The Butterfly Model of Careers

Planning and Chance, its existence and the utility of intervention, in the career education of secondary to post-secondary students. Australian Catholic University

Submitted by

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Statement of Authorship and Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

No other person's work has been used without due acknowledgement in the text of the thesis.

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All research reported in this thesis received the approval of the relevant Ethics Committees (Appendix A).

Dog

Signed

Date__22/2/16_____

Anthony Gerard Borg

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ABSTRACT

This research project aims to explore the perceived experience of planning and chance in the career experience of secondary students as they graduate from school and move in to post school pathways and the utility of chance related intervention in high school career education.

To acknowledge a relationship between chance and planning in career paths will involve a shift from traditional career counselling, which for much of the past hundred years had been fairly linear, to embracing nonlinear models. One of the cornerstones that career counselling has been built on is that career development is linear and rational (Guindon and Hanna, 2002).

Various authors and studies have suggested that we live in a complex world resulting in careers that are not always linear (Baumgardner 1976; Salomone and Slaney 1981; Scott and Hatalla 1990; Betsworth and Hansen 1996; Pryor and Bright 2003) and that in the interest of better serving our clients we need to explore ways to incorporate this into career counselling. Krumboltz (1998) proposes that we need to reconsider our career counselling approach to include the significance of unexpected change.

The author does not claim to discredit traditional approaches to career counselling but to investigate supplementing these with an approach that includes both planning and chance.

This thesis will investigate existing literature on the role of unplanned events and careers as well as carry out research with secondary to post-secondary students to establish firstly, the perceived experience of unplanned events in their career paths and secondly, the utility of chance related career counselling intervention. The research will take place with students from a comprehensive high school of approximately 750 students in New South Wales from a "realist constructivist" epistemology (Robson 2002). Two groups of studies are proposed. The first studies will involve a phone interview eighteen months after participants have completed high school which will compare their current career pathway with the one planned in school. The second group of studies will explore the utility of chance related career lessons compared to more traditional Trait and factor matching in high school career education settings.

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CHAPTER ONE

1.0 INTRODUCTION and CONTEXT

"Unplanned events affect everyone's career. The surprise is due to widespread but unfounded assumption that career decisions should be the logical outcome of a "true reasoning" process."

(Krumboltz, 1998, p.391)

Despite significant evidence of chance significantly influencing careers, it is a common assumption that good career counselling involves planning that gives little or no consideration to unexpected change. Career counselling has traditionally been made based on matching a client's traits to a linear career path. This approach ignores or underestimates the relationship between chance and planning in careers.

In a sample of 772 high school and university students, 69.1% reported chance as a major influence on their careers (Bright, Pryor & Harpham 2005) and extensive case studies by Williams, Soeprapto, Like, Touradji, Hess and Hill (1998) found that at least one chance event had had a major influence on the career path of all thirteen successful female psychologists.

This author arrived at the question of whether there is a relationship between planning and chance in careers and the utility of intervention through the context of working as a Careers Teacher in a New South Wales Department of Education comprehensive High School of approximately 750 students. One of the focuses of this "career teacher" role is "School to Work Planning" and the need for students to have a "career and transition plan" post school. Despite the focus placed on "career and transition plans" the question arises as to whether the career paths of high school students follow a planned and predictable pattern or whether unplanned events play a significant role? Additionally, if planning and chance both play a role in students' post school career paths, can students benefit from strategies to introduce them to the phenomena?

The proposal here is not that traditional career counselling methods or that career planning lacks merit, but, that as we live in a complex world, planning and chance co-exist and as a

result we need to investigate whether interventions in this regard can benefit career counselling clients.

The author's firsthand experience in student career counselling led to questioning the way we advise students regarding the planned nature of careers and was largely reinforced when attending a "Rural and Remote Careers Teacher's Conference" in 2005. At this function Professor Jim Bright of the Australian Catholic University made a presentation that raised the role of Chaos Theory and chance in careers.

Upon reflection, the author developed a model designed to reflect the role of planning and chance in careers along with lesson plans and strategies for classroom and individual counselling situations, "The Butterfly Model of Careers", (Borg, Bright and Pryor, 2006).

What was developed by the author was basically a continually looping figure eight on its side, where the left side reflected planning, the intersection a chance event and the right hand side the flow from that chance event that leads back into a planning phase. This pattern can be repeated on a continual or ongoing basis reflecting an ongoing relationship between planning and chance over an extended period, entire career or lifetime.

In summary of the "Butterfly Model of Careers" for use in a practical application in career education lessons, students are presented with a folded piece of paper dividing each side of the figure pictured over page, so that each side or loop of a figure eight was on each side of the folded line. Students were asked to plot the key points of their career plan for the next 12-24 months on the planning loop, then unfold the page, and be presented with a card at random that described an unplanned event to be placed at the intersection of each the loops. Students were then asked to plot suggested points on the chance loop that could reasonably represent a return from a chance phase to a planning phase. This lead to discussion on the relationship between planning and chance, examples in their own lives and the career paths of people they knew. Beyond this discussion, the Butterfly Model was a valuable introduction to other career education concepts such as being open to change, open and closed systems, lifelong learning, resilience, careers and change, retraining, redundancy and transferable skills. The model, as shown in Figure 1-1, can be used in a class group setting or in individual career counselling.

Figure 1-1: Diagram demonstrating the Butterfly Model of Careers



The following year the author had the opportunity to meet Professor Bright when attending another professional development function, describe the model and its use in career education classes and individual counselling situations. This led to the author collaborating on a paper with Professor Bright and his colleague, ACU Adjunct Professor Robert Pryor, titled The Butterfly Model of Careers, published in the "Spring 2006" edition of the Australian Journal of Career Counselling.

1.1 Chaos

The "Butterfly Model of Careers" developed by this author takes its title from the phrase "Butterfly Effect" which is intended to show that a small change in a complex system can lead to disproportional changes subsequently in the functioning of that system. While work on sensitive dependence to initial conditions may go back as far as the late eighteen hundreds, such as the work of physicists Jacques Hardamard and Henri Poincare, a paper by Edward Lorenz (1972) titled "Predictability: Does The Flap of a Butterfly's Wings in Brazil Set Off A Tornado in Texas" is credited with the popular birth of the concept "Butterfly Effect". The term chaos as applied to "Chaos Theory" is credited to Li and York (1975) via a paper entitled "Period three implies chaos".

In 1961 Lorenz was an assistant professor in meteorology the Massachusetts Institute of Technology, where he trialled the use of an early computer program to predict weather conditions. He found reliable methods using figures rounded to three places but that if these figures were not rounded, then the smallest change had a significant effect, changing forecast patterns and making long term forecasts unpredictable (Gleick,1987). While the term chaos was already being used to refer to random events it is the period following Lorenz's discovery that lead to the post 1960s use of the term "Chaos Theory" and the "Butterfly Effect". Gleick (1987) suggested that chaos had become the century's third great revolution in physical science.

Interest in Chaos Theory has grown dramatically since the work of Lorenz to include numerous books on the subject and reference in popular media such as movies like "Jurassic Park" (Kennedy and Moel,1993), "The Butterfly Effect" (Rhulen, Bender, Kutcher, Spink & Dix, 2004), Sliding Doors (Pollack & Braithwaite, 1998) and "Chaos Theory" (Kelly, Golchan and Westheimer, 2008).

In the movie "Jurassic Park", theme park owners attempted to run a "closed system" by running an island of caged dinosaurs developed from prehistoric DNA. Despite advice from a visiting chaos theorist played by actor Jeff Goldblum, who explained that the world is a complex "open system" in which we cannot control or predict what may happen, the park owners opened the Jurassic Park to the public and as the story goes, one small change lead to a huge series of dramatic events. In another example of Chaos Theory in the popularised medium of movies, "The Butterfly Effect", the main character attempted to go back in time and make small changes that had a positive bearing on his future and that of his loved ones only to find he could not predict the effect of each change. In the movie "Sliding Doors", two vastly different story lines compare the sequence of events triggered by the seemingly inconsequential action of the main character missing her usual morning train to work. In "Chaos Theory" the main character is an efficiency expert yet events in his life do not go to plan, with varied unexpected consequences.

1.1.1 Chaos theory in social science

"Now that science is looking Chaos seems to be everywhere...No matter what the medium...Chaos breaks across the lines that separate scientific disciplines." Gleick (1987, p.5)

While "Chaos Theory" was originally developed as a theory with its origins in physics there is suggestion, such as the above comments from Gleick (1987) that chaos "breaks across" various scientific disciplines. Pryor and Bright (2006) also suggest that numerous models used in psychology from the past 100 years originated in other fields of science including Patton and McMahon's (1999) adaptation of systems theory and Amundson's (2003b) "Physics of Living".

Chaos as distinct from randomness

It is not the suggestion of this author that career counselling practitioners and clients throw away established counselling methods and planning and rely or wait solely for random chance events to direct them as chaos is distinct from randomness (Wilbur and Kulikowich 1995). The "Chaos" referred to is that of "Chaos Theory" where a pattern can be relied upon to be reasonably repetitive, but like Lorenz's weather prediction never exactly the same forever and small causes can sometimes have larger effects. As Wilbur and Kulikowich point out ".... chaos describes systems that behave in orderly as well as disorderly ways, as such, better represent complexity rather than uncontrollable mayhem." (Wilbur and Kulikowich, 1995, p.3)

1.2 From Chaos Theory to intervention

A review of the literature on the role of chance and planning in careers reveals that very little information exists in relation to the application of Chaos Theory based intervention with high school students. The author proposes that given the evidence from existing studies on university students and working adults that report the influence of unplanned events on career

paths, there needs to be further investigation with high school participants. It is proposed that this study should involve two parts. Firstly, to confirm the perceived experience of unexpected change in the career path of secondary students post graduating from school and secondly, by investigating the utility of intervention in terms of introducing "Chaos Theory" in careers lessons in high school.

This study will explore the existing literature and studies on the role of planning and chance in careers and the benefits of intervention. The focus will be on the influence of unplanned events on secondary to post-secondary young adults and whether there are any reported benefits of Chaos Theory intervention in the high school career education classroom.

1.3 RESEARCH PROBLEM IDENTIFIED

Most of the Career education and counselling methods that we recognize today are credited with starting earlier in the twentieth century when Frank Parsons founded Breadwinner's College to provide vocational training and guidance in 1909 (Herr, 2001). Baltreniene (2004) points out that matching client's interests and abilities to a particular career became the most prominent career counselling approach. McMahon and Patton refer Parsons' work being the basis for the "... trait and factor approach, the dominant approach used in career counselling for most of the 20th century." (2002, p. 52).

This approach may have arguably served clients well in times when people kept the same job for much of their life (Patton and McMahon, 2006), however, over the last ten years, criticism has emerged that suggests career paths are now more complex and a wider range of counselling approaches are therefore needed. "The practice of career counselling has lagged behind ...This is evidenced by the fact that the dominant approach used in career counselling is still the trait and factor approach" (Patton and McMahon 2006, p. 3). Further criticism of person to job matching approaches includes descriptions as "insufficient" (Savickas, 2005), "limited and oversimplified" (McMahon and Patton, 2002) and "simpleminded" (Pryor, 2006). In more recent history, critics of traditional job to person matching suggest a wider range of consideration needs to be applied to career counselling, including "complexity", (Bloch, 2005; Bright & Pryor 2005); "interrelated systems" (Patton and MacMahon 2006) "personal construction", (Savickas, 2002) and "chance/chaos theory", (Krumboltz 1998; Bloch 2005; Pryor and Bright 2003, 2005, 2006).

According to Krumboltz (1998) "We have bought Parsons' (1909) model hook, line and sinker. Because Parsons' (1909) theory makes occupational choice such a rational and reasonable process, there is no room for chance or unplanned events" (p.391).

A "Chaos Theory of Careers" as put forward by Pryor and Bright (2003b) takes into account the complex array of influences that a linear approach to career planning alone does not consider.

In a study of over 600 university and high school students (Bright, Pryor, Wilkenfield and Earl, 2005) found 69.1% of students reported chance events had influenced their careers. Davey, Bright, Pryor and Levin (2005) found undergraduates who had viewed a video linked to Chaos Theory of Careers (CTC) (Pryor and Bright, 2003) principles were subsequently more realistic in their careers thinking. In a study comparing traditional Trait and factor matching to Chaos Theory with 60 university students (McKay, Bright and Pryor, 2005) found the Chaos approach had more lasting effect.

The challenge that is emerging is that much of our career counselling and career education methods are based around traditional "trait and factor", "reductionist" methods with "linear" expectations, while recent theorists in the field indicate that a more nonlinear, complex career pattern exists. In effect, current careers development and career decision makers need a "good theory of non-rationality" (Baumgardner, 1977) and to embrace the "certainty of uncertainty" (Drodge 2002).

This project aims to explore and build on these recent studies by examining whether there is a relationship between planning and chance in careers for secondary to post-secondary students

and investigating the utility of intervention to facilitate career development in the modern world of work.

CHAPTER TWO

2.0 RESEARCH PROBLEM DEFINED

This study will explore whether the traditional linear models of career counselling need to be expanded to incorporate non-linear approaches that include chance events. The existence of a relationship between planning and chance in the perceived experience of secondary students will be examined and the utility of intervention through career education lessons will be investigated.

The study will be carried out with students and recent ex-students of two NSW DET comprehensive secondary schools, with instruments developed in other studies and research instruments developed specifically for this study. There are essentially two aspects of this investigation, firstly, exploring the perceived experience of unexpected change in the transition from high school and secondly, investigating the benefits from planning and chance intervention in high school career education lessons.

2.1 THE RESEARCH PURPOSE

To explore the perceived experience of unexpected change in the career related lives of secondary students as they move from school to post school career paths and the utility of chance intervention compared to Trait and factor intervention in high school career education lessons.

2.2 RESEARCH QUESTIONS

Literature Review

1. What are the current major approaches to careers counselling? Are these linear, reductionist, and Trait and factor basd? Do they account for or include chance? If chance is included does it provide strategies for further application, intervention, counselling and education of clients?

2. What research exists on the role of chance in careers?
What papers and studies have been put forward?

Studies

3. What is the perceived experience of unexpected change in the school to post school career pathways?

What do the studies run for this thesis find?

4. Is there a benefit from chance based intervention compared to Trait and factor approaches in high school career education lessons?

What benefits do students show from career counselling education strategies that include chance?

2.3 SIGNIFICANCE OF RESEARCH

It is proposed that this research will be of significance and contribute to knowledge in this discipline through what Sternberg & Ben Zeev (2001) refer to as "forward incrementation".

Arguably the strongest point of the research is that it can be of value to the profession and be of value to end users. The research will contribute to the existing literature on the relationship between career planning and chance by investigating the perceived experience of unexpected change in the transition from high school and by investigating the benefits of chance based intervention compared to Trait and factor approaches in high school career education lessons. These intervention strategies could potentially be used by a large range of career educators and counsellors both with school groups and in individual counselling situations.

The research has the potential to be used locally and worldwide reflecting a wide application and has the potential to benefit the profession by providing and trialling strategies for practical application in career education and counselling. As an example of the potential if found applicable for high school career education lessons, in New South Wales the 2013 School to Work Report found 48,767 students in Years 9 and 10, participated in timetabled career education classes. (Retrieved, 24 February 2014,

www.det.nsw.edu.au/vetinschools/about/reports.html). Given the number of students

participating in career lessons in this state alone, the findings of this research on unexpected change and the career path of high school students in their first eighteen months post school and in particular integrating the concept of unexpected change into career lessons, has potentially wide application.

In a report on the School to Work Program in New South Wales, MacLean states "The Chaos Theory of Careers developed by Bright and Pryor has implications for contemporary thinking in regards to student's career development in secondary schools; (2007 p.1) "...in particular, the apparently contradictory relationship between the need for planning and the influence of unplanned events", MacLean (2007, p.11).

The proposed research has a substantial degree of currency; Chaos Theory is the last listing and most recent development point on Brown's (2007) history of Career Development Theories. In 2011 Pryor and Bright's book "The Chaos Theory of Careers, A New Perspective on Working in the Twentieth Century" was published. According to Hirschi (2010), "In recent years, there has been increasing theorizing about the effects of unplanned events in career decision making and career development." (p.39). Hirschi (2010) also points to a shortage of available research on unexpected change in the education and career path of high school students.

In proposing such study on unexpected change for the career education and career counselling of high school students the literature review will investigate existing literature on approaches to career counselling, in particular, the influence of unexpected change.

CHAPTER THREE REVIEW OF LITERATURE

3.0 Introduction

In order to consider the perceived experience of unexpected change and then the utility of planning chance intervention in high school career education, this literature review will examine the major theories in career counselling, recent developments and any links to the emergence of planning and unexpected change in this field.

3.1 Twentieth Century Career Counselling

"Any attempt to classify models of behaviour runs the risk of oversimplification and models can be classified in different ways. Yet, some attempt at classification can be useful in understanding the history and state of career development theory." (Baltreniene, 2004, p.1, retrieved 20 January, 2014, from http://www.sdcentras.lt/mind/CDhistory.pdf.)

Modern career development theory is commonly credited to have begun with Frank Parsons' 1909 publication "Choosing your Vocation" (Guindon and Hanna, 2002, Patton and MacMahon 2006). Parsons was known as a social reformer, his work came at a time in history of industrialisation, education and urbanisation when vocational choice was emerging rather than the previous eras of inheriting a job with very little choice. Parsons' approach to vocational choice involved three key elements, "understanding oneself", "requirements of available jobs" and "choosing based on logic" (Brown, 2007; Herr, 2001).

Despite being commonly credited as the forerunner to career counselling of the past hundred years there have been some researchers who have suggested that work raising similar concepts to Parsons' may date back over a thousand years. Carson and Altai (1994) acknowledge the work of Chabassus and Zytowski (1987) in identifying three key concepts in the work of Spaniard Sanchez de Arevalo's (1468) "Speculum Vitae Humanae". In one of the first works to be printed on a printing press, Arevelos made three points of similarity to Parsons', good decisions are based on good information, a person is capable of one thing and fitness in an occupation calls for both appropriate ability and interest. Carson and Altai (1994)

then delve deeper into history in the form of the "Rasa'll Ikhwan al-Safa wa-Khulln al-Wafa" translated as "Treatises of the Brothers of Purity" thought to be written around 955A.D. The "Ikhwan al-Safa" classified workers into seven groups and used descriptions similar to matching theories including statements such as "The characteristics are stocked inside a person, but the choices are identified according to an individual's capacities and facilities" (Treatises of the Brothers of Purity, Vol.1, p.271 in Carson and Altai 1994 p. 6).

These findings do not serve as disclaimers for Parsons or its place as the forerunner of modern vocational theory. The fact these researchers have looked so far into history to find works that echo similar themes to Parsons' may show how significant his work was rather than discredit it. These articles also highlight the concept of "matching" occupations as one that has been long held.

Trait and Factor Theory

While Parsons did not develop a formal theory of career development, his approach to matching clients to occupations is credited as a major contributor to one of the most prominent career theories of the twentieth century, "Trait and Factor matching", (Baltreniene, 2004).

Trait and Factor Theory advanced Parsons' techniques for matching the "understanding of oneself" and the "requirements of jobs". E.G. Williams of the University of Minnesota developed Trait and Factor Theory. Through Trait and factor testing participants' responses to a series of questions on their abilities, interests and personal characteristics are scored and these traits matched to occupations whose members have similar abilities, interests and personal characteristics. The theory assumes that clients' career paths will be more successful if they match their abilities, interests and personal characteristics closely with equivalent occupations. It also assumes that as such, "matched" occupations will be more satisfying to the client, leading to more productive employment for themselves and their employer. Trait and Factor Theory became one of the major theories of the twentieth century and the cornerstone for the vocational testing movement with numerous interest inventories and tests being developed.

One of the most prominent Trait and factor models was developed by John Holland (1959, 1997) which classified people as one of six personality types: "Realistic", "Investigative", "Artistic", "Social", "Enterprising" or "Conventional". Holland developed an interest inventory called the "Self Directed Search" (1994) at the completion of which clients receive a three letter "Holland code". Each of the three letters in the "Holland code" represents each of the highest scoring personality codes from the completed "Self-Directed Search". The three letter "Holland codes" are then matched to occupations from an extensive list developed by Holland to best match each of the codes. Holland's use of Trait and Factor Theory, particularly through the "Self Directed Search" remains one of the most prominent theories in use to this day.

The Theory of Work Adjustment

Another matching theory that came to some prominence is the Theory of Work Adjustment (TWA) (Dawis and Lofquist 1984). The premise of TWA is that good occupational choices can be made when the abilities of the individual best matched the performance demands of an occupation. A good match between the abilities of the individual and the performance demands of an occupation in TWA was called "satisfactoriness". If the preferences of an individual matched the rewards offered by an occupation, the TWA called this "satisfaction". Therefore in TWA a good occupational choice involved the client match being satisfactory in performance and satisfied in preference (Pryor and Bright 2007).

Developed at the University of Minnesota, The Theory of Work Adjustment (TWA) process could involve completing a general aptitude test, then the Minnesota Importance Questionnaire (MIQ) providing clients a list of up to 180 suggested occupations. This would be followed by counsellor assisting individuals to compare their abilities needs and values to those matched in the Minnesota Occupational Classification with the outcome of the process expected to benefit both employer and employee (Brown 2007).

Criticism of matching approaches

Matching theories such as those first proposed by Parsons (1909) and Trait and factor matching such as Holland (1959) remain in popular use in vocational counselling however there are criticisms of such approaches including:

- The reductionist nature of these theories means that clients identify their interests and abilities to assist them to match these to a refined number of suggested career occupations. The problem with reductionism being that it oversimplifies the decision making process by limiting the range of factors that are considered.
- We live in a time of changing work places, technologies, economies and globalization in which demand for various occupations is prone to much more change than in Parsons' era. (Patton and McMahon 2006). The concern being that Trait and factor approach reduces career development to a static process in a dynamic world.
- Criticism of Trait and factor matching involves questions on whether the diagnosis can reasonably take into account a wide cultural cross section of society and whether a successful career choice needs to be congruent with a personality coded from a diagnostic test, (Super 1981; Herr and Cramer, 1992), stability and change (Weinrach and Srebalus, 1990) and personality change (Herr and Cramer, 1992).
- Pryor and Bright (2011) suggest further limitations to matching theories include the presumption that choice is rational, that indecision is bad and decidedness is good and that making a decision does not affect the context in which it was made.

Developmental Theory

In Developmental Theory (Ginzberg, Ginsburg, Axelrad & Herma 1951; Roe 1956; Tiedeman and O'Hara 1963; Super 1969 and Gottfredson 1981) take into account an individual's self-concept and proposes that career development occurs in stages of an individual's development.

The most prolific proponent of Developmental Theory is recognized as Donald Super. Super was the author or co-author of almost 200 articles, books, chapters and publications (Brown, 2007). Developmental theory focuses on stages of development such as Super (1980) "child, student, citizen, worker, homemaker, parent and pensioner through stages of growth, exploration, establishment, maintenance and decline." (Brown, 2007, p.52) Super suggests that

career counselling take into account these stages combined with consideration of self-concept and move clients toward career maturity where clients balance the range of influences in their career.

The strengths of Developmental Theory such as Super's for counselling today are that the consideration of self-concept and stage of development in striving for career maturity considers a range of factors beyond Trait and factor matching. The theory remains linear in trajectory, expecting that clients can progress through these stages sequentially and achieve goals and that clients from various gender, or cultural demographic will also suit these stages and can reach an individual decision on career. While moving through developmental stages implies a linearity, Super (1990) added a mini-cycle to his theory or stages of development suggesting that within any particular developmental stage a person could go through a mini cycle of the stages such as experiencing unexpected career change (Leung 2008). Super also refers to an aspect of "career maturity" being the ability to handle change however, the application of change in this case is not expanded upon.

Gottfredson's (1981) developmental theory of "Circumscription and Compromise" proposes that as individual's move through three stages in childhood, "orientation to size and power", in ages 3 to 5, "orientation to sex-roles" in ages 6-8 and "orientation to social valuation", ages 9-13, that individuals develop through narrowing down the number of possible occupations as to whether they are compatible based on sex-type, prestige and interests (Leung 2008). In terms of considering change, or career paths beyond expected linear paths, Gottfredson also puts forward the concept of "compromise". For example, an individual may have eliminated occupational choices ("circumscription") based on sex type, values and prestige but find that a particular occupation is not available to them and therefore make a "compromise".

Criticisms of the Developmental theories

Criticisms of the developmental theories of both Super and Gottfredson are that they are dependent on the individual being the independent decision maker on their career path and this may not be the case in a number of cultures or for financially disadvantaged groups in society.

Learning Theory

Learning Theory applies neither the stages of development or Trait and factor matching. In Learning Theory individuals are said to learn from various encounters in their life and that it is this process that will shape their career selection.

Krumboltz's Social Learning Theory is credited with emerging in 1979 and having a basis in the work of Bandura (1977) and the proposition that individuals are constantly encountering and learning from new experiences. In brief description, an individual is born with particular characteristics including race, gender, physique and particular abilities or lack of ability and is constantly learning from experiences both positive and negative. Krumboltz (1979) proposes "...these learning experiences generate self observation generalisations and task approach skills that lead to specific career related actions." (p. 20).

As Krumboltz's "Social Learning Theory" (1979) incorporates continuously learning from new events and encounters, it acknowledges the influence of events in a dynamic and complex world and lends itself to elements of "Chaos Theory" presented in this paper. According to Krumboltz (1979) "Educational and Occupational decision making is influenced by a large extent by factors usually outside the control of any one individual. Some events may be planned; many others are unplanned" (p. 20).

Criticism of Learning Theory

While the Social Learning Theory of Krumboltz (1979) acknowledges the dynamic nature of the world we live in and encourage career counselling clients to continually learn from the encounters in their life, there is a shortage of detail on the process or the practical applications towards achieving this.

Construction

Brown and Brooks (1996) propose that all theories of career development come from two philosophical positions for which there is "no rapprochement", namely, positivism or constructivism.

In the Contextualist Theory of Young, Valach and Collin (2002) it is proposed that the best way to understand individuals is in the context of their environments, as individuals will construct their own sense or meaning based on their experience of this environment (Brown 2007).

In both the Contextualist Theory of Young et al. (1996) and the Constructivist Theory of Savickas (2006) the narrative becomes all important as the counsellor interviews the client and assists them to see the themes in their life to date and construct their future. Savickas (2006) proposes the counsellor retells the client's story, in an approach that is based on enhancing the client's career adaptability and in the process assist them to recognise potential occupations that can then be included in writing "the next chapter" in their own story.

Systems Theory

For Patton and McMahon (1996) The Systems Theory Framework is consistent with the constructivist worldview. Patton and McMahon (2006) suggest that Systems Theory had been previously been proffered as a possible "overarching framework" for human behaviour by contributors from a range of fields including physics (Capra 1982), as well as biology, anthropology and psychology (Bateson, 1979). In applying Systems Theory to career development the Systems Theory Framework (STF) put forward by Patton and McMahon (1999) in diagrammatic form, has the individual in the inner circle of three circles expanding outwardly like a bullseye target. The inner circle of the STF represents the individual and includes personal attributes such as gender, values, self-concept, ethnicity and aptitudes. The outer circle representing the influences of the past, present and future and the middle circle represents environmental influences such as geographic location, employment market and globalization. Smaller circles or subsystems overlap the inner and outer circle. It is the inclusion of these personal attributes (inner circle) and environmental (middle circle) aspects as well as the past present and future (outer circle) and overlapping subsystems and themes which

include chance, that Patton and McMahon (2006) claim the STF accommodates both the traditional predictive theories and constructivist approaches.

Criticism of constructivist approaches

There are a number of positives of the constructivist approach in that it considers the context in which individuals interact with a range of influences in their background. Another positive is that by including this range of interaction the constructivist approaches acknowledge complexity, in that the world is complex and prone to change and therefore careers may not be as simple as selecting an occupation matched to one's traits. The constructivist approaches highlight a more collaborative role of the career counsellor, working together with the client, not telling them what to do but showing them how.

Criticism of constructivist approaches point out that while assisting client's in understanding their present it seems unlikely it can help them write scripts for futures that are unknown or unknowable, (Brown & Brooks 1996). It is this step between constructing a narrative based on emerging themes from the client's story to applying it to their future that also raises criticism in that at some point the client's emerging themes must be applied to the real or outside world. While a client can construct their story through the narrative and construct their interpretation of the outside world, even the highest level of constructivism cannot control every aspect of the external or real world. For example, a careers teacher or counsellor may work with a student for whom becoming an orthopaedic surgeon repeatedly emerges as a theme from the student's narrative. Despite this narrative, if the student's school results were consistently lower than the university entry scores for this field by large margins, this narrative may not become a reality, no matter how well emerging themes and narrative are constructed. A similar example could be the client for whom emerging themes identify a desire to become an electrician but unknown to the client's projected future story the reality is that he/she has not yet been diagnosed as being colour blind, a condition that will prevent he/she projecting the intended next chapter. For Pryor and Bright (2011) the danger in allowing the narrative to be the method of producing meaning and continuity in a person's life is that the degree of control and choice that people genuinely have is exaggerated.

One of the positive aspects of Systems theory as applied to the Systems Theory Framework of Patton and McMahon (1999) is that it advocates a holistic approach to careers and attempts to represent complexity as well as including interaction between subsystems and chance. A criticism of Systems Theory is that it can serve as a representation of the various influences on career without actually offering a process or dynamic for the development and change. Patton and McMahon (2006) point out their Systems Theory Framework "…is not designed to be a theory of career development, rather it is an overarching framework within which all concepts of career development …can be usefully positioned and utilized in theory and practice." (p.1)

Pryor and Bright (2011) point out that while chance is included in the subsystems overlapping Patton and McMahon's STF, there is no explanation or process of application to explain its interaction across the system. Further to this the STF claims to represent both traditional and constructivist approaches, but is largely constructivist and as such the same criticism of such approaches not bridging the gap between the constructed and reality apply.

3.2 Twentieth to Post Twentieth Century Careers Counselling and the rise of Planning and Chance

Contextual approaches

Contextual approaches to career counselling are based on the client's interpretation of their context and assisting them to project this into future situations. Career related behaviours are goal-directed results of the individual's construction of the context in which he/she functions (Brown 2007).

Major contributors to contextual approaches include the work of Savickas (1995) and Young, Valach and Colin (2002). The process as described by Savickas (2006) is one where the client's narrative establishes themes and which the counsellor assists in analysing and adjusting skills for implementation in the future.

Criticism of Contextual Approaches

The contextual approach does not strive to match client's traits to a career path, or analyse careers along expected stages of development. The strengths of the contextual methods are

that they value an individual's narrative and interpretation along with allowing for individual values. Pryor and Bright (2007) warn of taking constructivism too far as they suggest the work of some recent systems theorists have. "Reality is complex...we would argue that virtually no one actually lives their lives as though reality is only what they perceive or create" (Pryor and Bright, 2007, p.10).

The Emergence of Chance and Planning in Careers

A key criticism of constructive approach is that despite identifying emerging themes in the client's narrative it may be challenging to apply those themes to the wider world. The challenge being that many elements of the next stage in the client's story are out of the client's control as we live in a dynamic world, an open rather than closed system. This open system means it is difficult to construct a narrative because we cannot construct or predict all the influences on the next stage of that narrative. Similarly, criticism of objective approaches such as Trait and factor matching is that they describe a process that is also somewhat linear. The Trait and factor approach presumes that career choice is rational and that career choice is a long term goal and the world outside of selecting this occupation is stable. While developmental theories included external influences on career they basically implied a linearity in that individuals progressed through developmental stages such as Super's "child", "student", "citizen, worker", "homemaker", "parent" and "pensioner".

The emergence of non-linearity, chance and unexpected change

According to Butz (1995) a nonlinear understanding of the world has been implicitly understood by civilizations long before Europe and Greece. Butz suggests there is evidence of the Chinese referring to the influence of chaos dating back to 2698 B.C., Egyptian cosmology from roughly 2500B.C, Babylonian civilizations from 2000B.C. and may have existed in Native American civilizations before Greek references of chaos to 7Th century B.C.

"...chaos is an ancient philosophical concept, which in the past 200 years has often been overlooked by scientists as they seek a logical positivist answer to a world that is largely non-linear". (Butz, 1995, p.2) The evolution of Chaos Theory in the last 150 years is often credited to the work of Henri Poincare 1890 (Butz 1995; Taleb 2007). James Clerk Maxwell's work of 1860 and the 1870s is credited with noting the amplification of small changes in gases. In 1890 Poincare found in a model that became known as the "three body problem" that a system with two planets in it could be predictable but that adding even the tiniest third body made things unpredictable, Taleb, (2007).

One of the most famous names associated with Chaos theory is Edward Lorenz and the term "Butterfly Effect". Lorenz (1993) who, when attempting to map the predictability of weather patterns on a computer, found the smallest change in data lead to unpredictable results. The work of Lorenz became even more famous when presenting his findings in a speech at a conference in 1972, he used the title "Predictability: Does the flap of a butterfly's wings in Brazil set off a tornado in Texas?" This is said to have given rise to the term "Butterfly Effect" to represent the large and often unpredictable effect a small change can make. Chaos Theory also gained reference in popular medium through the bestselling book "Chaos" by James Gleick (1987) which went on to sell over nine million copies.

Chaos as a science gained attention from the 1970s. In the mid1970s Robert May showed sensitive dependence on initial conditions in studying insects. He found after several period-doubling cycles that his model became unpredictable. Chaos became famous as a term for scientific use with the work of Tien Yien Li and James Yorke in 1975 (Lorenz 1993). Li and Yorke noted non-periodic behaviour in a paper titled "Period Three Implies Chaos", credited with drawing attention to the term Chaos Theory. In the late 1970s Mitchell Feigenbaum developed a method for measuring turbulence and in doing so found an order in disorder.

Another major contributor to Chaos Theory was Benoit Mandelbrot who in 1975 came up with the term fractal to describe never-ending patterns that are infinitely complex and self-similar across different scales. Developments in home computers meant that in 1982 Mandelbrot's work with fractals could be seen on home computers. This meant that Chaos Theory could be represented as fractals in colour on home computers throughout the world. Chaos Theory: From Meteorology and Mathematics to Career Counselling It is noted above that chaos did not gain attention as a science until the 1970s. The term chaos for many people represents totally random and entirely unpredictable events, however that is not the intended representation of chaos for this thesis. It is important to note that chaos is distinct from randomness (Wilbur and Kulikowich, 1995). "...chaos describes systems that behave in orderly as well as disorderly ways and as such, better represent complexity rather than uncontrollable mayhem" (p.3). It is this description of chaos that will be applied throughout this thesis. Wilbur and Kulikowich (1995) also noted that understanding chaos may have applications in counselling.

The concept of chance influencing career development is not new. It is mentioned in various counselling publications in the 1950s and 1960s (Caplow 1954; Brayfield 1964; Crites 1969). It received various levels of study from the 1970s and 1980s (Hart, Rayner and Christensen 1971; Salomone and Slaney 1981). Despite discussion of the role of chance in careers dating back to the fifties, sixties and seventies, it gained only a small amount of inclusion in theories for career counselling until recently (Krumboltz 1998, Bloch 2005; Bright and Pryor 2003;).

Early references to chance in career counselling literature

Publications discussing the role of unexpected change in modern and post-modernist approaches to career theory date back to the 1950s. Miller and Form (1951) stated that many occupational choices are made "accidentally". Caplow (1954) suggest "error and accident" often have a bigger part in career paths than given credit for. Osipow (1968) suggests chance events may more often be involved in career paths than "systematic planning". After studying the influences on college students in choosing their major Baumgardner (1976) proposed that "a desirable outcome of career counselling might then be students' recognition of the unsystematic nature of career decisions..."(p. 45)

Early studies on the influence of chance or unexpected events on career development

Hart, Rayner and Christensen (1971) examined the influence of planning, preparation and chance on the occupational entry of sixty men- twenty from professional occupations, twenty

skilled and twenty from semi-skilled occupations. The sixty subjects were interviewed and the responses classified in to eight categories reporting an inter-rater reliability of .97 from five raters. The findings were "...that a significant relationship (r=.66) between preparation and planning and entry into professional level occupations, that 55% of subjects entering skilled level occupations reported the influence of chance and for entry into semiskilled level occupations, 85% of respondents said their occupational entry involved unplanned chance events" (Hart et al., 1971, p. 283).

It is worth noting that this study from 1971 only looked at the influence of planning, preparation and chance on occupational entry. Hart et al. (1971) point out that "...the elements of chance involved in job movement within an occupation were not examined; had they been, chance events would appear even more influential..." (p. 284).

A study run by Baumgardner (1976) examined change of college majors amongst 586 Kansas State University undergraduate students. Results showed only 9.5% of first year students changed major once or more than once, however, change dramatically increased in subsequent year groups. Baumgardner (1976) found 44% of second year students, 49.3% of third year students and 61.6% of fourth year students reported changing major one or more times concluding "...rather than counselling students to follow some systematic approach, such as adopting specific goals and rational plans to achieve them, counsellors should instead help students to cope with a dynamic and uncertain choice task." (p. 45).

Given Hart et al.'s (1971) findings that unplanned events had a greater influence on the career of the semi-skilled worker, it is interesting to look at a study by Salomone and Slaney (1981) involving 917 "non-professional" or "non-college-degreed" workers. Participants had an education level of not more than two years of college, 470 were males and 447 females. This study attempted to consider the influence of chance and contingency using Crites (1969) description of contingency as "characteristics and conditions of the individual... which are predictable and which can be taken into consideration when an individual plans his future" (p. 80). The respondents had an average age of thirty six years old and were asked to respond directly to a list of factors which may have influenced their occupational decision making. Respondents were asked to rank each of twenty seven items on a Likert scale choosing from the listed scales of "great", "some" or "none". Ten of the items from the twenty seven items were considered by the authors to be chance items and these were "national or economic situations", "military service", "strikes", "local disasters e.g. floods", "unexpected information about job openings", "unemployment levels in local community", "unexpected information about schooling/training", "unexpected financial support", "unexpected personal events" and "other unexpected or unpredictable events".

Salomone and Slaney (1981) concluded that the participants in their study attributed rational factors rather than chance factors as having the largest influence in their careers, "...in large measure, they perceive themselves as using rational processes to arrive at their occupational decisions." (p. 34). "Overall, results clearly indicated the lack of importance attributed to chance factors..." (p. 33).

There are four points worth noting from Salomone and Slaney's study (1981). Firstly, that despite their conclusion there was some, arguably, noteworthy reporting of the influence of chance. Several items nominated by Salomone and Slaney as contingency or planning type items were amongst the highest scoring responses of "great" influence and when the response "great" and "some" were combined remained as the highest scoring items. The highest scoring items when the response of "great" and "some" were combined were "Being aware of my skills and abilities" as reported by 93.8% of males and 93.3%, "being aware of my own intelligence level", 89.6% of males and 88.1% of females and "my education level" 87.2% of males and 89.3% of females. These items have returned high scores and are consistent with the Trait and factor approach of being aware of one's skills and attributes and selecting an occupation to match, however a number of the chance related items received a noteworthy percentage of responses. The category of "Unexpected information about job openings" had "some" or "great" influence for 76.4% of males and 79.6% of females while "Unexpected personal events in my life" for example, had "some" or "great" influence for 64.7 % of males and 71.6% of females. "Unexpected personal events in my life" were reported as "some" or "great" influence on 64.7% of males and 71.6% of females.
The second point of note regarding chance from Salomone and Slaney's (1981) is that while several planning related items scored over 80% and 90% it is possible the respondents, given the average age of thirty six, had been through a vocational education period in school or university where planning or Trait and factor were presented as highly applicable approaches for the era. This may have increased the response on items such as "being aware of my skills and abilities", and "being aware of my intelligence level".

Thirdly, Salomone and Slaney (1981) point out that chance may play a greater role than subjects surveyed acknowledge. "It is tenable to suggest that persons may attribute, particularly in retrospect, an orderliness and planfulness to occurrences that to an outside observer would appear accidental." (p.27). Salomone and Slaney's study presented a series of set chance events amongst a long list of set planned events. Bright, Pryor and Harpham (2005) suggest that in studying the influence of chance events, placing chance events amongst other factors may lead to lower reporting of chance events as respondents tend to apply what they perceive as rational behaviour to their decisions.

The fourth point worth noting from Salomone and Slaney (1981) has strong relevance to the model that initiated this particular study for the author, which was described earlier as the "Butterfly Model of Careers". This model attempted to reflect a relationship between both planning and chance for career education and counselling. Salomone and Slaney (1981) acknowledge a relationship between both planning and chance and further to this, suggest future studies may be more successful exploring this relationship. "If it is true that when chance is involved in vocational decision making, it is most often involved through an interaction with contingency and personal factors, then looking for pure chance influences ...may be unproductive" (p. 34).

Salomone and Slaney (1981) go on to suggest "The real issue would appear to be how the factors interact in instances of vocational decision making." (p. 34).

Studies post 1990 on the influence of unplanned events on careers

In their study Scott and Hatalla (1990) used the same list of twenty seven decision-making influences from the study reported by Salomone and Slaney's (1981). The study by Salomone and Slaney (1981) was based on responses from non-college degreed workers, Scott and Hatalla's study involved college graduates, ninety four women 61.7% of them being 48 or 49 years of age.

The results of the Scott and Hatalla's (1990) study reinforce the findings of Hart et al. (1971) despite being conducted almost twenty years later and with quite a different section of the population, female graduates as opposed to non-college degreed males and females. Contingency or planned influences were found to fill the top five influence categories, scoring 75% to 88.3% however, the chance category "Unexpected Personal Events" scored 67%. This placed "Unexpected Personal Events" narrowly above the planning category of "factors specific to a job". This also replicates the results of Salomone and Slaney where "unexpected personal events in my life" were reported as having "some" or "great" influence for 71.6% of females and 64.7% of males.

Betsworth and Hansen (1996) surveyed 237 respondents, 89 were male and 148 were females aged 52 to 88 years of age with an average age of 72 years and 81.1% of participants had a bachelor's degree or higher. This study aimed to find out whether serendipitous events, defined as "events that were not planned or predictable but had a significant influence on your career", as a "yes" or "no" question, had influenced the respondents career path and secondly, to categorize open ended descriptions to these influential factors. Betsworth and Hansen (1996) found that 62.9% of males and 57.4% of females confirmed that a serendipitous event had influenced their career. After content analysis and the use of independent raters the responses were categorized. Eleven categories emerged from the study and the leading categories for serendipitous events were: "professional or personal connections (n=23)", "unexpected advancement" (n=19), "right place/right time" (n=15), "influences of marriage and family" (n=13), "encouragement of others"(n=11), "influence of previous work/volunteer experiences" (n=11), "military experiences" (n=9), "temporary position became permanent" (n=9), "obstacles

in original career path" (n=9), "influence of historical events" (n=8), and "unexpected exposure to an interest area" (n=5).

As with the studies of Hart et.al (1971), Salomone and Slaney (1981) and Scott and Hatalla (1990) the results of the study from Betsworth and Hansen (1996) confirm that an average of sixty percent of respondents or greater report unexpected influences on their career path.

Williams, Soeprapto, Like, Touradji, Hess, and Hill (1998) studied thirteen prominent female psychologists from nine different institutions and found that unexpected events were largely influential on each of the careers of all thirteen participants.

In this study Williams et al. investigated the impact of chance events on the career path of thirteen prominent academic women in counselling psychology and found that all thirteen reported chance events had a strong influence.

Williams et al. (1998) makes use of qualitative research in the form of consensual qualitative research. Information was gathered from thirteen prominent female counselling psychologists from nine different institutions, none from the author's own university through a 40-60 minute phone interview, transcribed and cross referenced at length to find emerging domain categories.

The results were broken into nine domain categories: "choice of psychology, choice of academia, definition of chance, most salient chance event, significance of event, stage in career development, internal readiness factors and external readiness factors" (Williams et al. 1998, p. 7).

Williams et al. (1998) found that chance had played a role in the career path of all thirteen participants. "Chance events affected career choices most often by changing women's career paths altogether or by altering their self-concept. The results also suggest that both internal characteristics, e.g. ability to take risks, self-confidence, etc. and external factors (e.g. a strong support system, few external barriers, etc.) helped women take advantage of chance

opportunities" (p.1). Williams also refers to the role of both planning and chance, "The results of this study suggest that both chance and planning were important factors in the participants' career paths." (p. 12).

Applications of Chaos Theory in counselling

Positive Uncertainty

Gelatt (1995) puts forward a strategy to embrace Chaos Theory, "It suggests the acceptance of chaos (uncertainty and instability) and recommend a positive attitude toward uncertainty."(p. 6). The four principles of Gelatt's (1995) "Positive Uncertainty" are being "focused and flexible", being "aware and wary" about what you know, being "objective and optimistic" in what you believe and being "practical and magical" in what you do.

Planned Happenstance

Mitchell, Levin and Krumboltz (1999) cite the above mentioned findings of Williams et.al (1998), Hart et.al (1971) and Baumgardner (1975) as examples of the influence of unplanned events and suggest developing in clients five of those skills identified by Williams (1998): "curiosity", "persistence", "flexibility", "optimism", and "risk taking". Mitchell et al. (1999) put forward a "Planned Happenstance Theory", referring to Miller's (1983) view of "happenstance" as a normal part of career choice and Cabral and Salomone's (1990) suggestion that there is a need for an approach that integrates both "planfulness" and "happenstance". For the application of "planned happenstance" in career counselling, Mitchell et al. (1999) propose four steps: the first being to "normalize planned happenstance in the client's history", the second, "assist clients to transform curiosity into opportunities for learning and exploration", thirdly, "teach clients to produce desirable chance events" and the fourth, "teach clients to overcome blocks to action" (p.122).

The significance of both planning and chance were also highlighted in a study by Neault (2002) which surveyed 181 managers employed in a large Canadian company. The study aimed to identify whether any of the following: "continuous learning", "financial management", "flexibility", "work-life balance", "networking", "optimism", "persistence", "planfulness" and "risk-taking", predicted either their career success or job satisfaction. "Optimism" and "flexibility" were found

to be the best predictors of career success, accounting for 12% of variance. "Optimism", "continuous learning" and "planfulness" were the best predictors of job satisfaction, accounting for 19% of the variance.

Further support for chaos being included in career counselling and for new approaches to counselling co existing with previous approaches comes from Drodge (2002). According to Drodge (2002) there is some value in all theories of career and they can be used some of the time but no theory should be used all of the time at the expense of others. "The emergence of a new career perspective should not be interpreted as a signal for the rejection of existing models of career development and counselling." (p.53). Drodge cites Arnold and Jackson's (1997) term of "new career" and Mathews, White and Long's (1999) term "complexity science" to describe "chaos theory", "complexity theory" and "self-organization" and the value of incorporating these into career counselling. "Complexity science and new career share metaphorical concepts such deterministic non -linearity, bifurcation, complexity and self-organization...By understanding how unpredictable events occur and function in naturalistic systems, careers counsellors for example, can normalize a client's experiencing of uncertainty in the career system and furthermore, assist the client to more effectively cope with future uncertainty..."(p.50)

Bloch (2005) put forward a theory of career development that included nonlinear dynamics and chaos which differed from other theories in that the concept of "career" is presented as "an adaptive entity, a fractal of the human entity." (p.1). Bloch (2005) suggests her theory supports both the need identified by Savickas and Lent (1994) for convergence in career development theories and the call for a more adaptive theory (Savickas 2001) by framing career as "a complex and adaptive entity". In Bloch's approach career counselling would include working with individuals to show them that "...opportunity occurs in transition points, listening to stories, knowing that change is inevitable using complexity theory to help the client, helping the client understand the power of small changes..." (p.8) Bloch (2005) also suggests attractors could be used to assist clients see the emerging patterns in their career path and connections with spirituality.

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As identified to this point, a number of career theorists and studies have identified the influence of chance on career paths, but very few had put forward approaches for practical application in careers counselling. Chen (2005) acknowledges that chance can involve both positive and negative chance and proposed that career counsellors work with clients to "Adopt an open stance" as "...any attempt to avoid such change is useless" recommending an "open proactive attitude toward change." (p.259) .The three steps in counselling application for Chen (2005) are: helping clients increase an "understanding of change in life generally" then to "identify and normalize change in their life" and then to "adopt a proactive stance and more effective coping strategies with vocational aspects of life and change" (p.262). Chen (2005) also advocates the use of "transforming perspectives" (p.260) to counsel clients to look at chance events from different angles and highlights "compromise" as another important strategy with clients as chance opportunities often involve some form of compromise.

The Chaos Theory of Careers (CTC)

There is evidence of the discussion of the influence non-linearity, chance, and unplanned events on careers in the literature of Miller and Form (1951), Caplow (1954), Osipow (1968) Baumgardner (1976) and studies such as Hart et al.(1971), Salomone and Slaney (1981) Scott and Hatalla (1990) Betsworth and Hansen (1996) Williams et.al (1998). In terms of application, there is also some literature that proposes aspects of Chaos Theory be included in career counselling approaches (Drodge 2002, Bloch 2005).

In the "Chaos Theory of Careers" (CTC), Pryor and Bright (2003a) (2003b), (2011); Bright and Pryor, (2005), (2007), (2011a) put forward a theory that "fundamentally conceives of the world as composed of complex dynamical systems." (2014, p.5)

According to Bright and Pryor (2012) The Chaos Theory of Careers is "introduced as a dynamical systems theory alternative and contemporary model of career development that emphasis as continual, uncertain and non-linear change, complexity of influences, and emergent fractal patterns in career." (p.10). The Chaos Theory of Careers (CTC) proposes that careers are prone to change as the world is an "open system" in which the large number of possible influences give it complexity and as such we should prepare students to appreciate

the complexity in their lives. Secondly, the CTC proposes we should prepare clients to expect non-linearity. As suggested by the term "Butterfly Effect", tiny changes in linearity can lead to unexpected results. The CTC suggests career education needs to show students that change is constant and the influence of chance events on career paths including the potentially positive influence. In terms of emergence and fractals Bright and Pryor (2012) suggest the "challenge for career education is to develop methods to assist students in seeing and exploring the fractal patterns (the self-similar but changing patterns) in their lives" (p13).

Just as Barton (1994) suggests incorporating Chaos Theory into psychology has had "no single name, but has been described in terms of "chaos", "nonlinear dynamics" and "self organization", Pryor and Bright (2003) acknowledge "positive uncertainty" (Gelatt 1991), "emergent qualities" (Leong, 1996), "happenstance" (Mitchell, Levin and Krumboltz, 1999), "contextualism" (Young, Valach and Collin,1996), "non-linear change"(Leong, 1996), "systems" (Patton and McMahon 1999), "luck readiness" (Nealt, 2002) "spirituality" (Bloch, 2004) "career craft" (Amundson, 2003a) "career chance" (Chen, 2005) and "narrative" (Savickas, 2006).

Pryor and Bright (2003) go on to assert "... that Chaos Theory represents a theoretical way to integrate these concepts into a holistic understanding of career development and life transition" (p.5).

The Chaos Theory of Careers: Similarities and Differences

In terms of similarities and differences to other theories incorporating non linearity into careers theory Bright and Pryor (2014) point out that career is not an entity as described by Bloch (2005) describing this as an "ontological error... when in fact career is an emergent property from the interaction of individuals with their contexts". It is also noted by Bright and Pryor (2014) that while the Chaos Theory of Career has similarities to Planned Happenstance, Mitchell Levin and Krumboltz (1999), "it should be clear that the CTC covers significantly more theoretical ground, than a singular focus on chance events." To this end Bright and Pryor have themselves been involved in a number of studies involving the Chaos Theory of Careers (Bright, Pryor and Harpham 2005; Bright, Pryor, Wilkinfeld and Earl 2005; Bright, Pryor Chan

and Rijanto 2009) and the CTC is referred to in other studies or included in similar studies and findings by other researchers such as Hirschi (2010).

The Chaos Theory of Careers has prompted a range of studies and been referred to other studies that will be examined in the following section of the literature review.

Chaos Theory of Careers and Attractors

In mathematical terms, attractors are the points to which a dynamic system moves. The Chaos Theory of careers proposes that in counselling settings, attractors can be used to assist clients understand emerging patterns in their careers. Barton (1994) cites the work of Abraham, Abraham and Shaw (1990) in stating that there are four types of attractor, as shown in Figure 3-1, the "point attractor", the "oscillating attractor", the "quasiperiodic attractor" and the "chaotic attractor". Similarly, in the Chaos Theory of Careers Bright and Pryor (2007) acknowledge that four attractors, as depicted in Figure 3-1, play a key role, in particular the strange attractor also known as the chaotic attractor.

In the case of the point attractor, systems move toward a particular point. In a career setting this is the simplest attractor such as setting a goal and moving towards it. A little more complex is the "pendulum attractor", referred to by Abraham et al. as an "oscillating attractor" in which a system moves repeatedly between two points. In the careers setting this describes the client who continually moves between two occupational options without resolution. The third attractor, the "Torus attractor" also known as a periodic attractor, is more complex and involves systems moving in a repeated pattern that eventually returns to the same point. In a career counselling setting the Torus attractor can represent the client who goes through a complex cycle of events, but feels they are returning to the same point in their career. Each of these attractors; the point attractor, the pendulum attractor and the torus attractor are predictable because they are part of a closed system. According to Bright and Pryor (2007) it is the Strange Attractor that "can be called chaotic, because it has element of stability coexisting with instability. It exhibits ...uncertainty, non-linearity, phase shifts and emergence." (p. 16)



Figure 3-1: Diagram depicting four types of attractor.

A fractal refers to a never-ending pattern. Fractals best represent the strange attractor as fractals are created by repeating a simple process over and over in an ongoing feedback loop. Fractals can represent infinitely complex patterns that are self-similar across different scales. Wilbur and Kulikowich (1995) suggested fractals and strange attractors are two aspects of Chaos tTheory that could be useful for counselling. Drodge (2002) points to the use of the fractal in careers counselling as a means of demonstrating to clients the patterns in their own life and that like the strange attractor, small changes can have a large effect.

Studies incorporating a Chaos Theory of Careers

The authors of the Chaos Theory of Careers, Pryor and Bright (2003) conducted a number of research studies to investigate support for some of the theory's fundamental concepts and claims (Davey, Bright, Pryor, & Levin, 2005, McKay, Bright & Pryor 2005, Bright, Pryor and Harpham 2005).

The use of Chaos Theory interventions are tested in a study Davey, Bright, Pryor, & Levin, (2005). Using a before and after design where 42 university students were presented with a video emphasising chaotic concepts with measures on self-efficacy, the levels of career exploration undertaken in the past three months and the individual's intentions to engage in career exploration behaviour in the future. These three measure were taken one week before, immediately after and one week post intervention. The study claims to show a positive use of chaos intervention on decision making and self-efficacy.

A possible limitation of this study is readily acknowledged by the authors in that a control group was not used for this study. Other points acknowledged by the authors include the similarity of demographic for participants being based on undergraduate psychology students and the limited size of the study.

Another study testing Chaos Theory intervention from 2005 was run by McKay, Bright & Pryor. This study by McKay et al. used a comparative design and included a control group and incorporated before and after studies using established instruments as well as instruments developed specifically for the study.

McKay et al. (2005) examined the efficacy of a Chaos Theory approach to career counselling compared to trait matching methods. Sixty university students were randomly assigned to a chaos intervention group, a trait matching group or a wait list control group with measures

taken before, immediately after and one month after the single counselling session run by the same facilitator. It was found that both chaos and trait matching had an immediate benefit, but that the chaos approach had a more lasting benefit.

Following the above intervention, subjects were tested using established instruments to measure efficacy, the Career Decision-Making Self-Efficacy Scale (Betz and Taylor 1996) and a scale developed for this study called the "Irrational Career Related Thoughts Scale" in the pre-test. The same instruments were used for the immediate post intervention and again at one month with the addition of a satisfaction scale that explored subject's satisfaction with the particular career counselling approach.

While the study found a lasting benefit for the Chaos approach, in terms of limitations McKay et al. acknowledged the potential for facilitator bias as the facilitator who ran the counselling sessions also put forward the study hypothesis.

Bright, Pryor and Harpham, (2005) report on two studies, one is a large scale survey of high school and university students which investigated the role of chance events as influences in career decision making. The second study investigated the role of locus of control. The first study involved 772 high school and university students who completed a 47 question online survey covering influences affecting career choices including unplanned events. These unplanned events were listed as: "personal or work relationship", "previous work or social experiences", "barriers to previous career plan", "injury or health problem", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting", "unintended exposure to a type of work you found interesting".

Bright et al. (2005) found 69% of students identified an unplanned event as being influential on their career decisions. Secondly, the reporting of chance events did not necessarily increase with the older aged subjects.

The results for the proportion of students responding to the question "Did any of the following have a significant influence on your career decision making?" were reported as 44% for "a

personal or work relationship", 60% for "previous work or social experiences", 36% for "barriers to your previous career plan", 11% reported an "injury or health problem", 43% "an unintended work activity they found interesting", 33% an "unintended work activity they did not enjoy", 11% experienced a "major change of residence out of their control" and 10 % listed "other unplanned events".

From this study Bright et al. suggest there is a need to research whether people perceive personal events as being within or beyond their locus of control. The second study by Bright, Pryor and Harpham (2005) found the role of locus of control accounted for 8-9% of the total variance in the reporting of chance events between two groups, when comparing those grouped from pre testing as having more external locus of control to those tested as having more internal control. The participants with more external control tended to report more chance events than those with more internal control however, the study concluded that the reporting of chance events as effects on career development could not be accounted for solely by locus of control.

Salomone and Slaney (1981) also raised the question of "locus of control" as to whether over time an individual credits themselves as having more control over events than they actually had at the time. Over three studies on forty three university students aged between eighteen and forty with an average age of twenty one, Bright, Pryor Chan and Rijanto (2009) investigated chance events in terms of dimensions of influence and control and the effect of multiple chance events on career development. Subjects rated both their own experiences and fictional scenarios. The findings were that "high influence" and "low control" chance events had the biggest impact on career development and negative outcome chance events had the greatest impact whether these were single or multiple events. (p.14)

In a similar study to that of Bright et al. (2009), Hirschi (2010) investigated the role of chance events on the school to work transition of 229 eleventh grade students in a retrospective study and 245 eight/ninth grade students in a one year longitudinal study. This Swiss study investigated demographic and like the studies of Bright et al. (2009) included locus of control as well as career decidedness and planning in relation to perceived chance events. Hirschi (2010)

states that the results show almost two thirds of participants perceived chance events had an effect on their "school to work transition". This is consistent with other studies referred to in the literature review, (Betsworth and Hansen ,1996); (Bright, Pryor & Harphamn, 2005); (Scott and Hatalla, 1990) in which at least 60% of participants reported the influence of chance and unplanned events on their career path.

Career education practice in New South Wales and Australian schools

There is growing acknowledgement for the inclusion of change and unexpected change in the intended career path of Australian high school students. This concept is mentioned in a number of the state and national documents that serve as guidelines for high school career education. Despite this inclusion, a high emphasis on more traditional approaches remains, for example "School to Work Transition plans" in New South Wales and "Action Plans" in Victoria.

The guidelines for Career Education in New South Wales government schools comes from the "School to Work Program" and two optional elective courses that run through the New South Wales state wide syllabuses. These two optional courses are "Work Education" which is available in Year 7 to 10 (approximately 13 to 16 years of age) and "Work Studies" for Year 11 and 12 (approximately 17 to 18 years of age).

The "School to Work Program" reports to support over 128 000 students in government schools and has four key action areas, "Planning Transition Pathways", "Exploring Career Futures", "Strengthening Student Outcomes through Vocational Learning" and "Building Networks and Connections". Each year in NSW over 400 government schools complete an online report regarding the development and application of "School to Work" action areas in their school, (retrieved 24 February 2015, www.det.nsw.edu.au/vetinschools/about/reports.html).

The 2013 "School to Work Report" highlights the emphasis on planning as a focus in current school practise as it reports "93% of Year 9-12 participants are able to articulate a career and transition plan" (retrieved 24 February 2015

<u>www.det.nsw.edu.au/vetinschools/about/reports.html</u>) and "68% Years 9-12 STW participants had a written career and transition plan" (p. 4).

The vast majority of schools in the region of New South Wales, in which the studies for this thesis are proposed, provide students with at least one compulsory career education lesson per fortnight in Year Nine and/or Year Ten. This program usually covers a curriculum developed independently by the schools that is in support of the "School to Work" guidelines. Fewer students state wide are involved in studying the optional "Work Education" and "Work Studies" courses that require a larger number of timetabled lessons each week. This is evident in the 2013 School to Work report which found in Years 9 and 10, 48,767 students participated in timetabled career education classes representing 74 per cent of participants. Some schools ran career education classes in Year 7 and 8, with 3,707 students state wide, others ran some classes for senior students with 20 per cent involved in 2013. Of the optional elective courses, 7,816 studied "Work Education" in Years 7 to 10, representing 10 per cent of students and 2,576 in Years 11 and 12 took part in "Work Studies" representing less than 2% of senior students. The Year 7-10 Syllabus, "Work Education", makes little or no mention of preparing students for unexpected changes to their career path however, amongst a wide range of topics the Year 11 and 12 "Work Studies" syllabus includes under a topic heading "Managing Change", "changes in the work environment and redundancy and company closure" (p. 31)

Similarly to New South Wales, Victoria has developed career education guidelines in which a major focus is the completion of "Action Plans" templates. These templates are available for each Year group from Year 7 to 12 on the state's website and a difference from New South Wales is that unexpected change is given some inclusion within the overall outcome matrix. The Victorian "Outcome Framework" has nine outcomes for each year group. It includes the outcome of "Consider the possible implications of changes in learning and work for your own career goals and plans including financial options" in the Year 12 framework and "Understand the importance of developing flexible and adaptable short-term Career Action Plans within the career building process" (Retrieved 24 February 2015, source vccfoutcomes).

In terms of national guidelines the federal government in association with Canadian authorities developed the Australian Blueprint for Career Development (ABCD) (2003) as a framework for all career development practitioners including schools, universities, training providers and employers. The Blueprint's framework proposes eleven competencies, which includes two competencies focused on change. It is proposed the eleven competences should be developed under three main categories: "Personal Management" under which falls "self concept", "interaction with others" and "change and growth through life", the second category is "Learning and Work Exploration" which includess participation in "lifelong learning", "locating career information" and "understanding the relationship between work, society and economy" and the third category is "Career Building" which covers "securing creating and maintaining work", "making career enhancing decisions", "maintaining a balanced life and work roles", "understanding the changing nature of life and work roles", and "understanding and engaging in and managing the career building process". (Retrieved 24 February 2015, https://education.gov.au/australian-blueprint-career-development, p.18)

It should be noted that while the change related competencies of "change and grow throughout life" under "personal management" and "understanding the changing nature of life and work roles" under "career building" are included in the Australian Blueprint for Career Development, the document is currently a guideline and as such, does not have any compulsory requirement for complete adoption by schools.

In December 2014, four research papers were developed for the National Career Development Strategy with a new framework approved by state and territory ministers. While the above mentioned ABCD (2003) has not been compulsory for schools, its potential relevance remains as the 2014 National Career Development Strategy states, "Career development skills can readily be fostered within the existing Australian school curriculum, based on the eleven competencies identified in the Australian Blueprint for Career Development." (Retrieved 24 February 2015, https://education.gov.au/australian-blueprint-career-development, p.9)

Summation: Literature Review

The literature review showed that a range of research exists on the role of chance in careers, (Hart, Rayner and Christensen 1971; Baumgardner 1976; Salomone and Slaney 1981; Scott and Hatalla 1990; Betsworth and Hansen, 1996; Bright, Pryor and Harpham 2005; Bright, Pryor Chan and Rijanto 2009; Hirschi 2010). These studies most commonly reflected chance being reported as having an influence on the career path for at least two thirds of respondents.

Current approaches to career counselling remain largely traditional. While there is mention of chance and unexpected change in career education policy including Australian national guidelines and some state policies, there is only a small amount of literature on practical applications that incorporates unexpected change in career counselling and very little on practical application for use with high school students.

According to Australian researchers Patton and McMahon (2006), "...the practice of career counselling has lagged behind that advocated by more recent approaches to both career development theory and counselling practice. This is evidenced by the fact that the dominant approach used in career counselling is still the trait and factor approach", (p. 3). Despite the inclusion of change and unexpected change in career education policy, a high emphasis on more traditional approaches of the "planned" rather than "unplanned" remains with, for example, students completing "School to work transition plans" in New South Wales and "Action Plans" in Victoria.

Despite the number of studies indicating that unplanned events influence career paths, very few studies have explored strategies for the application of chance or unexpected change in career path for counselling or for careers education, particularly for high school students. Davey, Bright, Pryor, & Levin, (2005) found presenting video emphasising chaotic concepts returned positive measures on decision making and self-efficacy. An intervention study by McKay, Bright & Pryor (2005) tested trait matching methods compared to chaos intervention. It was found that both chaos and trait matching had an immediate benefit, but that the chaos approach had a more lasting benefit. These studies were based on participants who were university students.

Borg, Bright and Pryor (2006) put forward the Butterfly Model of Careers that can be used within both classroom and individual counselling applications. Loader (2009) outlines career education classroom activities that introduce the Chaos Theory of Careers through video including "Where will you be?" (Bright 2009) and excerpts from the motion picture "Sliding Doors" (Pollack & Braithwaite, 1998) and student activities involving the compilation of a career collage depicting their lives now and in ten years' time to discuss and consider themes. While these examples advance the application of teaching strategies and resources they have not been tested extensively in a research setting with high school students. There remains a lack of tested strategy incorporating unexpected change for use with high school students.

There are very few studies on chance and planning and its influence on the career paths of secondary students as they move from high school to post high school options. The studies that are available suggest results for high school students may be similar to studies with other age groups such as university students and older groups. A study from 2005 by Bright, Pryor and Harpham which included high school and university students found 69% of students identified an unplanned event as being influential on their career decisions. Secondly, the studies by Bright et al. (2005) found the reporting of chance events did not necessarily increase with the older aged subjects.

In a study with Swiss high school students Hirschi (2010) investigated the role of chance events on the school to work transition of 229 eleventh grade students in a retrospective study and 245 eight/ninth grade students in a one year longitudinal study. Hirschi's results show almost two thirds of participants perceived chance events had an effect on their "school to work transition". Hirschi (2010) also points to the shortage of research on high school students.

CHAPTER FOUR RESEARCH DESIGN

While the literature review found that a number of researchers suggest chance and unexpected change influenced career paths (Hart, Rayner and Christensen 1971; Baumgardner 1976; Salomone and Slaney 1981; Scott and Hatalla 1990; Betsworth and Hansen, 1996, Bright, Pryor and Harpham 2005, Bright, Pryor, Chan and Rijanto 2009; Hirschi, 2010) there is very little study involving high school students. The first area of study for this thesis proposes to investigate the perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways.

The literature review found that there has been some inclusion of "change" in career education policy for Australian secondary schools, however there is a shortage of research on the practical application of incorporating concepts such as the Chaos Theory of Careers into the high school career education setting. The second part of this research will investigate the utility of intervention in the form of applying the Chaos Theory of Careers to high school career education lessons compared to lessons incorporating a Trait and factor approach.

The hypotheses reflect the investigation of each of the proposed areas of study:

Hypothesis 1

Change and unplanned events play a significant role in the careers of secondary to post secondary career pathways.

Hypothesis 2

Intervention designed to show clients a relationship between both planning and chance events, namely, lessons incorporating the Chaos Theory of Careers, can be beneficial in career education.

4.1 Theoretical Framework

4.1.1 Epistemology

The epistemological approach of this research that of "realist-constructive". It is necessary in these studies to acknowledge that the reality of a person's career development is both empirical, objective and real as well as their perception or their construction of the world also plays a major role.

Robson (2002, p.41) describes this as a critical realist stance that provides a third way between positivism and realism. This approach is necessary for research on the role of unexpected events on careers proposed in these studies as put forward by Outhwaite "a realist analysis of causality can account for the interaction of various causal tendencies within the complex and open systems among which we live..." (1987, p. 22).

As described by Outhwaite (1987) we live in complex and open systems. The studies described here suggest that unexpected or unplanned events have an influence on careers. If we all lived in closed systems such unexpected changes may not occur but they become much more likely in an open and complex one. "The acts of persons in life settings are open-systemic events that involve an enormous range of codetermining structures and systems." Manicas and Secord (1983, p. 407).

Bright and Pryor state that the position taken within the Chaos Theory of Careers is that of "constructive realist" where the "natural world is both knowable but not in any indisputable way and constructed in terms of what aspects of reality we choose to pattern together..." (2003, p. 7). Bright and Pryor (2003) acknowledge that while a person's constructions may be incorrect, they still may be influential on their career path.

The first set of studies for this thesis will investigate the perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways by interviewing members of the same graduating high school class 18 months after completing Year 12. These studies will require an approach that incorporates "realism" indisputable not just to the interview subject but to all observers such as for example "not

gaining the entrance scores for my intended university course" as well as the respondent's "construction" such as the perceived level of influence of unexpected events or chance on their career path.

The second set of studies investigates the utility of applying a Chaos Theory of Careers approach in high school career education lessons compared to a Trait and factor based approach. The Epistemology and theoretical perspectives taken will also be that of realist constructivist. There are aspects of chance or unexpected change that examples of "realism" for high school students such as colour blindness denying a candidate a career path as a special forces recruit, as well as examples of "construction" such as seeing this as an opportunity to explore other defence force roles or as a negative event that greatly restricted their future employability.

Measures in both groups of studies will incorporate a realist constructivist approach in that both qualitative data such as open ended interview questions and quantitative data such as Likert scale responses will be used. The theoretical framework is represented in Table 4-1.

4.1.2 Research Theoretical Framework

Ontology	Epistemology	Theoretical	Methodology	Methods	Data
		Perspectives			Analysis
Both	Realist	Scientific Truth	Statistical	Both	Statistical
Objective	Constructivist		Research	Quantitative	and
and		Constructivism	Case Study	and	Content
Subjective		Chaos Theory		Qualitative	Analysis

Table 4-1: Table demonstrating the Research Framework

The aims and purpose of each of the proposed studies is demonstrated in Table 4-2.

		-
Study #	Title	Aim and Purpose
Study One	Surveying the perceived experience of	To establish whether
	chance and planning in the lives of	unexpected change is a
	secondary students as they move from	perceived experience of high
	high school to post high school career.	school students in their career
		transition.
Study Two	Surveying the perceived experience of	To investigate the
	chance and planning in the lives of	generalisability of the results of
	secondary students as they move from	Study One by replication.
	high school to post high school career: a	
	replication.	
Study Three	The comparative effectiveness of two	To evaluate the comparative
	different career interventions on Year 10	effectiveness of two career
	students' confidence in dealing with career	interventions, one that
	change.	emphasizes change based
		upon the Chaos Theory of
		Careers and the other based
		upon traditional Trait based
		career interventions.
Study Four	The comparative effectiveness of two	To investigate the
	different career interventions on Year 11	generalisability and robustness
	students' confidence in dealing with career	of the results of Study Three by
	change.	replication with an older group
		of high school students and
		different timing of pre testing.
Study Five	The comparative effectiveness of two	To investigate the

Table 4-2: Table demonstrating the Aims and Purpose of Each Study

	different career interventions focusing on	generalisability of the results of
	students' confidence in dealing with career	Study Three by replication with
	change, for Year 10 students, with no	a similar group of high school
	previous career education.	students without any prior
		career education.
Study Six	Validating the comparative effectiveness of	To test the benefits of career
	two different career interventions focusing	lessons incorporating a Chaos
	on students' confidence in dealing with	Theory of Careers compared to
	career change, for Year 10 students from a	those using a Trait and factor
	socioeconomically comparable school.	approach.
		To investigate whether results
		from Studies Three and Five
		can be replicated in a different
		school.

4.1.3 Overview of Research Design

Section One

The perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways will involve two studies as shown in Table 4-3.

Sludy	#1
Title	The perceived experience of chance and planning in the lives of secondary
	students as they move from high school to post high school career
	pathways. A study on the graduating class of a comprehensive,
	coeducational high school in regional New South Wales, 18 months after
	completing Year 12.
Background	While other studies have investigated the influence of unplanned events on
	university students there is very little information on secondary to post

 Table 4-3: Table demonstrating the Research Design for Study One

 Study
 #1

	secondary students. Some of the data gathered when Study One was in
	progress was also referred to in a paper for which the author of this thesis
	was the lead author, Borg, Bright and Pryor (2014). The study as presented
	in this thesis will report on and discuss a more complete and larger range
	of data and themes than those raised in that paper by Borg , Bright and
	Pryor (2014).
Aim	To establish whether unexpected change is a perceived experience of high
	school students in their career transition from school.
Hypothesis	That chance will have played an influential role in the career pathway of
	most school leavers.
Design	Longitudinal and retrospective study through survey and interview
Subjects	High school leavers who completed the final Year of High School-Year 12.
Procedure	Contacting school leavers from the same graduating class from the same
	High School and interview to assess whether their career path has gone to
	plan compared to the role of unplanned events.
Analysis	Content analysis
Time frame	18 months post HSC for class of 2011

Table 4-4: Table demonstrating the Research Design for Study Two

#2
The perceived experience of chance and planning in the lives of secondary
students as they move from high school to post high school career
pathways. A study on the 2011 graduating class of a comprehensive,
coeducational high school in regional New South Wales, 18 months after
completing Year 12.
While other studies have investigated the influence of unplanned events on
university students there is very little information on secondary to post
secondary students.
To investigate the existence and influence of unplanned events in the
careers of post secondary students 18 months after leaving school.

Hypothesis	That chance will have played an influential role in the career pathway of
	most school leavers.
Design	Longitudinal and retrospective study through survey and interview
Subjects	High school leavers who completed the final Year of High School-Year 12.
Procedure	Contacting school leavers from the same graduating class from High
	School and interview to assess whether their career path has gone to plan
	compared to the role of unplanned events.
Analysis	Content analysis
Time frame	18 months post HSC for class of 2011 from the same school

Section Two

The second group of proposed studies involving a Chaos Theory of Careers Intervention, incorporating Chaos Theory in school career education lessons are represented in Tables 4-5, 4-6, 4-7 and 4-8.

Study	Ihree
Title	Chaos Theory of Careers Intervention, a Careers Lessons in Schools study
Background	The utility of Chaos Theory of Careers can be measured in terms of its
	practical benefits. There is evidence that chaos intervention benefits career
	counselling (Davey et al. 2005). Evidence to date has been collected on
	university students rather than adolescents. The design rationale for this
	study will closely follow that of Mackay et al. 2005.
Aim	To test the benefits of career counselling interventions designed to teach
	clients about the influence of unplanned events on their careers. To
	compare a group of students receiving a chaos-based intervention with
	another group receiving a more traditional Trait and factor intervention.
Hypothesis	That the chaos-based intervention will have a positive effect that will show
	up in established measures of career-related behaviour such as the Career
	Self-Efficacy Scale and Luck Readiness Index post intervention and four

Table 4-5, Table demonstrating the Research Design for Study Three

	weeks later.
Design	Between subjects repeated measures design. Pre test, intervention, post
	test after a between subjects intervention with two levels – Chaos-based
	and Trait-Factor based counselling. Repeated measures pre, immediately
	post and four weeks following the intervention.
Subjects	Year 10 students from the same career education classes at a
	comprehensive High School.
Procedure	Pre Test, Intervention in the form of a careers lesson incorporating change
	to expected career paths for one group and traditional Trait and factor
	lesson for the other group, post test, then test again at four weeks.
	The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was
	developed by Betz and Taylor (1996), the Career Exploration Survey (CES)
	developed by Stumpf, Colarelli and Hartman (1983) and the Career
	Exploratory Plans or Intentions Scale (CEPI) developed by Betz and
	Voyten (1997).
Analysis	Mixed between-within subjects analysis of variance of data gained through
	established instruments the Career Decision Self-Efficacy Scales, the
	Career Exploration Survey (CES) and the Career Exploratory Plans or
	Intentions Scale (CEPI).
Time frame	Study Three will be run in Semester One 2012

Table 4-6: Table demonstrating the Research Design for Study Four

Study	Four
Title	Chaos Theory of Careers Intervention, a Careers Lessons in Schools study
Background	The utility of Chaos Theory of Careers can be measured in terms of its
	practical benefits. There is evidence that chaos intervention benefits career
	counselling (Davey et al. 2005). Evidence to date has been collected on
	university students rather than adolescents. The design rationale for this
	study will closely follow that of Mackay et al. 2005.

Aim	To test the benefits of career counselling interventions designed to teach
	clients about the influence of unplanned events on their careers. To
	compare a group of students receiving a chaos-based intervention with
	another group receiving a more traditional Trait and factor intervention. To
	compare data gained from this study with Year 11 English class students,
	in classes no taught by the researcher, to the previous study with Year 10
	students from career education classes taught by the researcher.
Hypothesis	That the chaos-based intervention will have a positive effect that will show
	up in established measures of career-related behaviour post intervention
	and four weeks later.
Design	Between subjects repeated measures design. Pre test, intervention, post
	test after a between subjects intervention with two levels - Chaos-based
	and Trait-Factor based counselling. Repeated measures pre, immediately
	post, and four weeks following the intervention.
Subjects	Year 11 students from the same Higher School Certificate English
	Advanced Class classes at a comprehensive High School in New South
	Wales.
Procedure	Pre Test, Intervention in the form of a careers lesson incorporating change
	to expected career paths for one group and traditional Trait and factor
	lesson for the other group, post test, then test again at four weeks.
	The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was
	developed by Betz and Taylor (1996), the Career Exploration Survey (CES)
	developed by Stumpf, Colarelli and Hartman (1983) and the Career
	Exploratory Plans or Intentions Scale CEPI developed by Betz and Voyten
	(1997).
Analysis	Mixed between-within subjects analysis of variance of data gained through
	established instruments the Careeer Decision Self-Efficacy Scales, the
	Career Exploration Survey (CES) and the Career Exploratory Plans or
	Intentions Scale (CEPI).

Study	Five
Title	Chaos Theory of Careers Intervention, a Career Lessons in Schools study
Background	The utility of Chaos Theory of Careers can be measured in terms of its
	practical benefits. There is evidence that chaos intervention benefits career
	counselling (Davey et al. 2005). Evidence to date has been collected on
	university students rather than adolescents. The design rationale for this
	study will closely follow that of Mackay et al. 2005.
Aim	To test the benefits of career counselling interventions designed to teach
	clients about the influence of unplanned events on their careers. To
	compare a group of students receiving a chaos-based intervention with
	another group receiving a more traditional Trait and factor intervention. To
	compare results with these Year 10 careers classes with the two previous
	studies to see if results are repeated for Year 10 career education students,
	taught by the researcher, as in Study Three and Year 11 English class
	students, not taught by the researcher, as in Study Four.
Hypothesis	That the chaos-based intervention will have a positive effect that will show
	up in established measures of career-related behaviour post intervention
	up in established measures of career-related behaviour post intervention and four weeks later.
Design	up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post
Design	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based
Design	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately
Design	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention.
Design Subjects	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a
Design Subjects	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in
Design Subjects	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in New South Wales.
Design Subjects Procedure	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in New South Wales. Pre Test, Intervention in the form of a careers lesson incorporating change
Design Subjects Procedure	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in New South Wales. Pre Test, Intervention in the form of a careers lesson incorporating change to expected career paths for one group and traditional Trait and factor
Design Subjects Procedure	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in New South Wales. Pre Test, Intervention in the form of a careers lesson incorporating change to expected career paths for one group and traditional Trait and factor lesson for the other group, post test, then test again at four weeks.
Design Subjects Procedure	 up in established measures of career-related behaviour post intervention and four weeks later. Between subjects repeated measures design. Pre test, intervention, post test after a between subjects intervention with two levels – Chaos-based and Trait-Factor based counselling. Repeated measures pre, immediately post and four weeks following the intervention. Year 10 students from the same career education classes at a comprehensive High School classes at a comprehensive High School in New South Wales. Pre Test, Intervention in the form of a careers lesson incorporating change to expected career paths for one group and traditional Trait and factor lesson for the other group, post test, then test again at four weeks. The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was

Table 4-7: Table demonstrating the Research Design for Study Five

	developed by Stumpf, Colarelli and Hartman (1983) and the Career
	Exploratory Plans or Intentions Scale CEPI developed by Betz and Voyten
	(1997).
Analysis	Mixed between-within subjects analysis of variance of data gained through
	established instruments the Career Decision Self-Efficacy Scales, the
	Career Exploration Survey (CES) and the Career Exploratory Plans or
	Intentions Scale (CEPI).
Time frame	Study Five will be run in Semester One in 2013

Table 4-8: Table demonstrating the Research Design for Study Six

Study	Six
Title	Chaos Theory of Careers Intervention, a Career Lessons in Schools study
Background	The utility of Chaos Theory of Careers can be measured in terms of its
	practical benefits. There is evidence that chaos intervention benefits career
	counselling (Davey et al. 2005). Evidence to date has been collected on
	university students rather than adolescents. The design rationale for this
	study will closely follow that of Mackay et al. 2005.
Aim	To test the benefits of career counselling interventions designed to teach
	clients about the influence of unplanned events on their careers. To
	compare a group of students receiving a chaos-based intervention with
	another group receiving a more traditional Trait and factor intervention. To
	compare results of Year 10 career education students from a school in
	which the researcher does not teach at, a school 30 kilometres from the
	researchers school, with those from Studies Three, Four and Five.
Hypothesis	That the chaos-based intervention will have a positive affect that will show
	up in established measures of career-related behaviour post intervention
	and four weeks later.
Design	Between subjects repeated measures design. Pre test, intervention, post
	test after a between subjects intervention with two levels – Chaos-based
	and Trait-Factor based counselling. Repeated measures pre, immediately

	post and four weeks following the intervention.
Subjects	Year 10 students from the same career education classes at a
	comprehensive High School classes at a comprehensive High School in
	New South Wales.
Procedure	Pre Test, Intervention in the form of a careers lesson incorporating change
	to expected career paths for one group and traditional Trait and factor
	lesson for the other group, post test, then test again at four weeks.
	The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was
	developed by Betz and Taylor (1996), the Career Exploration Survey (CES)
	developed by Stumpf, Colarelli and Hartman (1983) and the Career
	Exploratory Plans or Intentions Scale CEPI developed by Betz and Voyten
	(1997).
Analysis	Mixed between-within subjects analysis of variance of data gained through
	established instruments the Career Decision Self-Efficacy Scales, the
	Career Exploration Survey (CES) and the Career Exploratory Plans or
	Intentions Scale (CEPI).
Time frame	Study Six will be run in Semester Two in 2013

4.4 LIMITATIONS AND VARIABLES

Limitations and variables that need to be acknowledged, managed and reduced include the potential bias of delivery by the researcher, the applicability of research to the broader population, maturation of subjects and cross contamination of sample groups.

Potential bias of delivery by the researcher is difficult to avoid as the researcher is the only Careers teacher on staff at this particular school. Efforts need to be made to ensure well prepared presentation is consistently adhered to, so that both interventions are consistently delivered to participants.

Despite the potential for researcher bias there are some benefits of the researcher carrying out the research within the same High School he is employed as a Careers teacher. Students may be comfortable with the researcher and expect to cover career education at scheduled intervals as part of the school's curriculum. In order to test these studies with students the researcher does not teach, Study Four, a classroom intervention study was run with class groups, while at the same school, students not taught by the researcher and Study Five was run with student from a different high school.

It may be argued that the research results lack applicability to the broader population as it was carried out solely on the population from two regional high schools. The benefits of the research population compares well with other studies in that the subjects are from a comprehensive high school, represent similar career destination to the available state wide data and as such, represent a wider range of backgrounds than some previous studies such as Williams (1998) study of thirteen prominent women in psychology.

Technological differences are a limitation within the intervention studies. The intervention for Trait and factor approach used a "pen and paper" activity in the form of the "Occupational Search Inventory" (Pryor, 2010) and the Chaos approach intervention used "powerpoint" slideshow and "youtube" slide show. The difference in these interventions should be noted in case it can be argued that either approach is a contributing factor to responses. Given the age of the subjects there is a risk of subjects maturing during the intervention studies. The chance of maturation however, is almost impossible to avoid and the information gained potentially quite valuable to this field of study. The size of the interval between pre testing and intervention can only be managed to fit within the shortest time period that can be applied for each group pending their particular school timetables and calendars

These studies are based on two high schools in regional News South Wales. A limitiation of these studies may be that the results are more applicable to students from regional areas due to aspects particular to the region geographically, the employment and post school training providers available and the economic circumstances of the region. To endeavour to gather information from a wide section of students, the two interview studies aimed to interview every student from two graduating classes in a comprehensive high school, thus capturing a wide range of career destinations and intentions however, these results are restricted to the one regional high school. Likewise, the intervention studies were run with four different groups across two calendar years and two schools however, the source of these results are also restricted to two regional high schools. A limitation of these studies is that they were run with two high schools in regional New South Wales.

While Study One and Two involve interviewing over one hundred students regarding unexpected change to their intended post school career path, the results when considered by occupational grouping at eighteen months post school, represent small sample sizes. A limitation of Study One and Two when considering results by occupational grouping at eighteen months post school is that some of these groups are quite small in terms of sample size.

The interview studies rely largely on respondents perceived experience of unexpected change, which may be a limitation compared to longitudinal data. A small amount of longitudinal data was available to Study One and Two, which came from the respondents' end of school interviews which included intended post school occupation, location and accommodation. This data could be referred to in the interview and comparisons could be made with this data to their responses at eighteen months post school. The remaining interview questions were retrospective and as such, relied on the respondents' perceived experience and are therefore,

potentially open to inaccuracy in which a respondent, may upon reflection, attribute a different perspective to events or unexpected change.

CHAPTER FIVE STUDY ONE

The perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways.

A study on the graduating class members of a comprehensive, coeducational high school in regional New South Wales, 18 months after completing Year Twelve.

Introduction

The literature review found that there is existing research, largely carried out with university students, graduates and adults to suggest chance and unexpected change influences career paths (Hart, Rayner and Christensen 1971; Baumgardner 1976; Salomone and Slaney 1981; Scott and Hatalla 1990; Betsworth and Hansen, 1996, Bright, Pryor and Harpham 2005, Bright, Pryor Chan and Rijanto 2009). There is very little information regarding high school students (Hirschi 2010). The first area of study for this thesis will investigate the perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways.

The Chaos Theory of Careers (Pryor and Bright 2003) suggests those working in career counselling need to prepare their clients for a working lives impacted by complexity, change and chance.

Before prescribing any form of career education intervention that includes concepts such as unexpected change, Chaos Theory and nonlinearity it is essential to first establish whether the career paths of secondary students to post-secondary career paths do in fact experience such unpredictability and nonlinearity.

This study will investigate the perceived experience of unexpected change in the career paths of secondary students to post-secondary career paths. This will be done by gathering data through telephone interviews that will allow comparison of participants intended career path in their final year of high school with information on their career path at eighteen months post school.

Current practice in collecting secondary to post-secondary career path data Many secondary schools in New South Wales, particularly the New South Wales Department of Education Schools (Public Schools) collect destination data on their graduating Higher School Certificate (HSC) class. Once gathered, this information informs career education planning and is usually included as a table in the school's annual report showing the percentage of students attending university, deferring university, attending TAFE or other training providers, employment, apprenticeships, traineeships or seeking employment. The data gathered is not part of a larger longitudinal study by schools. It is usually an accurate reflection of students' occupations in February /March of the year immediately following their HSC, their final year of high school.

The studies reported in this thesis do not question the fact that the "destination data", gathered as current practice by a growing number of schools, is valuable to school planning and careers counselling. Student destination data for February/March, the beginning of the year following a student's final year of school, is valuable however, such data is limited as it does not allow for comparison with the intended career pathway of students, nor does it allow for analysis of the former student's pathway beyond the first months of the year immediately after school. Arguably the word "destination" is in itself misleading as there may be many changes in the former student's career pathway from the point where this information was gathered. Assuming the destination of a student four months after their final year of school is a good indicator that "school to work" or "transition plans" were successful risks using a very narrow margin to indicate success, particularly if there are large levels of unexpected change beyond this point in time.

This study aims to go beyond the student destination information on the occupation of graduating classes that is gathered three to four months after leaving school by investigating the perceived levels of unexpected change experienced in the career path of secondary to post-secondary students in their first eighteen months after completing high school.

The research presented here includes data gathered in phone interviews and reflects on relevant earlier studies in this field, reinforcing some of those findings and noting other emerging data.

Participants

The participants were the recent ex-students of a coeducational Year 7 to 12 Comprehensive High School of 750 students in New South Wales. All participants were graduates of the same Higher School Certificate class. All were interviewed approximately eighteen months after their Higher School Certificate exams. In Study One, 58 students participated in the study. This figure represents 87.88% of the entire graduating class from the full range of the school's demographics, academic achievement and career aspirations.

Method

This study was run by the school's careers teacher who is the author of this thesis. Participation was voluntary, there were no additional incentives, bonus assessment marks, gifts or implied indirect benefits to participants. As the interviews in these studies were run eighteen months after the Higher School Certificate exams, there could be no implied benefit to students' school results, university entry or any coerced participation. The school, as is the practice in many high schools in New South Wales, had established a pattern of collecting data on the career and transition plans of Year 12 students. Students completed interviews on their intended career pathway post school in the month leading in to their final exams and destination interviews at the beginning of the year immediately after graduating from school.

All Year 12 students complete their final state wide school exams in November and it is common for schools to contact students in March the following year to complete a destination survey. This data is usually gathered and made available in the High school annual school reports for New South Wales Department of Education and Communities schools. The information is usually presented in table format showing the percentage breakdown of the graduating Year 12 class at university, in vocational education, apprenticeships and traineeships, employment or seeking employment. It should be noted that none of the participants had covered any career education classes or individual work with a particular focus on Change or the Chaos Theory of Careers at any stage of their school education or individual school based career counselling. Participants were not aware of the interviewer's interest or work in the Chaos Theory and Careers. Other possible limitations of this approach will be discussed later in this thesis.

The former students were contacted by phone. They were informed of the aims of the study and approval was sought to contact them for an interview at a time convenient for both the student and the careers teacher. The interviews, the use of these in PhD studies by the careers teacher and the amount of time the phone interview would take were also explained. In the interim, the participants were forwarded a copy of the university ethics department information letter and consent forms. Students were then contacted by phone at the agreed time and a phone interview, that phone interview usually ran up to 20 to 25 minutes, with the interviewer noting the responses on pen and paper versions of the interview questions followed.

After the interview, the participants' responses were typed out by the researcher and posted with a pre-paid return envelope to the participants who were invited to add or correct any details. Participants were also provided with another copy of the university ethics information and participant consent letter included with the transcribed interview. Participants were asked to confirm or amend and confirm the interview transcript and sign it if it was an accurate representation of their responses and return it with the consent form to the researcher in the pre-paid envelope.

Any amendments were made to the returned interviews and the data having been confirmed by the participants was then typed into an excel spread sheet, including the responses to open ended questions for further content analysis.

Materials

There were thirty interview questions which were divided into eight sections: Section One- Background information
Section Two- Current occupation compared to intended post school pathway Section Three –Any unexpected change of occupation including training provider or employer, career path or career interest.

Section Four-Sources of unexpected change

Section Five- Positive or negative unexpected change and sources of support

Section Six- Preparation to manage unexpected change

Section Seven- What schools should teach and what I wish I knew about unexpected change Section Eight - Overall level of unexpected change.

Any additional comments or explanations respondents made about their career pathway post school were noted on both the pen and paper and transcribed editions of the interview for respondents to confirm.

The sequence of interview questions are depicted in Figure 5-1

Figure 5-1 Interview sequence chart

Background information

- Year finished school
- Current occupation
- Post code
- Occupation(s) since school
- School pattern of study
- Relocated since school
- First in family to complete HSC
- Highest level of training within family

Compared to intended pathway

- Intended pathway in school (refer to end of school interview)
- Is this what you are doing now?
- First choice occupation/course
- First choice employer/training provider
- Any unexpected change to planned pathway

Figure 5-1: Ex-student interview question map (continued)



Figure 5-1: Ex-student interview question map (continued)



Results - Study One

Section One: Participant Background Information

Study One investigates the perceived experience of unexpected change on high school to post high school career paths through interviews with former students of the same graduating high school class. Fifty eight participants completed the study representing 87.88% of the entire graduating class. All of the participants completed the New South Wales Higher School Certificate in 2010. Twenty were males and 38 were female. At the time of interview most participants were nineteen years of age. Forty One of the 58 participants completed a pattern of study that made them eligible for an Australian Tertiary Admissions Rank (ATAR).

Results: Study One, Section One: Participant Background Information Occupation at Eighteen Months Post School

Respondents were asked their current full time occupation so that this information could be compared to the career pathway the respondents had planned to undertake when in their final year of school. The responses also provided occupational groupings in which to place participants so data on unexpected change could be compared, for example whether one group from a similar career path post school, such as "university students" or "workers", was more likely to report experiencing particular aspects unexpected change compared to another.

The interview question asked respondents what they would describe as their "current full time occupation?" These interviews occurred at eighteen months post completion of high school (Year 12). The occupations reported can be grouped together as either : "working", referring to those in paid employment (27.59%), "university students", referring to full time university students, (37.93%), "university after deferring", referring to students who deferred university for one year, then commenced university the following year (8.62%), those in "traineeships", a contract for employment and training, where approximately twenty per cent or one day per week is training in a nationally recognised vocational course such as retail or office administration that usually lasts twelve months (8.62%), those in "apprenticeships", which is usually a four year contract for work and training in which the first three years usually involves approximately one day per week or the equivalent in vocational training with an outside provider/college and the remaining days working and learning one's trade with the employer (8.62%) and 8.62% reported studying at TAFE (Technical and Further Education Colleges which are the government run vocational colleges) or similar Registered Training Organisations, which are often private vocational colleges as opposed to TAFE.

How does this group of participants compare to broader or state wide data?

The closest available state wide data to the calendar year these respondents completed high school is from the "Career Moves Expectations and Destinations of New South Wales Secondary Students, Australian Council for Educational Research" (Marks, Underwood and Brown, 2011), The state wide data, as shown in Table 5-1, was gathered from students completing school in 2009 and reported 48% as attending university, 24% in vocational training which included TAFE apprenticeships and traineeships and 30% who were not in education or training (with 73% of these in employment). This data was similar to the destination data for studies run for this study. This is the closest available state wide data to the groups studied here, the class of 2010. The post high school destinations of this group are similar to state wide data.

5-1: Occupation of Particip	pants of study 1 and 2 at 18 months post	School compared to
ACER Data		
Destination	ACER NSW DATA 2011 report	Study One
University	48%	47%
Vocational Training	24%	27%
Neither	8%	
employment	22%	28%
Source of State wide data- Care	eer Moves Expectations and Destinations of New	South Wales Secondary
Students, Australian Council for	Educational Research (2011) retrieved 12 June	, 2013, from
http://research.acer.edu.au/tran	isitions_misc/11/	

Table 5-1: Participant Occupations at 18 months compared to state wide data

Results: Study One: Section Eight

Overall level of unexpected change reported at 18 months post school

A combined 72.41% of respondents reported experiencing an overall level of unexpected change from what they had planned in Year 12 as either "significant", "large" or "major". Respondents were asked "Overall on the following scale of 1 to 5, considering work or study and possible influential factors like family, finances, accommodation, health and lifestyle, I

would rate the levels of unexpected change from what I had intended or planned in Year 12 as: "1, Insignificant", "2, Minor", "3, Significant", "4, Large" or "5, Major." Insignificant was described for respondents, both over the phone and in the transcribed and printed copies of the interviews, as "almost nil" effect on their intended post school pathway, minor as "slight or minor" effect, significant as "more than slight or minor effect" and in this sequence, the scales of "large" and "major" required little or no clarification for respondents.

This result is consistent with the findings of Bright, Pryor and Harpham (2005) where 69% of students identified an unplanned event as being influential on their career decisions. These results also resonate with the figures reported in other studies on adults, university/college students in terms of the influence of unexpected change on career path (Betsworth and Hansen, 1996; Scott and Hatalla 1990; Hart and Rayner 1971). While there are very few studies on high school students, the results of Study One is consistent with Hirschi's study of the school to work transition of Swiss high school students (2010). Hirschi (2010) reported that 64.7% of respondents stated that chance events had "some" or "great influence" on their career, from a Likert scale of "great", "some" or "no" influence.

In Study One those reporting "insignificant" overall levels of unexpected change represented 8.62% of respondents, "minor" levels were reported by 18.97%, "significant" by 29.31%, "large" by 31.03% of respondents and "major" for 12.07%. It is the last three categories "significant", "large" and "major" that when combined, report overall levels of unexpected change as 72.41% of "significant" or above which reveals comparable results to the above mentioned studies.

Which groups reported the largest overall levels of unexpected change?

In this, the final question of the interview, respondents were asked to rate the overall level of unexpected change they had experienced compared to the pathway they had planned or intended in their final year of school. As shown in Table 5-2, those reporting the largest level of unexpected change "major", were those in the occupational category at eighteen months post school of "working" with 87.50% of this group reporting significant levels of change or above, the breakdown being 18.75% as "significant", 43.75% "large" and 25% "major". "University

students" reported 63.64% as "significant" or above, (31.82% as "significant", 22.73% as "large" and 9.09% as "major").

Those at university, after deferring for twelve months, were a small group, being five students in total, representing 8.62% of the sample. One of the five "university post deferment" respondents reported "minor change", two reported "significant" change and the remaining two reported "large" levels of change. This means 80% of those in "university post deferment" reported significant or higher levels of change however, this was a small group as five participants fell under this category. Those in "traineeships" also represented a small number of participants, five in total. "Traineeships" represented 8.62% of all participants. Three of the five "trainees" (60%) reported "significant" change and 20%, or one student, reported experiencing "large" levels of unexpected change. Five respondents from those in the sample were in "apprenticeships", one reporting "insignificant change", two "minor", one "large" and one "major" as shown in Table 5-2.

Study One: Overal	l Lev	el of Unex	pected	Change re	eported	by occupat	ion at 1	8 months				
Current		Level of Change on Likert Scale										
Occupation												
Total	Ins	ignificant	Mino	r	Signif	icant	Large		Мај	or		
Working 16			2	12.50%	3	18.75%	7	43.75%	4	25%		
Uni FT 22	4	18.18%	4	18.18%	7	31.82%	5	22.73%	2	9.09%		
Deferrers 5			1	20%	2	40%	2	40%				
Traineeship 5			1	20%	3	60%	1	20%				
Apprenticeship 5	1	20%	2	40%			1	20%	1	20%		
Tafe/RTO 5			1	20%	2	40%	2	40%				
Totals 58	5	8.62%	11	18.97%	17	29.31%	18	31.03%	7	12.07%		
Current Occupation: w	orking	g =employme	ent, Uni	FT=universit	y full time	e, deferrers=re	esumed u	niversity study	after	12 months		
deferment, traineeship	s=12	month contra	act of wo	ork and traini	ng which	usually inclue	des the ea	quivalent of or	ne day	per week in		
vocational training, app	prentio	ceships= a fo	our year	contract of v	vork with	on average o	ne day pe	er week in voc	ational	training,		
TAFE/RTO= vocationa	l trad	e and training	g college	es								

Table 5-2: Overall Level of Unexpected Change

Study One: Section Two

Occupation at 18 months compared to planned post school occupation The second section of Study One, which interviewed former students from the same graduating class to investigate their perceived experience of unexpected change in their intended career pathway, involved four questions which can be summarised as:

- Intended pathway in school?
- Is this what you are doing now?
- First choice employer/training provider?
- First choice occupation/course?

Results: Study Two, Section Two- Comparison with intended pathway in school *What was your intended Pathway in School? Is this what you are doing now?*

When reminded by the interviewer of their intended career path post school, based on the data from interviews in their final months of school, followed by the question "is this what you are doing now?" 51.72% of respondents said "yes", they were pursuing a career pathway as planned in school. The breakdowns of responses by occupational group at eighteen months post school are shown in Table 5-3.

First choice occupation course												
Response	occupation											
	totals	otals u udef w Apprt Trnee T/RTO										
Yes	42	18	4	10	3	3	4					
No	16 4 1 6 2 2 1											
Occupations at 18 months:u=university, udef=university of 12 months deferment, w=working in paid employment,												
apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation												

Table 5-3: Study One, first choice occupation course

Results: Study One, Section Two- Comparison with intended pathway in school *First Choice Employer or Training Provider*

When asked whether you "...were able to gain entry to your first choice occupation or course?" 67.24% responded "yes", with 10.34% of these "yes" respondents adding a comment or qualifying their responses. These respondents who qualified their response usually added the word "but..." and added a comment or explanation such as *"after several months", "the same course but, at a different university"* or *"employer", "after working in other employment first",* indicating that despite their response, some level of unexpected change may have been experienced. The breakdowns of responses by occupational group at eighteen months post school are shown in Table 5-4.

Table 5-4: Study	/ One, f	first choice	employ	er/training	provider
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First choice employer/training provider										
Response Occupation										
	totals	uni	udef	W	Apprt	Trnee	T/RTO			
Yes	39	18	4	8	3	3	3			
No	19	4	1	8	2	2	2			
*Occupations at 18 months:u=university, udef=university of 12 months deferment, w=working in paid										
employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organistaion										

In contrast to the "Yes" respondents, exactly half of the "no" respondents to the question of whether their current occupation is what they had planned at school, eight of sixteen, qualified their response. Examples of qualifying "no" responses include *"No, I changed my mind about TAFE and wanted to earn money"*, *"No (to TAFE in another city) but I am doing a course by distance education"*, *"No (to policing course) but I am working towards it via McDonalds"*.

Study One: Section Three

Unexpected Change to planned pathway

The third section of Study One asked respondents about unexpected change to their intended post school career pathway and the questions can be summarised as:

• Any unexpected change to planned pathway? Yes/No

- Changed university? Yes/No? N/A
- Changed course or major? Yes/No/N/A
- Changed employer? Yes/No/N/A
- Changed type of job? Yes/No/N/A
- Changed job with same employer? Yes/No/ N/A
- Changed type of job or career path? Yes/No
- Changed career interest (open ended question)

Results: Study One, Section Three- Unexpected Change to planned pathway Did you experience any unexpected change from what you had intended or planned in Year Twelve?

After being asked what they had planned or intended in terms of career pathway after completing Year 12 and whether this matches their current occupation, respondents were asked if they had experienced "any unexpected changes from the pathway they had or planned in their final year of school?" Consistent with the percentage of respondents reporting unexpected change in Hart and Rayner (1971) 66.67% of respondents confirmed they had experienced "unexpected change" to their intended pathway. By occupational grouping at eighteen months post school the responses confirming "unexpected change from what was planned in the final year of school" can be grouped as: "University full time" 63.64%, "University post deferring twelve months" 60%, "working" 68.75%, "Traineeships" 80%, "apprentices" 40% and "TAFE/RTO" students 80%.

Results: Study One, Section Three- Unexpected Change to planned pathway *Changing university*

Five respondents reported changing university, which represented 18.52% of those in full time university study at eighteen months post school. Comments reflected a range of unexpected change influencing participant's change of university including: *"it was so difficult to gain full time employment in my deferred year that I will switch degree and switch to distance education", "I changed from Canberra University to Newcastle to study PE Teaching after*

unexpected enjoyment of work as a teacher's aide", "I switched to distance education with mixed success after an unexpectedly relocating to Melbourne", "I moved from Lismore to Newcastle after I didn't like changes the university made to the course structure", "I changed to a university three hours away to gain entry in to nursing".

Results: Study One, Section Three- Unexpected Change to planned pathway *Changed university course or major*

Seventeen of those interviewed responded "yes" to "change of university course or major". This represents 56.66% of those commencing or gaining entry to university courses.

Of the respondents who have changed their degree or major, it is worth noting almost one in three, 29.63% involved a total change of degree and as such, most likely, a substantial change of career direction.

For those who had completed six to twelve months of university study their responses about change of degree included, "education to arts", "music to management", "changed course at the same university", "changed degree totally", "B. Info Tech. not business", "Maths to Science". Two of the five respondents who returned to university after deferring twelve months also reported a complete change of degree, responses included "changed degree and university" and "changed degree after deferring".

Having explored change and unexpected change in the transition of high school to university students, the next part of the interview explored similar themes for those working, particularly as almost half (48.27%) of all respondents reported their post school career plans did not involve university.

Results: Study One, Section Three- Unexpected Change to planned pathway *Changed full time employer* As an equivalent question to "change of university" respondents in employment were asked if they "changed full time employer". Respondents that could be considered as "employed" in this case included the groups identifying themselves as "working" and those in "apprenticeships" or "traineeships" as these both involve significant employment.

Of the participants not involved in full time study, 55.55% reported experiencing a "change of full time employer". Of those reporting a change of full time employer (73.33%) were from the category of "working" at 18 months post school. This represented 68.75% of those in the category of "working". Two of the "change of employer" respondents were in "traineeships" that began as twelve months contracts having worked several other jobs prior to their traineeship. One of the five "apprentices" who reported changing employer, having covered part of the apprenticeship in school one had left the industry for nine months before recommencing the apprenticeship with a new employer.

Results: Study One, Section Three- Unexpected Change to planned pathway *Changing job with the same employer*

Participants were then asked if they had an unexpected "change of job with the same employer?" as it could be possible for someone to experience unexpected chance within their career path with the same employer, a concept raised by Hart and Rayner (1971).

On the question of changing job with the same employer, six participants responded "yes", which represents 10.34% of all participants and 22.22% of those not in full time study at eighteen months post school. Comments included, "Yes, from part time in school to permanent trainee", "Yes, moving from casual to permanent (because my sporting) injury meant more work time", "Yes, part time to full time", "increased hours with McDonalds", "Yes, from night fill to check out". One respondent commented on employment from his working deferred year prior to university as it was pivotal in his change of university pathway, "Yes, I changed work in deferred year to teacher's aide from that work I decided to change degree".

Results: Study One, Section Three- Unexpected Change to planned pathway

Changed type of job or career path

The question of unexpectedly "changed type job or career path" was addressed by all participants, not just those in employment. Twenty eight respondents (48.27%) confirmed that they "changed type of job or career path". The breakdown of these responses by occupation at eighteen months post school represented six of the 22 "university students" in the study, three of the five "university students post deferring", 13 of the 16 "workers", two of the five "apprentices", three of the five "trainees" and one of the five "TAFE/RTO" students.

Amongst the full time university students who said they had not changed job or career path were seven who had made changes to their degree, but perhaps didn't consider this as a change to their intended career path at this stage.

Results: Study One, Section Three- Unexpected Change to planned pathway *Changed career interest*

All respondents were asked if they had experienced an unexpected "change of career interest?" Fifty percent of respondents confirmed they had an unexpected "change of career interest".

Factors influencing change of career interest

All respondents were asked if there were any factors influencing their change of career interest and responses from all participants including those who had said "no" to change of career interest can be summarised in Table 5-5. Responses were coded by two independent raters, one a Librarian with over twenty years of experience in her field, the other a teacher with over twenty years of experience in marking, moderating and coding student responses from Primary Schools through to High School. The aim of the studies and the rationale behind the open ended questions were explained to the independent raters and they were provided with a set of codes the researcher had identified after content analysis. The independent raters were asked to refer to the codes provided then record the number representing the code they would assign to each response. No further training of independent raters was provided. The inter-rater reliability on this item was of 94.12%.

	interest				y515		
Coded response category				Occup	ation		
	Total	Uni	Uni Df	Wrk	Apprt	Trnee	T/RTO
1. negative employment experience	2				1	1	
2.positive employment experience	6		1	3			1
3. course prac experience	2	1		1			
4. course structure/course content	10	6	1	1			2
5. returning to a previous or past interest	8	2	1	5			
6. lack of career path/employment	3			2		1	
opportunity							
7.personal health							
8. family health							
9 no change in career interest	24	12	2	4	3	1	2
10 other	3	1			1	1	
*Occupations at 18 months:u=university, uni	Df=unive	rsity of 12	months de	eferment,	w=working	j in paid	1
employment, Apprt=apprenticeship, Trnee=t	raineeshij	o and T/R	TO=TAFE	or Regist	ered Traini	ng Organi	staion

Table 5 -5: Factors influencing change of career interest coded after content analysis.

Study One, Section Four, Sources of Unexpected Change

In Section Four, all participants were asked whether they had "experienced any unexpected changes to the pathway they had planned to take in their final year of schooling?" These were "Yes/No" response type questions with any additional comments noted and transcribed. The questions can be summarised as:

- Unexpected change within family
- Unexpected changes within circle of friends
- Unexpected change of location or intended accommodation

Respondents were also asked if the following aspects of their pathway post school were "as planned or expected":

• Work life balance?

- Sport and hobby time?
- Financial resources?
- Level of satisfaction with occupation or course?
- Unexpected change within family?

From all respondents, 15.52% reported experiencing an "unexpected change within family". In terms of the optional additional comments, the most frequent comments on "unexpected change within family", as shown in Appendix E-7, involved the respondents' immediate families, namely their parents such as parent's health or the prospect of their parents relocating. In two cases it involved the respondents themselves unexpectedly becoming a parent. In no case did the unexpected change within family match the influencing factor listed by the same respondents in response to the questions on unexpected "change of career interest".

Results: Study One, Section Four - Sources of Unexpected Change Unexpected changes within circle of friends

"Unexpected change within circle of friends" was investigated to explore whether such a change was substantial amongst the possible range of unexpected changes that high school students may experience in their career path post school. Eighteen of 58 respondents (31.03%) reported that they had experienced "unexpected change within their circle of friends". Unexpected changes within circle of friends, as shown in Appendix E-8, usually involved participants acknowledging that they saw less of their former school friends, some countering this with the positive comment that they have however, made new friends since leaving school.

Results: Study One, Section Four - Sources of Unexpected Change Unexpected change of intended accommodation or location

Responses that reported an "unexpected change of accommodation" came from 37.93% of all participants. This constituted an unexpected change from the intended accommodation identified by these respondents in their end of Year 12 interviews. This (37.93%) is a substantial figure given a number of participants had intended to remain in fairly stable sources of accommodation such as their family home. Of those reporting an "unexpected change of

accommodation" 68.18% of these had intended to relocate post school. Despite having postsecondary plans that involved relocating, two thirds of respondents experienced unexpected change on this aspect.

Results: Study One, Section Four - Sources of Unexpected Change Work life balance as planned or as expected

Seventeen respondents (29.31%) reported their "work life balance was not as planned or expected" and their comments and occupation can be seen in the Appendix E-9.

Results: Study One, Section Four - Sources of Unexpected Change The sport and hobby time I had intended or planned

On a similar theme to "work life balance" respondents were asked if the sport and hobby time was as intended or planned with very similar results. Nineteen respondents (32.76%) reported their "sport and hobby time" was not as they had intended or planned. The comments of those who reported "work life balance" as planned can be seen in Appendix E12.

Results: Study One, Section Four - Sources of Unexpected Change Financial resources as planned or intended

On the question of whether "financial resources were as planned or intended", as shown in Appendix E-12, 51.72% of respondents reported their financial resources were not as they had intended or planned. Comments to "financial resources were as planned or intended" by occupation at eighteen months can be seen in Appendix E-13.

Results: Study One, Section Four - Sources of Unexpected Change Level of satisfaction with occupation/course as planned Twenty three participants reported the "level of satisfaction with occupation or course" was "lower than they had planned or anticipated". This represents 39.66% of all respondents. Those who reported the "level of satisfaction with occupation or course" was not as expected represented 36.36% of "university students", 60% of those in "university post deferring", 50% of "workers", 60% of "trainees" and 20% of "TAFE/RTO" students.

Conversely, those reporting levels of satisfaction "as planned or higher" with their course or occupation represented 63.64% of "university students", 40% of "university after 12 months deferring", 100% of "apprentices", 80% of "TAFE/RTO students" and 40% of "trainees".

Study One: Section Five, Positive or Negative Change and Sources of Support

Study One, Section Five aimed to investigate the unexpected changes respondents found to be positive or negative. This section also aimed to identify the sources of support reported as assisting respondents to progress from unexpected change. The questions for section five can be summarised as:

- Unexpected changes that turned out to be quite positive?
- Unexpected changes that seemed to be negative at the time?
- Any unexpected changes that still seem quite negative?
- Who/what assisted you to make progress from unexpected change?

Results: Study One, Section Five- Positive or Negative Change and Sources of Support Unexpected changes that turned out to be quite positive

The responses to the "open ended" question of "unexpected changes that turned out to be quite positive" coded, after content analysis, as one of twelve responses and inter-rater reliability of 94.83%.

Four respondents replied as having "no unexpected changes to report", which meant 93.10% of respondents reported a perceived unexpected change that turned out to be quite positive.

The most common coded responses for "unexpected change that turned out to be quite positive" as shown in Appendix E-14, were "relocating on campus or share housing", "changing study provider" and "unexpected job openings".

"Relocating after high school to on campus or share rental housing" was reported as an "unexpected change which turned out to be quite positive" by 32.76% of respondents. This was reported by nine of the twenty two "university students", one out of five "university students post deferment", four of the sixteen "workers", two of the five "apprentices", one of the five "trainees" and two of the five "TAFE/RTO students". Relocation was an "unexpected change that turned out to be quite positive" across all groups. It was reported not just by those who had to relocate in order to attend university but by "workers", "apprentices", "trainees" and "TAFE/RTO" students.

The second highest scoring category of "unexpected change that turned out to be quite positive" came from "unexpected enjoyment of course" which was reported by 15.52% of all respondents. This represented five of the twenty two "university students", one of the five "university students post deferment", one "apprentice" and two "TAFE/RTO" students.

"Unexpected enjoyment of course" was the second highest reported change that turned out to be quite positive as reported by "university students", "university students post deferment", "apprentices" and "TAFE/RTO" students. This demonstrates that a wide range of career paths post high school incorporate some form of course work or further training.

"Changing course or study provider" was reported as an "unexpected change that turned out to be quite positive" by 12.07% of all participants.

Results: Study One, Section Five- Positive or Negative Change and Sources of Support Unexpected changes that seemed quite negative at the time

Having investigated unexpected changes that turned out to be quite positive, respondents were asked if there were any "unexpected changes that seemed quite negative at the time". Responses were coded with and inter-rater reliability of 96.78. The most frequent response to the question of "unexpected changes that seemed quite negative at the time" after coding, as shown in Appendix E-15, was "relocating/ finding accommodation/ homesickness/ living on campus/ share housing" reported 29.31% of all participants. The second highest coded

response was that of "not much/ no unexpected negative change to report" as identified by 20.7% of all respondents.

"Not getting in to intended job or course" was the third most common response, to the open ended question of "unexpected changes that seemed quite negative at the time" as reported by 12.07% of all respondents. This represented of at least one person across each of the occupation at eighteen months post school categories.

For those in the occupational category at eighteen months post school of "working" the response of "not getting intended job or course after HSC" when combined with other responses of "employment changes or cutbacks or type of work" and "lack of employment/hours/money from working", represented 50% of all "workers".

Study One: Section Five- Positive or Negative Change and Sources of Support Unexpected changes that still seem quite negative

Having asked respondents about "unexpected changes that seemed quite negative at the time", respondents were asked if they experienced any "unexpected changes that still seem quite negative". This question was asked to investigate whether some of the unexpected changes experienced are perceived as having longer lasting ramifications. The question investigates the lasting nature of nonlinear events in the perception of respondents. Responses were coded using the same codes as those used for the previous question of "unexpected changes that seemed negative at the time". The inter-rater reliability for the coded responses on this question was 96.55%.

There was a substantial reduction in the number of responses that identified "unexpected changes that still seem quite negative" when compared to the previous question of "unexpected changes that seemed negative at the time". As shown in Appendix E-15, the most frequent response to the question of "unexpected changes that still seem negative" was "not much/ no unexpected negative changes to report" from 70.69% of all participants. In contrast to the previous question of "unexpected changes that seemed quite negative at the time" in which

"not much/ no unexpected negative changes to report" was identified by 20.70% of respondents.

The next most frequent response to the question of "unexpected changes that still seem negative" was coded as "relocating/ finding accommodation/ homesick/ living on campus/ share" reported by four of the 58 participants.

Not getting intended job or course after completing high school

A notable difference in terms of "unexpected changes that still seem negative" was for the response of "not getting intended job or course after HSC". It was identified as the third most prominent response to "unexpected changes that seemed quite negative at the time" and it was not reported by any respondent as a lasting negative.

The third highest response to "unexpected changes that still seem quite negative" was "relocating/ finding accommodation/ homesick/ living on campus/ share accommodation" as reported 6.90% of participants. This was a reduction in the number of responses when compared to the previous question in which 29.31% of respondents identified this as an "unexpected change that seemed quite negative at the time".

Results: Study One, Section Five- Positive or Negative Change and Sources of Support *Who/what assisted you in making progress from any unexpected change?*

While a number of studies have identified the influence of unexpected change in career paths, particularly as experienced by university students and university graduates (Hart, Rayner and Christensen, 1971; Baumgardner 1976; Salomone and Slaney, 1981; Scott and Hatalla, 1990; Betsworth and Hansen, 1996), very few have investigated the sources credited by respondents as assisting them to progress through phases of unexpected change. Understanding these for career teachers and career counsellors may be beneficial in assisting clients as well as those who are likely to be the source of assistance to clients.

Responses to the open ended question of "who/what assisted you in progressing from any unexpected change to your intended pathway" were coded after content analyses with an interrater reliability of 98.28% as shown in Table 5-6. Where respondents asked the interviewer what was meant by "progress" from unexpected change, it was described as "assisting in managing, adjusting to and moving on from unexpected change affecting your intended career path."

Table 5-6: Study One, Coded responses- who/what assisted you in progressing from unexpected change

Coded response categories			occupa	ation			
	total	uni	u def	W	apprt	tr	T/RTO
1. parental support/mum/dad/both	28	9	1	10	2	2	4
2. sibling/bro/sister	1			1			
3. relative other than parent/sibling	2		1	1			
4 boyfriend/girlfriend	2			1	1		
5. friends school/uni	7	4		2	1		
6. self	5	3	1			1	
7. work place/employer/agencies	3		2			1	
8. university/training provider	3	3					
9. I have not had much change to need	4	2		1	1		-
support/report							
10. other	3	1				1	1
*Occupations at 18 months: u=university, employment, apprt=apprenticeship, tr=trai	u def=univ	ersity of 1	2 months d =TAFE or F	leferment Registere	t, w=working d Training (g in paid Drganisa	tion

Parents, friends and self-reliance emerged as the most common source of support reported. "Parental support/ mum/ dad/ both mum and dad" was by far the biggest form of support identified as it was reported by 48.28% of respondents. "Friends from school or university" was reported by 12.07% and 9% of responses were coded as "self" for respondents who credited their own work or initiative in resolving unexpected change. "Parental support" was consistently reported as the source of assistance in "progressing from unexpected change" across all groups of respondents, including 40.91% of "university students", 20% of "university post deferment", 62.5% of "workers", 40% of "apprentices", 40% of "trainees" and 80% of "TAFE/RTO" students. "Friends from school or university" was reported by almost one in five "university students", usually in terms of advice regarding courses or accommodation. Two out of 16 "workers" and one out of five "apprentices" reported "friends" as assisting them to learn about a job opportunity or to move out of home. The third largest response was from respondents crediting their own initiative or investigation as assisting themselves to make progress from unexpected change. The coded response of "self", came from five respondents, three of which were "university students" finding out about another course pathway through their own research and one of the five "trainees" who reported finding "employment my own". Other examples of responses from participants were coded under the category of "self" included "research prompted by my deferred year of hard work", "my willingness to take responsibility and try another uni", "I saw an ad in the paper for this job, it actually took 10 months after HSC", "university services but mostly my own research", "my researching university, my parents moved closer, Tamworth, uni life".

Study One: Section Six, Preparation to manage unexpected change

Study One, Section Six, used Likert scale type questions and asked respondents to rate sources that assisted them in preparation to manage unexpected change. The aim of these questions was to investigate the perceived sources of preparation for unexpected change. The statements to be rated by respondents can be summarised as:

- Seeing parents or family members manage change
- Seeing other students manage unexpected change
- Options shown at school assisted me to manage change
- School prepared me to expect change
- School prepared me to believe things would go to plan
- School gave me skills, strategies to cope with change
- Schools need to do more to prepare students for change

This section used a five item scale from 1-"strongly agree", 2-"disagree", 3-"neither agree nor disagree", 4-"agree" and 5-"strongly disagree".

Results: Study One, Section Six- Preparation to manage unexpected change Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change.

The first of seven Likert scale questions "seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change". This was a question designed to ascertain whether respondents who had witnessed role models within their own family manage unexpected change to their career path reported this as assisting themselves in managing such change.

Twenty one respondents agreed (36.21%) and six strongly agreed (10.34%) that "seeing family members manage unexpected change to their occupational plans assisted them in managing unexpected change", 19 neither agree nor disagreed (32.76%), 11 disagreed (18.97%) and one respondent (1.72%) strongly disagreed. A table of responses by occupation at eighteen months can be seen in Appendix E-17.

Results: Study One, Section Six- Preparation to manage unexpected change Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change

Having asked whether seeing family members manage unexpected change to their occupational pathway assisted respondents, the focus of this question moved from family to friends.

Responses to the statement of "seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change" were that nineteen of 58 respondents "agreed" and one "strongly" agreed, 34.48% when combined, 34.48% "neither" agreed nor disagreed, 17 disagreed and one respondent "strongly" disagreed, leaving 31.03%

combined scores for "disagree" and "strongly disagree". A table of responses by occupation at eighteen months can be seen in Appendix E-18.

Results: Study One, Section Six- Preparation to manage unexpected change The range of career and training options shown to us at school assisted me in managing unexpected change.

To the statement of "the range of career and training options shown to us at school assisted me in managing unexpected change", as shown in Appendix E-19, 43.10% of all participants "agreed", 8.62% responded as "strongly agree", 25.86% as "neither agree nor disagree" and 22.41% as "disagree". This leaves a combined "agree" and "strongly agree" total of 51.72% to a "disagree/strongly disagree" total of 22.41%.

Results: Study One, Section Six- Preparation to manage unexpected change School prepared me to expect the possibility of changes to my occupational/future plans

The question of whether "School prepared me to expect the possibility of changes to my occupational/future plans" was designed to investigate whether respondents perceived their school had prepared them to expect the possibility of change to their occupational plans. Responses from 56.90% of all participants were "agree" and 5.17% "strongly agree", 18.97% replied "neither agree nor disagree" and 18.97% "disagreed". This placed the combined "agree" and "strongly agree" response total as three times higher than that of "disagree/strongly disagree". The percentages of response were fairly consistent across each occupational group at 18 months post school, as shown in Appendix E-20, with 50-60% of candidates in each occupational category giving an "agree" or "strongly agree" response.

Results: Study One, Section Six- Preparation to manage unexpected change *School prepared me to believe that my career plans would go exactly to plan*

Having investigated the influence of family and secondly friends the next interview questions aimed to investigate the influence of school, firstly whether "School prepared me to expect the

possibility of changes to my occupational/future plans" and secondly whether school had given students the impression their "career pathway would go exactly to plan".

Results: Study One, Section Six- Preparation to manage unexpected change School prepared me to believe that my career plans would go exactly to plan

Most respondents, as shown in Appendix E-21, disagreed with the statement that their "school had prepared them to believe their career plans would go exactly to plan". There were thirty seven responses of "disagree" (63.79%) and two of "strongly disagree" for a combined "disagree" and "strongly disagree" total of 67.24%. Nine respondents did "agree" that school had "prepared them to believe their career plans would go exactly to plan" representing 15.52% of the total participants and 17.24% of respondents replied "neither agree nor disagree". A table comparing the responses of those who agreed that "school prepared me to believe my career plans would go exactly to plan" compared with their reported "overall level of change" is included in Appendix E-22 and shows these respondents reported similar rates of unexpected change to the results for all participants.

Results: Study One, Section Six- Preparation to manage unexpected change School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path

The next two questions in the interview were designed to investigate whether respondents perceived that their school gave them skills or strategies to cope with unexpected change and secondly, whether respondents thought schools should do more to prepare students for unexpected change in career pathways.

The results in response to "school gave me skills, resources, strategies or ways to cope with unexpected changes in my career path", as shown in Appendix E-23, were that 37.93% responded "agree", 3.45% "strongly agree", 31% as "neither agree nor disagree", 25.86% "disagree" and 1.72% (one respondent) "strongly disagree".

Results: Study One, Section Six- Preparation to manage unexpected change Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans

Having asked respondents if the "school had prepared them for change", respondents were asked whether "schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans"

Despite 43.10% agree, 8.62% strongly agreeing, to the statement "The range of career and training options shown to us at school assisted me in managing unexpected change" a significant number of respondents, as shown in Appendix E-24, 39.65% "agreed or strongly agreed" that "schools need to do more to prepare students for unexpected change", 41.38% neither agreed, nor disagreed and 18.97% disagreed.

Study One: Section Seven- Respondents' suggestions for career education

What should schools teach about unexpected change and what I wish I knew in school about unexpected change and career pathways?

What should schools do to assist preparing students for the possibility of change in their career path?

Having asked students if schools should do more to prepare students for change as a response to a five item Likert scale, respondents were asked an open ended question of "what schools should do to assist preparing students for the possibility of change in their career path?"

Content analysis was carried out on the responses and the twenty two themes that emerged were coded then tested for inter-rater reliability, which was 94.80%.

Results: Study One, Section Seven- Respondents' suggestions for career education What schools should do to assist preparing students for the possibility of change in their career path?

The most frequent responses as shown across each occupational group in Appendix E-25, were "not sure/ unsure" from 20.69% of participants and another 18.97% of participants responded that they were "not sure how this could be taught" as unexpected change in career path varied by individual.

Information from "real life examples" such as former students was identified by 15.52% of all respondents, more than half of these (six) were university students.

The next largest scores, while small at three respondents each from 58 interviewed, were 5.17% who commented "that it is okay to change" and 5.17% who responded "look beyond ATAR/ university/ and apprenticeships".

The responses under the code "it is okay to change/change is normal/change can be good" were not from any single group. These responses came from one "university student", one "worker" and one "apprentice".

Results: Study One, Section Seven- Respondents' suggestions for career education What do you wish you knew about unexpected change to career paths when you were at school?

Having asked respondents what schools should have done to "assist in preparing students" for possible change to their career paths, respondents were asked the open ended question on what they "wish they knew in relation to managing unexpected change and career plans". The question differs from the previous one in that respondents may not perceive "what they wish they knew about unexpected change" as something particular to the role of the school in preparing them. The difference between the questions may be highlighted by 78% of respondents providing a different response to their response for the previous question. Of

those respondents who gave the same reply to both questions, 50% were in the "unsure" response group, unsure of what they thought "schools could do to prepare students" for potential unexpected change and unsure of what they "wish they knew regarding change".

Cost related categories were the second highest response to the question of "what I wish I knew in relation to unexpected change" with five participants responses based on "costs", four to "moving out of home/rental property" and three to "banking/money/finances" representing a combined 20.69% of respondents. As shown in Appendix E-26, costs, banking and relocating themes are not restricted to university students. "University students" and "workers" figured in responses related to "costs" and "relocating" while those earning the higher incomes in the group, "apprentices", were more likely to nominate "banking", perhaps as their income put them in a position more likely to access banking services, such as car loans.

The highest number of responses for "what I wish I knew in school..." were under the response category of "unsure" (32.76%). These respondents noted that they were "unsure" as to what would have assisted to prepare themselves for unexpected change. The third highest scoring response was from five respondents, 8.62% of the total and was categorised as "okay to change/change is normal/change can be good". Only one of these respondents had repeated this response from the previous question on "what schools should teach in relation to unexpected change".

The results of Study One, which aimed to establish whether unexpected change is a perceived experience of high school students in their career transition, found unexpected change is a perceived experience for high school students on a number of levels and from a number of sources. These results are discussed in the next section of this thesis.

Discussion and recommendations for further study Study One

Introduction

The results from Study One show that unexpected change is a perceived experience of high school students in their career transition. The study also found the perceived experience of unexpected change is reported from a range of sources which are expanded on in the following discussion.

Overall level of unexpected change-discussion

As the final question in the interview at eighteen months post school, respondents were asked to rate the overall level of unexpected change they had experienced compared to the career pathway they had planned in their final year of school. These ratings were from 1 to 5, where 1 was "insignificant", 2 – "minor", 3-"significant", 4-"large" and 5-"major". 72.41% of respondents reported an "overall level" of unexpected change from what they had planned in Year 12 as either "significant", "large" or "major".

These results for Study One are consistent with previous studies such as Hart, Rayner and Christensen (1971);Baumgardner (1976); Salomone and Slaney (1981); Scott and Hatalla (1990) Betsworth and Hansen (1996); which reported the influence of chance events on career paths on at least two thirds of participants. While these previous studies involved college students, graduates and working adults, the results of Study One show a similar percentage of those making the transition from high school also report unexpected change as influential on their career path. Thus findings of previous studies on the influence of unexpected change on the career path with older participants may also be applicable to those in the transition post high school (Hirschi 2010).

Which groups of respondents reported experiencing the highest levels of unexpected change?

Responses reporting the highest levels of unexpected change -"Major"

Seven of the 58 respondents reported experiencing the highest overall level of change, "Major". Four of these were "workers", which represented 25% of those in the "working" group. This group, "workers", may report experiencing larger amounts of change than other occupational groups due to economic changes or the casualization of the work force. It may also show that simply planning to gain a Higher School Certificate in itself is not a passport to employment or a steady career path, but an entry point to be built on with further education, such as university or TAFE or further education and employment packaged together such as a traineeship or apprenticeship.

A number of respondents who had thought completing school would assist them in finding employment noted a negative unexpected change in that they were surprised how difficult it was or how long it took them to gain substantial employment. Examples of comments, from these respondents, as shown in Appendix E-1, include comments such as *"it took 10 months and 4 jobs to get a decent 5 day a week job.", "first job that I had since school had cutbacks so I went back to McDonalds then to a Real Estate Office job, then to my current job", "major given my moves to a retail job in a regional university town four hours away, then back home and then interstate to Brisbane". These responses raise questions on whether more work in schools could be done to prepare students for change in the work place. Is the workforce more prone to chaotic themes than other post school destinations or, given "university students" are the second highest group reporting unexpected change, is change fairly consistent across all post school pathways?*

Aside from those in the "working" category at eighteen months post school reporting the highest level of unexpected change, the group reporting the next highest levels were "university students". For the university students reporting "major" levels of unexpected change it usually involved a complete change of university, university degree and city or town.

The university students reporting the second highest level of overall change on the five item scale, "large", were usually those that changed the degree from the one they had planned, gained entry or commenced. In some cases the respondents had studied in one degree or institution for six to twelve months before changing. Those university students reporting

"significant" change, the third item on a five item scale, had some similarities to respondents reporting "large" change in that some had changed degree, but in most cases these respondents had made changes to their pathway of study at the same university, such as adding a major or beginning their studies in a different university to the one they had previously planned.

Responses reporting "large" levels of unexpected change

The second highest overall level of change on the Likert style question was "large", which was reported by 18 of the 58 respondents. This response was highest amongst those from the group identified as "working", followed by "university" students full time as shown in Appendix E-2 which includes the respondents' comments.

From the total group of participants, one of the five "trainees" and one of the five "apprentices" reported "large" levels of unexpected change from what they had planned late in their final year of school. Traineeships are usually a twelve month contract, incorporating on average four days a week of employment with one day a week of training. Given these are usually twelve month contracts for work and training and these interviews were carried out eighteen months after completing school it is likely respondents had commenced a traineeship having been in a different occupation the year before. This is reflected in the responses, while the group is small with five reporting to be in traineeships, four of the five reported the level of change from what they had planned in school as "significant" or higher. One respondent who reported "large" level of change by gaining a traineeship ten months into a deferred university year and three others in traineeships reporting "significant" levels of change, completing a traineeship instead of their original plans.

Responses reporting "Significant" levels of unexpected change

The third highest overall level of change, the middle response on the Likert scale, "significant" was reported by 17 of the 58 respondents. One of the smaller groups in this study, five respondents, was those who deferred university for twelve months and commence university study the following year. Given the interviews for this study ran eighteen months after completing the last year of high school, the potential for planning or change for this group is

different to those students who went straight to university after high school. Four of the five respondents who were "university students post deferring" for twelve months to work, reported "significant" change. This change mainly related to the changing nature of employment in the deferred year and deciding to adjust or change the degree they would commence at university having worked for twelve months, reflected in responses such as "*large because I changed degree to a double degree adding law and I worked two jobs at the same time for deferred year*," and "*significant as volunteer work in deferred year helped decide on primary teaching instead of psychology*". A more detailed table of responses is included in Appendix E-3.

TAFE (Technical and Further Education College) is the government based vocational college while RTOs refer to Registered Training Organisations which are usually private forms of vocational colleges; both TAFE and RTOs offer nationally accredited vocational training. Five respondents in this study identified their occupation as "TAFE" students with four out of the five rating their level of unexpected change from intended pathway in Year 12 as "significant" or higher. The reasons behind this level of unexpected change varied amongst the TAFE respondents, one starting a TAFE course and changing to another because of "lack of support for practicums", another respondent reported changing to TAFE after reviewing his mid-year school report as most of his school life prior this was aimed toward completing a science degree at university.

Responses reporting "Minor" levels of unexpected change

Respondents reporting "minor" overall change came from eleven of the 58 respondents. This represented each of the categories of occupation at eighteen months post school with two "workers", four from "university", one "university post deferring", one "trainee", two "apprentices" and one from "TAFE/RTO" group. In most cases these respondents are pursuing the career path they had planned in school in terms of training or employment with some level of change in accommodation and for the full time university or TAFE/RTO students, some level of change in accommodation or casual employment. A more detailed listing of responses can be seen in Appendix E-4.

Responses reporting "insignificant" levels of unexpected change

Five of the 58 participants reported experiencing "insignificant" overall levels of unexpected change compared to what they had planned late in their final year of school, which represented 8.62% of the total participants. The guidelines for "insignificant" were "almost nil, virtually no change from what I had planned". Four of the five respondents reporting "insignificant" levels of unexpected change were university students who gained entry in to their intended course, at the intended university with the intended accommodation. The other respondent reporting "insignificant" levels of unexpected change was an apprentice who was in the same apprenticeship he had been offered before school had finished, enjoying his course work and was in the same accommodation as school, thus very few changes. This is a positive experience of planning for this 8.62% of respondents. The question arises as to whether these respondents had not experienced unexpected change, or only experienced positive unexpected change which they did not perceive as significant to report? For example, one respondent commented that, "I did get some scholarships after the HSC and I am fitting into university better than expected." Were these respondents better at managing unexpected change or more likely to under report unexpected change? In another example, a respondent in this group reporting "insignificant" levels of change commented that "my levels of change from what I intended in Year 12 have been almost nil, work has been difficult to get and I moved off campus, but things working out." Despite work being difficult to find and a relocation of intended accommodation, this respondent's perceived experience of unexpected change was ranked at the lowest level, "insignificant". A complete list of these responses by occupation at eighteen months post school can be seen in Appendix E-5.

Discussion: Section Two, Study One- Unexpected change from what you had intended or planned in your final year of school

First choice employer or training provider

Six of the respondents who said they did gain entry to their intended first choice employer or training provider, qualified their response adding the word "but...", and added a comment or explanation such as "after several months", "the same course but, at a different university" or

"different employer", "after working in other employment first", indicating that despite their response they may have experienced some level of change.

Exactly half of the "no" respondents to the question of whether their current occupation is what they had planned at school, eight of sixteen, qualified their response. Examples of qualifying "no" responses include "No, I changed my mind about TAFE and wanted to earn money", "No (to TAFE in another city) but I am doing a course by distance education", "No (to policing course) but I am working towards it via McDonalds". Salomone and Slaney (1982) suggest clients may retrospectively attribute more control to themselves after a change event. Respondents qualifying their responses may be an example of this.

Of those who qualified their "no" responses to the question of "first choice employer of training provider", three were respondents who did not gain entry into their intended course, two did not gain entry in to an application based vocational training providers for policing and drama. If any additional comments were made, they were usually because the respondent did not gain entry to their intended pathway. This is shown in Appendix E-6.

Discussion: Section Three, Study One Any unexpected change from what you had intended or planned in Year 12?

Changing university, Changed university course or major? Changed full time employer, Changed job with the same employer? Changed type of job or career path? Changed career interest?

When asked "have you changed the university you study at?" 15.79% of university students in Study One changed university to study at a different institution to the one at which they had commenced study.

In response to the question of "Have you changed course of major?" Respondents changing university course or major represented 56.67% of those commencing or gaining entry to university courses in Study One.

A complete change of university was reported by 16.13% of the respondents who had applied/planned/intended to go to university and 56.67% of repsondents reported changing university course.

A complete change of university usually requires substantial effort for high school students from regional New South Wales. The change usually requires a change of geographic location, for example, for one of the respondents in this group moving to a different university involved an eight hour drive from the university at which she had completed twelve months study.

It may be worth noting that for these five students reporting to have changed university, it was usually respondents who did not gain their first choice of university directly from their final year exams at high school who reported changing university.

The results show unexpected change of university pathway is reported at similar rates to other studies such as Baumgardner (1976); Scott and Hatalla (1990) Betsworth and Hansen (1996), Bright Pryor and Harpham (2005) and as such, high school career education may benefit from equipping students for such change. The sample sizes when categorized by occupation at 18 months post high school can be small, for example 27 respondents were involved in full time university study, so further study on high school students and unexpected change of university or university course is recommended.

Could respondents report a "change of career interest" without reporting a "change of job or training provider"?

Seven of those who said "Yes" to "change of career interest", had said no to "changed job or career path" as they had not acted on this interest. Conversely, six of those who said they had "changed type of job or career path" did not respond as having "changed career interest".

It is possible six participants "change job or career path" yet responded "no" to "change of career interest" as unexpected change may have meant they had to work or study in another

field but despite such circumstantial requirements, they have retained the same interest. These respondents may remain open to the possibility accessing their original plan at a later point or remain determined to resume to their previous plan. This raises the question on plans and unexpected change as to whether some individuals stick steadfastly to plans despite unexpected changes while others adjust their plans more readily to unexpected change and whether either group report greater levels of benefit from either approach or perspective.

Change of job with the same employer

Responses to change of job with the same employer represented 10.34% of all participants and 22.22% of those who were not in full time study at eighteen months post school. In a number of cases, the employment opportunity to change job with the same employer came because the respondent had started in casual employment with the same organisation. Do these results raise the question of whether we should show high school students that casual employment leads to opportunity, not just in terms of moving from casual to permanent employment in the same role but across various roles in an organisation?

Change of career interest by occupational group

Fifty percent of all respondents replied "yes" to the question of "unexpected change of career interest?" Eleven of these were "workers" from a total group of 16 in the "working" group. This is a large percentage (68.75%) those identified as "working" and more study may be required to investigate whether schools and their students would benefit in preparing students for the potential of a change of career interest after commencing employment.

Other respondents by occupation at eighteen months post school who reported a "change of career interest" were eight of the twenty two "university" students, two of the five respondents at "university post deferring", two of the five "apprentices", two of the five "TAFE or RTO" students and four of the five respondents in "traineeships".

These results raise discussion on whether change of career interest is an aspect of he unexpected change in careers and the Chaos Theory of Careers that warrants further study.
While a number of respondents reported changing career path due to unexpected change in circumstance, what are the unexpected or planned influences that lead to an unexpected change of career interest? Is such a change of interest as chaotic as the range of unexpected events outside a person's control? For example, can unexpected change of career interest be triggered without an unexpected physical event? The implications for the Chaos Theory of Careers would not change the theory but widen its application as an unexpected change of career paths that had gone to plan.

Unexpected change within circle of friends

"Unexpected change within circle of friends" was reported by 31.06% of all respondents. While some respondents noted struggling with homesickness and missing friends and family in their first six months away from home, particularly "university students", "unexpected change within circle of friends" was not noted as an influential factor on other questions in this interview on career change.

Unexpected change of location or intended accommodation or location

Based on responses to the question of intended career path post high school, 38 respondents intended to relocate or pursue a post-secondary pathway more than 100 kilometres away from their home town. Despite planning to relocate after school, fifteen of the 38 respondents who intended to relocate reported experiencing "unexpected change of location or intended accommodation".

Of the twenty respondents not intending to relocate post school, seven reported an "unexpected change of accommodation or location" within the eighteen months post school. Relocation was not simply a factor for regional high school students relocating to university. Relocating from home may also be a "rite of passage" for young working adults such as apprentices. Three of the five "TAFE/RTO" students reported "unexpected change of location/accommodation" as did six of the sixteen "workers", along with two of the five "trainees". Unexpected change of location may be a topic careers teachers should consider including in their curriculum for all senior students as it was noted by two out of every five students planning to relocate and by one out of every three students who had not planned to relocate.

Work life balance as planned or as expected

For "university students" who reported that work life balance was not as expected, their comments reflected the time their course or their course combined with part time employment taking more time than expected. "Workers" commented that the time their occupation took left little free time. Time management in planning or chaotic themes or both may be beneficial for inclusion in the career education curriculum of senior students.

The sport and hobby time I had intended or planned

Responses showed "sport and hobby time" and "work life balance" were "not as expected" for 29.31% of participants. The implication for career education practice is that if such time related issues are noted by almost one in three high school students transitioning from school, then there may be further merit in schools exploring ways to teach time management or chaotic concepts so that clients are prepared to expect changes in their anticipated schedules.

Financial resources as planned or intended

It was anticipated that university students and TAFE/RTO students who relocated would most likely experience unexpected financial change as they would not have significant employment income and they could have the additional costs of relocating. As shown in Appendix E-12, eleven of the twenty two "university students" and three of the five "university students post deferring" and four of five "TAFE/RTO" students reported their "financial resources" were not as "planned or expected". Financial resources not being as planned or expected were also reported by those in employment, seven of the 16 "workers" and three of the five "trainees".

Ten of the twenty seven respondents (37.04%) who were not in full time studies reported their financial resources were not as they had planned or expected. Whether poorly planned and prepared financially or highly prepared and encountering unexpected change, all categories of occupational grouping at eighteen months were represented and 51.72% of all respondents

have indicated financial resources were not as intended. Should schools or career education involve financial education or lessons in managing financial chaos for students?

Level of satisfaction with occupation/course as planned

While it is a small group, being five in total, one hundred percent of the "apprentice" group were satisfied with their course/occupation, "Yes, love the job, the training part is just okay as I went back to 1st year and travel", "higher enjoying course", "Yes, a bit higher settling with employer and chance for extra study", "higher, better than I thought learning new stuff each day" and "Yes, as good as I had hoped". This may reflect the security of a four year contract of employment and training which was also often located close to home so relocation was not essential. The question arises as to whether having a structured time period of training and employment is more likely to provide satisfaction and less prone to unexpected change or whether to some extent this only defers some aspects of chaos for these respondents.

Discussion: Study One, Section Five- Positive or negative unexpected change and sources of support

Unexpected changes that turned out to be quite positive

Relocation and accommodation is largely reported as an "unexpected change" in this study. It was mentioned by respondents (32.76%) as a "positive" unexpected change and by 29.31% of respondents as an "unexpected change that turned out to be quite negative at the time". It may be an expected response from regional high school students attending university, as the nearest university is over 100 kilometres away, however this response was reported across all occupational groups. Career education for senior students may benefit from the inclusion of more work or more study on unexpected change and relocation in their career education curriculum.

Changing course or study provider

"Changing course or study provider" was reported as an "unexpected change that turned out to be positive" by 12.07% of participants. These responses included five "university students" and

one of the five "university study post deferment". This represented 22.22% of all participants involved in university study. If one in five university students report "changing course or study provider" as an unexpected change that turned out to be positive, school career teachers may benefit from teaching concepts such as being open to unexpected change (Chen 2005). This could include the possibility of unexpected change, as in this case within university courses, as well as concepts such as unexpected change location/accommodation and employment.

Unexpected changes that seemed quite negative at the time

The most frequent open ended response to the question of, "unexpected changes that seemed negative at the time", once coded, related to relocation after high school. Responses coming under the coded category "relocating/ finding accommodation/ homesick/ living on campus/ share accommodation" were noted by 29.31% of all respondents.

Unexpected changes that still seem quite negative

Five of the six respondents who commented on "lack of employment/hours/money from work" remaining as a negative were university students. There was a substantial difference in the number of respondents who reported experiencing an "unexpected change that seemed quite negative at the time" (79.30%), compared to those reporting an "unexpected change that still seems quite negative" (29.31%).

Participants seemed to encounter unexpected change particularly in their first six to eight months post school with the prominent examples of response being "not gaining entry into employment or course"(12.07%), "changing course or institution and relocating" (29.31%) and resolve a large percentage of these by eighteen months post high school. For example, "relocating", referred to by 17 respondents as an "unexpected change that seemed quite negative at the time", was reported by only four respondents when asked about "unexpected changes that still seem quite negative".

Further study regarding this period of transition post high school may be beneficial. Results here suggest schools and clients may benefit from preparing for the likelihood of unexpected change in the first six to eight months post school and skills or strategies for this period of transition or chaos. The higher rates of reporting "unexpected change that seemed quite negative" in the first six to ten months was common across all post school destinations by group, "university students", "workers", "apprentices", "trainees" and "TAFE/RTO" students. Examples of responses included "better now than first 6 months", "most things are getting better now", "all pretty good now, but it took a big year to get here" and "most stuff is sorted out now".

Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change

In response to the Likert styled statement of "Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change" a combined 46.55% of respondents replied with either a response of "agree" or "strongly agree". In response to the open ended question of "who assisted you in managing unexpected change?" 48.28% of responses, when coded, referred to "parents" as the source of support in managing unexpected change. In this study parents were reported four times more than any other response as a source of support or example in managing unexpected change. As reinforced by Bryce and Anderson (2008) parents may be the next frontier for career education in terms of preparing students for potential unexpected change in career paths post high school. Career Education may benefit from seeking opportunities to introduce and train parents on unexpected change and nonlinear career concepts.

Did the respondents who agreed with the statement of "the range of career and training options shown to us at school assisted me in managing unexpected change", report any lower or higher rates of overall change?

Of those agreeing or strongly agreeing that the "range of career and training options shown to us at school assisted me in managing unexpected change", cross referenced with the reported overall levels of unexpected change, 70% reported overall level of changes of "significant" or higher. The breakdown was 10% as "major", 26.66% as "large", 33.33% as "significant", 20% as "minor" and 10% as "insignificant". The comparison of these results show those agreeing the "range of career and training options shown to us at school assisted me in managing unexpected change" still reported experiencing similar rates of unexpected change to other participants in this study and other studies graduates (Hart, Rayner and Christensen, 1971; Baumgardner 1976; Salomone and Slaney, 1981; Scott and Hatalla 1990; Betsworth and Hansen, 1996).

School prepared me to believe that my career plans would go exactly to plan

Given that nine respondents or 15.52% agreed that "school prepared them to believe that their career plans would go exactly to plan" the question arises as to whether these same respondents report the similar levels of unexpected change being experienced. Do high school students who perceive that their career plans will go exactly to plan report a higher incidence of linearity to the rest of the overall group? The group is small, being nine of 58 respondents however, their responses can be cross referenced with their response to the question asking participants to rate their overall level of unexpected change. The results in this case were similar to the rest of the participant group. Of the nine respondents one reported the highest level, "major", two reported the next highest category, "large" levels of change, four reported "significant" levels of change, while one reported "minor" and one reported "insignificant" change. This meant that while these respondents agreed that school prepared them to "believe my career plans would go exactly to plan" their reported rates of overall unexpected change were of "significant", "large" or "major" was 77.77% while the reported rate across all participants was 72.41%.

It is possible a range of influences are at play for senior students, careers teachers, their senior class teachers for each subject, year advisors, deputies and principals that potentially give students the perception that their "career plans would go to plan". Schools may benefit in presenting the concepts of unexpected change and the Chaos Theory of Careers to all of their

teaching staff as the range of teaching staff in a school may influence students post school plans and expectations.

School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path

Did those that agreed with the statement that "school gave me skills, resources, strategies to cope with unexpected change", report experiencing overall lower levels of unexpected change? The combined "agree" and "strongly agree" total represented 41.38% of the all participants. When this result is compared to the same respondents' reply to the question of the "overall level of unexpected change" it showed that 75% reported experiencing a level of change of "significant" or higher. The rate of overall level of change reported was similar to all participants.

Being prepared for change does not stop change

Despite the responses of 41.38% participants agreeing that "school gave them skills, resources, strategies or ways to cope with unexpected changes in my career path" the reported overall levels of change experienced for these particular respondents remained at 75%. This does not mean the respondent's perception that school prepared them for change is incorrect, as in an "open system", preparing for change does not necessarily prevent change. Preparing for unexpected bush fires each summer does not necessarily prevent the rate of bush fire occurrence. It is perhaps reassuring that those who perceived they were prepared for change by their school still experienced change at a similar rate, in that it reinforces the reliability of data on the rate of change experienced as consistently representative of at least two thirds of the population. Not measured here is whether those prepared for change and those perceiving they were prepared to expect and manage unexpected change, manage the process better than those who perceived they were prepared for a more linear pathway. This may warrant more study of a longitudinal nature.

Study One, Section Seven: Respondents' recommendations for career education-discussion Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans

"Agree" responses came from 41.38% of all respondents to the statement of "schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans". As two out of every five participants agree that "schools should do more to prepare students for unexpected change affecting their plans", more study may be warranted on the methods and benefits of including such topics in career education at schools.

What should schools do to assist preparing students for the possibility of change in their career path?

When asked what should schools do "to assist preparing students for the possibility of change in their career path?" the most frequent response recorded was "I am not sure how you would teach it" from 18.97% of all respondents. While respondents acknowledge experiencing unexpected change in their career path in the eighteen months post high school, almost one in five are unsure what schools should do to assist in preparing for such change.

Information from "real life examples" such as former students was suggested by 15.52% of respondents and more than half of these (six) were university students. This is the third time the influence of peers on university students has emerged as a response in this study. Those more likely to nominate friends in response to the question of who "helped you manage unexpected change?" were university students and those who responded "agree" or "strongly agree" to the statement of "seeing friends manage unexpected change assisted me" at the highest rate were university students.

Respondents, particularly university students seem to report an interest and benefit in learning about the way other recent high school graduates or university students have managed unexpected change and their post school career pathway/transition. Schools may wish to consider including this as a strategy in teaching senior students and further study on the use of

former students or real life examples as a means to teach about unexpected change may be warranted.

Responses that fell in to the group "It is okay to change/change is normal/change can be good" were not from any single group, coming from one "university student", one "worker" and one "apprentice". While 5.17% of respondents seem to be suggesting school should teach students to embrace change, 10.34% suggested more planning as the solution as their responses were that schools should be teaching "more back up plans".

Does the concept of back up plans show that respondents acknowledge experiencing a level of unexpected change or chaos and their solution more linearity in the form of more plans? Will some sections of the population insist more work on planning is the key to plans being achieved or as we live in an open system, will chaos and unexpected change be a factor, no matter how much work is done on planning?

Summary of Results-Study One

The perception of unexpected change in the career path of secondary students to post school careers

Study One

Participants

Were the post school occupations of participants in this study representative of state wide data?

 In terms of career destinations post high school, these participants were very similar to ACER DATA 2011 report based on 2009 data, ACER reported 48% in university compared to Study One 47%, ACER reported Vocational Training for 24%, compared to Study One 27% and Study Two 20%, ACER reporting neither as 8%. ACER reporting employment as 22%, in Study One this was 28%.

Did respondents report unexpected change?

- While there have been very few studies on high school students, the responses in Study One to the question of "Overall level of change from what I had planned", when rated by respondents on a five item scale, were consistent with other studies.
- In Study One, 72.41% of respondents reported a level of unexpected change from what they had planned in Year 12 as "significant", "large" or "major".
- These figures are consistent with studies by Hart, Rayner and Christensen (1971); Baumgardner (1976); Salomone and Slaney (1981); Scott and Hatalla (1990) Betsworth and Hansen (1996); Bright, Pryor and Harpham and Hirshi (2010) which consistently reported the influence of chance events on career paths of at least two thirds of participants.

Did participants report their career paths at 18 months post high school as following their high school plan or intentions?

 When asked "what were you planning to do late in term three of Year 12?" Followed by the question of "is this what you are doing now?" 48.28% of respondents from Study One said "No".

- Asked "Were you able to gain entry to your first choice occupation/training/course?" 32.76% responded "No" from Study One.
- Asked whether they had experienced "any unexpected from the pathway they planned in Year 12"? In Study One 66.67% of respondents said "Yes" they had experienced unexpected change from what they had planned in Year 12.
- When asked "have you changed the university you study at?" 15.79% of university students in Study One changed university to study at a different institution to the one at which they had commenced study.
- In response to the question of "Have you changed course or major?" Respondents changing university course or major represented 56.67% of those commencing or gaining entry to university courses in Study One.
- When asked "have you changed full time employer?" 55.55% of respondents not involved in full time study reported experiencing a "change of full time employer". Of those reporting a change of full time employer (73.33%) were from the category of "working" at 18 months post school which represented 68.75% of those in the "working category".
- On the question of "Have you changed job with the same employer?" Changing job with the same employer was identified by 10% of those in the "working" group at 18 months post school. Unexpected change of intended career path for this age group has been more likely to be in terms of changing employer than changing job with the same employer.
- Thirty respondents, 48.28% of all respondents in Study One reported they had an "unexpected change of job or career path".
- An "unexpected change of career interest", as opposed to actual change of career path, was reported by 50% respondents.
- In comparing respondents to the question of "change of career" with "change of career interest", 13.79% of participants reported changing career interest but had not acted on this in terms of change of job or career path at 18 months after completing high school.
- 10.34% of participants also changed job or career path yet had reported not changing career interest, which may demonstrate a level of resilience, acceptance of change or reflect a degree of goal orientation.

Reported Factors influencing change - YES/NO responses

Results were quite similar for each group of participants by occupation at eighteen months post school.

- "Unexpected change within family", Study One 15.52% "Yes", 84.48% "No".
- "Unexpected changes within circle of friends", Study One 31.03% "Yes" 68.97% "No".
- "Unexpected change of location or intended accommodation." Study One 37.9% "Yes"
 62.07% "No".
- "The work life balance I had intended or planned" Study One 70.69% "Yes", 29.31%
 "No".
- "Sport or hobby time as I had intended or planned", Study One 67.24% "Yes" 32.76%
 "No".
- "The financial resources I had intended or planned", Study One 48.28% "Yes" 51.72%
 "No".
- "The levels of satisfaction with occupation or course that I had planned or intended" Study One 60.34% "Yes" and 39.66% responded, "No".

Positive and negative unexpected change

When asked the open ended question of "unexpected changes that turned out to be quite positive?"

Coded results after content analysis that stood out were, "relocating including on campus/share housing" identified by 32.75%, a factor reported across all groups not just university students with the need to relocate from regional high school. "Unexpected enjoyment of course" was prominent with 15.52% response. "Changing course or course provider" was identified by 12.07% of respondents.

Unexpected changes that seemed quite negative at the time (Open ended question, responses coded after content analysis)

"Not getting intended job or course after the HSC" was reported by 12.07% of all respondents identified and these responses came from all occupational groups not just university aspirants. "The course structure/course" gained 10% response. "Relocating/ finding accommodation/ homesick/ living on campus/ share accommodation" was reported by 29.31% of participants was reported across the range of participant occupations, not just respondents relocating to study at university.

Unexpected changes that still seem quite negative (Open ended question, responses coded after content analysis)

The leading coded response after content analysis was "not much/no unexpected negative changes to report" 70.69%. The other most frequent responses were "Lack of employment/hours/money from working" 10.34% and "Relocating/finding accommodation/homesick/living on campus/share" identified by 6.90% of respondents.

What assisted you to make progress from unexpected change to your intended pathway (*Open* ended questions with responses coded after content analysis)

"Parental support/mum/dad/both" remained by far the most significant responses to the question of "who/ what assisted you to make progress from unexpected change" as reported by 48.28% of respondents. The next most significant score was "self" with 8.62%. "Friends from school or university" was reported by 12.07%. The respondent's "work place/employer or agencies" were identified by 5.17%.

Preparing for unexpected change

Who/what assists individuals prepare for unexpected change? (Five item scale)

Did seeing the way change was managed by their parents, family members or friends assist respondents to manage unexpected change?

"Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change" was reported as 36.21% "agree" and 10.34% "strongly agree" for 46.55% combined total. "Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change." (*Five item scale*)

"Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change" recorded results of 32.76% "agree" and 1.72% "strongly agree" for a combined 34.48%.

"The range of career and training options shown to us at school assisted me in managing unexpected change." (*Five item scale*)

The combined "agree" (43.10%) and "strongly agree" response (8.62%) from Study One was 51.72%.

"School prepared me to expect the possibility of changes to my occupational/future plans" (*Five item scale*)

The combined "agree" (56.90%) and "strongly agree" (5.17%), total was 62.07%.

"School prepared me to believe that my career plans would go exactly to plan". (*Five item scale*)

In Study One 63.79% "disagreed" and a further 3.45% "strongly disagreed" for a combined total of 67.24%. The "agree" response in Study One was 15.52%.

"Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans" (*Five item scale*)

"Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans" recorded responses of 32.76% "agree" and a further 6.90% "strongly agreed". The "disagree" responses for Study One were "18.97%".

"What should schools do to assist in preparing students for unexpected change to career plans?" (*Open ended responses coded after content analysis*)

In Study One the highest scoring responses once coded came under the response of "not sure or not sure how you would teach this" with 20.69%. A response in the top three reported in Study One, that "it is okay to change/change is normal/change can be good". "Things I wish I knew when I was in school in relation to managing unexpected change and career plans," (*Open responses coded after content analysis*)

The highest scoring coded response was "unsure" from 32.76% of respondents in Study One.

Conclusions of Study One

The aim of Study One was "to establish whether unexpected change is a perceived experience of high school students in their career transition". This investigation was carried out through an interview study of the former students of the same graduating class of a comprehensive coeducational high school in regional New South Wales. Fifty Eight students participated in the study. This figure represented 87.88% of the entire graduating class. Participants were from the full range of the school's demographics, academic achievement and career aspirations.

The hypothesis was "that chance will have played an influential role in the career pathway of most school leavers".

The findings were consistent with the hypothesis as 72.41% of respondents reported an overall level of unexpected change from what they had planned in Year 12 as "significant", "large" or "major".

Aside from the overall level of unexpected change, 48.28% of respondents reported they had experienced unexpected change from what they had planned in Year 12. Of those who were not in full time study, 55.55% reported an unexpected change of full time employer. Of those in the category of working, 73.33% reported an unexpected change of employer. Respondents with an unexpected change of university course or major represented 56.66% of those commencing or gaining entry to university courses. Fifty per cent of respondents reported that they have had an unexpected change of career interest.

These results are also resonate with the results of studies by Hart, Rayner and Christensen (1971); Baumgardner (1976); Salomone and Slaney (1981); Scott and Hatalla (1990) Betsworth and Hansen (1996); Bright, Pryor and Harpham (2005) and Hirschi (2010) which reported the influence of chance events on career paths on at least two thirds of participants.

Given that very few of these previous studies were based on high school students, further study is needed to test the generalisability of the results found in Study One through replication.

Study Two will investigate the generalisability of the results of Study One by replication.

CHAPTER SIX STUDY TWO

Surveying the perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school careers

A study on the graduating class of a comprehensive, coeducational high school in regional New South Wales, 18 months after completing Year 12.

Introduction and Rationale

While Study One found 72.41% of respondents reported an overall level of unexpected change from what they had planned in Year 12 as "significant", "large" or "major". Very few studies exist on the influence of unexpected change on the career path of high school students to post school destinations (Hirschi, 2010). Study Two will investigate the generalisability of the results of Study One by replication.

Study Two was run with the Higher School Certificate graduating class from the following calendar year at the same school as the participants in Study One.

The rationale behind studying a second graduating class was to further test the hypothesis that "change and unplanned events play a significant role in the careers of secondary school to post-secondary pathways". Study Two will examine whether the results observed in Study One will be replicated in Study Two. Comparing the results of the two studies may better inform career education practice in this particular school and others.

Participants

The participants were the recent ex-students of the same coeducational Year 7 to 12 Comprehensive High School of 750 students in New South Wales as featured in Study One. All participants were graduates of the same Higher School Certificate class, the difference being that this was the graduating class from the year after Study One, the class of 2011. All participants were interviewed approximately eighteen months after their Higher School Certificate exams. In Study One 58 former students of the same graduating class participated which represented 87.88% of the entire class of 2010. Fifty one former students from a graduating class of sixty two participated in Study Two. This represented 82.26% of the entire graduating class of 2011.

As in Study One, the participants in Study Two represented the full range of the school's demographics, academic achievement and career aspirations.

For Study Two, twenty six of the participants were males and twenty five were female and most participants were nineteen years of age. Thirty six participants completed a pattern of study that made them eligible for university admission via the Australian Tertiary Admissions Rank (ATAR).

Method

This study was run by the school's careers teacher who is the author of this thesis. Participation was voluntary, there were no additional incentives, bonus assessment marks, gifts or implied indirect benefits to participants. As the interviews in this study were run eighteen months after the Higher School Certificate exams, there could be no implied benefit to students' school results, university entry or any coerced participation. The school, as is the practice in many high schools in New South Wales, had established a pattern of collecting data on the career and transition plans of Year 12 students. All Year 12 students complete their final state wide school exams in November and it is common for schools to contact students in March the following year to complete a destination survey. This data is usually gathered and made available in the state high school's annual school reports as a percentage breakdown representing the number of students at university, vocational education, apprenticeships and traineeships, employment or seeking employment.

It should be noted that none of the participants had covered any class or individual work with particular focus on Change or the Chaos Theory of Careers at any stage of their school career education lessons or in the school's individual career counselling. Participants were not aware of the interviewer's interest or work in Chaos Theory and Careers. Other possible limitations of this approach will be discussed later in this thesis.

The former students were contacted by phone. They were informed of the aims of the study and approval was sought to contact them for an interview at a time convenient for both the student and the careers teacher. The interviews, the use of these in PhD studies by the careers teacher and the amount of time the phone interview would take were also explained. In the interim, the participants were forwarded a copy of the university ethics department information letter and consent forms. Students were then contacted by phone at the agreed time and a phone interview that was conducted. That phone interview usually ran up to 20 to 25 minutes, with the interviewer noting the responses on pen and paper versions of the interview questions followed.

The interview notes were typed out by the researcher and posted with a pre-paid return envelope to the participants who were invited to add or correct any details. Participants were also provided with another copy of the university ethics information and participant consent letter included with the transcribed interview. Participants were asked to confirm or amend the interview transcript and sign it if it was an accurate representation of their responses and return it with the consent form to the researcher in the pre-paid envelope.

Any amendments were made to the returned interviews and the data having been confirmed by the participants was then typed into an excel spread sheet, including the responses to open ended questions for further content analysis.

Materials

There were thirty questions in the survey, with the scope and sequence represented in Figure 5-1.

The eight sections of the interview can be summarised as: Section One-Background Information Section Two-Comparison with planned post school pathway Section Three -Any Unexpected change? Section Four-Sources of unexpected change? Section Six- Positive or negative unexpected change? Section Seven-School and unexpected Change? Section Eight- Perceived overall level of unexpected change?

RESULTS STUDY TWO

As the aim of this study is to investigate the "generalizability" of results observed in Study One through replication, the results for Study Two are presented with some reference to the results from Study One for comparison.

Section One, Participant Background Information

The first section of the interviews question with former students gathered background information and can be summarised as:

- Year finished school?
- Current occupation?
- Current post code?
- Occupation(s) since school?
- School pattern of study?
- Relocated since school?
- First in family to complete HSC?
- Highest level of training within family?

Results: Study Two, Section One: Participant Background Information Occupation at Eighteen Months Post School

Respondents were asked their current full time occupation so that this information could be compared to the career pathway the respondents had planned to undertake when in their final year of school. The responses also provided occupational groupings in which to place participants so data on unexpected change could be compared, for example whether one group from a similar career path post school, such as "university students" or "workers", were

more likely to report experiencing particular aspects of unexpected change compared to another.

The interview question asked respondents what they would describe as their "current full time occupation"? These interviews occurred at eighteen months post completion of high school (Year 12). The occupations reported can be grouped together as either: "working", "university students", "university post deferring", "traineeships", "apprenticeships", "TAFE/RTO" and "seeking employment".

"Working" referring to those in paid employment, was reported as the occupational category at eighteen months post school for 39.22% of participants. "University students", referring to full time university students, (33.33%), "university post deferring", referring to students who deferred university for one year, then commenced university the following year, (3.92%). Those in "traineeships", a contract for employment and training where approximately twenty per cent or one day per week is training in a nationally recognised vocational course such as retail or office administration that usually lasts twelve months represented 1.96% of respondents. Those in "apprenticeships", usually a four year contract for work and training in which the first three years usually involves approximately one day per week or the equivalent in vocational training with an outside provider/college and the remaining days working and learning one's trade with the employer involved 9.80% of all respondents. Studying at TAFE (Technical and Further Education Colleges which are the government run vocational colleges) or similar Registered Training Organisations (RTO), often private vocational colleges as opposed to TAFE was the reported occupation for 7.84% of respondents and 3.92% of respondents fell under the category of "seeking employment".

Comparison of the post school destination of participants in Study Two with state wide data.

The closest available state wide data to the calendar year these respondents completed high school is from the Australian Council for Educational Research (Marks, Underwood and Brown, 2011). The state wide data, as shown in Table 6-1, was gathered from students completing school in 2009 and reported the post school destinations as 48% as attending university, 24%

in vocational training which included TAFE apprenticeships and traineeships and 30% who were not in education or training (with 73% of these in employment). This data was similar to the post high school destination data for the participants in this study. To this extent, the participants are representative of state wide data in that on other career information, namely occupational destination post school, they are very similar to state wide data.

Table 6-1: Occupation	n of Participants of study	1 and 2 at 18 months po	st School compared to					
ACER Data								
Destination	ACER NSW DATA	Study One	Study Two					
	20011 report							
University	48%	47%	37%					
Vocational Training	24%	27%	20%					
Neither	8%		4%					
Employment	22%	28%	39%					
Source of State wide data- Career Moves Expectations and Destinations of New South Wales Secondary								
Students, Australian Council for Educational Research (2011)								

Results: Study Two: Section Eight

Perceived overall level of unexpected change reported at 18 months post school

In the last question of the interview, respondents were asked, "Overall on the following scale of one to five, considering work/study and possible influential factors like family, finances, accommodation, health and lifestyle, I would rate the levels of unexpected change from what I had planned in Year 12 as: "1. Insignificant, 2. Minor, 3. Significant, 4. Large or 5. Major". In response to this, 82.35% of respondents reported a level of unexpected change from what they had planned in Year 12 as either "significant", "large" or "major" compared to 72.41% from Study One.

In this study, the breakdown of responses for each reported level of change, as shown in Table 6-2, were "insignificant" 3.92% of respondents, "minor" 11.76%, "significant" change 41.18%,

"large" 27.45% and "major" 15.69%. As shown in Table 6-2, compared to the previous study on the graduating class from the year prior to this one, there was an 11.9% increase in those reporting an overall "minor" level of change compared to "what they had planned in their final year of school" and a 3.62% increase in those reporting "major" change, the highest of the five items on a Likert scale.

Overall level change from pathway planned in school										
Study	Almost Nil		Minor		Significant		Large		Major	
	Total		Total		Total		Total		Total	
Study Two	2	3.92%	6	11.76%	21	41.18%	14	27.45%	8	15.69%
Study One	5	8.62%	11	18.97%	17	29.31%	18	31.03%	7	12.07%

Table 6-2: Study Two, Overall level change from pathway planned in school

Overall levels of unexpected change as reported by occupational group at 18 months post school

In Study One, 87.50% of those in the "working" category of occupation at eighteen months post school reported levels of change as "significant", "large" or "major" and this was consistent with Study Two in which the combined figure was 90%. For those in the full time "university" category, 82.35% reported "significant" or higher levels of unexpected change compared to 63.64% in Study One. In Study Two, as shown in Table 6-3, there were only two students who had deferred university to work for twelve months before commencing university studies as compared to five in the previous study and both reported "significant" overall levels of unexpected change. Similarly, there was only one respondent in a "traineeship" in this study compared to five in the previous study and this participant reported "significant" change. There were five "apprentices" in this study, which was the same number as in the previous study and from this group, two reported "significant" unexpected change and one "large" which was again similar to the previous study, with two of these reporting "significant" and one "large" overall levels of unexpected change from what they had planned. There were no respondents in the category of "seeking employment" in Study One and there were two in this group for this

study with one reporting "significant" and the other "large" overall levels of change. Tables showing the responses by occupation at eighteen months for each response "insignificant", "Minor", "Significant", "Large" and Major" can be seen in Appendix E1, 2, 3, 4 and 5. Table 6-3: Study Two, Overall level of change reported by occupation group

Overall level of change reported by occupation group											
Occupation		Aln	Almost Nil Minor		Significant		Large		Major		
-	Total										
Working	20	1	5%	1	5%	7	35%	6	30%	5	25%
Uni FT	17			3	17.65%	6	35.29%	5	29.41%	3	17.65%
Deferrers	2					2	100%				
Traineeship	1					1	100%				
Apprenticesh	nip 5	1	20%	1	20%	2	40%	1	20%		
Tafe/RTO	4			1	25%	2	50%	1	25%		
Seeking emp	oloy 2					1	50%	1	50%		
Totals	51	2	3.92%	6	11.76%	21	41.18%	14	27.45%	8	15.69%
Current Occupation: working =employment, Uni FT=university full time, deferers=resumed university study after 12 months											
deferment, traineeships=12 month contract of work and training which usually includes the equivalent of one day per week in											
vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training,											
TAFE/RTO= v	TAFE/RTO= vocational trade and training colleges, seeking employ=seeking employment										

Results Study Two, Section Two Comparison to Intended Career Pathway

The second section of Study Two, interviewing former students from the same graduating class can be summarised as:

- Intended pathway in school?
- Is this what you are doing now?
- First choice employer/training provider?
- First choice occupation/course?

• Unexpected change from what you had planned?

Results: Study Two, Section Two- Comparison with intended pathway in school

Intended career pathway in the final term of school?

Is this what you are doing now?

In this study, 72.55% of respondents reported they were not currently in the occupation they had planned in their final year of school compared to 48.28% from the Study One.

Of those who planned to gain apprenticeships, which was 17.65% of total participants, 22% reported being in their intended occupation. From those participants who had planned to go to university, 21.74% of this group reported studying at university as they had planned. Of those who did not enter the university course they had planned, 35% were still able to gain university access studying an alternative university course or studying at a different institution they had intended. None of the seven respondents who had planned to study at TAFE/RTO were doing so eighteen months post school. Three of the seven who had planned to study at TAFE were studying at university, two of these having completed twelve months of TAFE study after graduating from high school and four respondents were working. Of those who planned to be working after completing school, 28.57% reported they were employed in the occupation they had planned to be in school.

Only one respondent had planned to gain a traineeship after completing high school and this respondent did complete a traineeship. As these interviews were held at eighteen months post school, the respondent in this case had completed the 12 month contract for this traineeship and reported their current occupation as "working" at the time of interview.

Three respondents had mentioned two options as their intended pathway post school. Two of these had been "either university or TAFE" and neither respondent reported a direct pathway in to their current occupation, one entering "TAFE" after working in paid employment for twelve

months and the other "working". The other respondent who mentioned two planned pathway options when in school as "either university or an apprenticeship" was not in either and was "working" when interviewed at eighteen months post school.

Results: Study Two, Section Two- Comparison with intended pathway in school

Were you able to gain entry to your first choice occupation/training/course?

Did you gain entry to your first choice occupation or training provider?

These interview questions looked to explore which aspects of secondary students' plans go to plan or change.

On the questions of "Were you able to gain entry to your first choice occupation/training provider?" 43.14% of all participants responded "No" compared to 27.59% for the previous study. On the question of gaining "entry to your first choice occupation or training provider?", 45.10% of all participants responded "No" compared to 33.33% from the previous study.

Of the five respondents who reported not gaining entry to their intended university, four were studying at "university" at the eighteen months post school and one was "working". Of the five respondents who planned to be working but did not gain access to their first choice employer, all five were "working" (100%). Of the two respondents in Study Two that had planned to defer university to work for twelve months, one was at "university" and the other in a "traineeship" (50%). Of the two respondents that did not gain apprenticeships with their first choice employer, both were in "apprenticeships". Of the three who did not gain entry to their intended TAFE/RTO provider, two were studying different courses to those in their original plans at "TAFE" and the other respondent was "working". Of the two respondents that had intended to gain traineeships, one in mining the other as a golf professional, one was in a traineeship in quite a different field at eighteen months post school, McDonalds and the other was "working".

Study One: Section Three Unexpected Change to planned pathway

The third section of Study Two asks respondents about unexpected change to their intended pathway and the questions can be summarised as:

- Any unexpected change to planned pathway? Yes/No
- Changed university? Yes/No? N/A
- Changed course or major? Yes/No/N/A
- Changed employer? Yes/No/N/A
- Changed type of job? Yes No/N/A
- Changed job with same employer ?Yes/No/ N/A
- Changed type of job or career path? Yes/No
- Changed career interest (open ended)

Results: Study One, Section Three- Unexpected Change to planned pathway Did you experience any unexpected change from what you had intended or planned in Year Twelve?

Having asked respondents about their planned occupational pathway from school compared to their occupation eighteen months post school, respondents were asked if they had experienced "any unexpected from the pathway they planned in Year 12?" The question brings into focus the concept of "unexpected change" and relies on what the respondent perceives as "unexpected change".

In this study 86.27% of respondents reported they had experienced "unexpected change" from what they had planned in Year 12 compared to 66.67% in Study One.

The breakdown of those who said they had experienced unexpected change from what they had planned in Year 12 by occupation at 18 months represented 60% of the five "apprentices" with comments such as negative initial experiences, "yes, I had to start as casual in pizza, then local racecourse now a move to the ACT" and positive late changes of career direction "yes, not going to uni when as late in term 3 I still intended to (go to university)". As could be

expected, both of those "seeking employment" reported negative unexpected change, "yes, I did not gain an apprenticeship, but I did TAFE, now it has finished and I am seeking employment" and "yes, not gaining uni entry, then working as waitress, I did an office traineeship in Sydney, now I have moved to Brisbane and no job".

Those who said they had experienced unexpected change from what they had planned in Year 12 by occupation at 18 months included fourteen of seventeen "university students", representing both of the respondents who were studying at "university post deferment". Most of the comments on unexpected change experienced by those at university related to not gaining entry into their intended university or course or changing course, *"yes, I did not gain QUT entry but did gain university", "yes, I am going to uni in Wagga 10 hours away" "yes, Newcastle University instead of UTS, but it is good", "yes, I transferred from CSU Bathurst to Dubbo", "yes, started psych switched to social science after one year", "yes, childcare course to pharmacy assistant to uni bridging to uni", "yes, changed degrees twice from plan, I did one year of Geology now Construction Management".*

Of those in the "working" category 18 out of the 20, (90%) reported an "unexpected change" from what they had "planned or intended as their career pathway in school". A number of comments support the previously raised concept that those intending to go from "school to work" often experience high levels of unexpected change, "yes, took almost 6 months to get hardware job, then 6 months later this", "yes, did office admin 12 months then switched to childcare", "yes, it took almost year to gain job, 1 like the job."

All four of those studying at "TAFE/RTOs" reported experiencing "unexpected change" from what they had planned or intended as their career pathway in school as did the one respondent in a "traineeship". For two of the four students at TAFE not getting into university based on their school results was reported as their unexpected change, for another it was deferring university after 12 months in to the degree.

Results: Study Two, Section Three- Unexpected Change to planned pathway *Changing university* In the previous study, five respondents indicated they had changed university representing 15.79% of those who intended to go to university, in Study Two there were three respondents and this represented 13.64% of those who intended to go to university.

Results: Study Two, Section Three- Unexpected Change to planned pathway *Changed university course or major*

Respondents were asked if they had "changed university course or major?"

Of the respondents who accepted an offer for university study 28.57% reported "changing university course or major".

Results: Study Two, Section Three- Unexpected Change to planned pathway *Changed full time employer*

Having explored the question of change with "university students", equivalent aspects of change were explored for respondents in occupation categories at eighteen months post school that largely involved paid employment. This included those in the occupational category at eighteen months post school of "working", "traineeships" and "apprenticeships". "Apprenticeships" and "traineeships" were included as these involve contract for employment and training where 80% of the time spent in the work place.

Fifty per cent of all respondents not involved in full time study reported an "unexpected change of full time employer" compared to 55.55% in Study One. In Study Two 70% of those the "working" category of occupation at eighteen months post school reported an "unexpected change of employer" which was consistent with the figures from Study One in which 68.75% changed employer.

Results: Study Two, Section Three- Unexpected Change to planned pathway *Changing job with the same employer* One respondent out of all fifty one participants in Study Two reported "changing job" with the same employer representing 1.96% of all respondents and 3.57% of those not involved in full time study. Changing job with the same employer was reported by 10.34% of all participants in Study One and 22.22% of those not in full time studies.

Results: Study Two, Section Three- Unexpected Change to planned pathway *Changed type of job or career path*

The question of unexpected "change of job or career path" gained a range of responses across the groups of participants. Thirty respondents, 58.82% of all respondents in Study Two reported they had "changed job or career path". This represented 47.06% of those who described their full time occupation at eighteen months as "university students", 100% of the two "university students post deferment", three of the four "TAFE/RTO" students, 60% of "workers", two of the five "apprentices", both of the two respondents "seeking employment" and one respondent in a "traineeship". As a comparison, "Changed job or career path" was reported by 48.27% of all respondents in Study One.

Results: Study One, Section Three- Unexpected Change to planned pathway *Changed career interest*

Responses to the question of "change of career interest" may reflect unexpected change of career interest in the eighteen months post school, which has or has not yet been acted upon. In Study Two, 66.67% of respondents reported they had "changed career interest" compared to 50% in Study One. The breakdown across the occupational groups at eighteen months was consistent with those in Study One representing 64.71% of "university students", 65% of "workers" and across the smaller groups, both of the "university post deferment", three out of the four "TAFE/RTO" students, both of the two respondents "seeking employment" and two out of the five "apprentices".

Factors influencing change of interest

Respondents were asked if there were factors influencing their change of career interest and their comments were noted. After content analysis with an inter-rater reliability of 94.12% and the results are displayed in Table 6-4.

Table 6-4: Study Two, Coded Responses, "Factors influencing change of interest".

Factors influencing change of interest								
Coded responses Occupation								
	Total	Uni	Uni Df	Wrk	Apprt	Trnee	T/RTO	seekg
1. negative employment								
experience								
2. positive employment	5			1	2	1		1
experience								
3. course prac experience	5	3		2				
4. course structure/course	12	5		5			2	
content								
5. returning to a previous or	4	2		2				
past interest								
6. lack of career	7		1	5				1
path/employment								
opportunity								
7. personal health	2	1	1					
8. family health								
9. no change in career	13	5		5	2		1	
interest								
10. other	3	1			1		1	
Occupation refers to occupation at 18 months post school: wrk =working in paid employment, Uni=university full								
time, Uni df=resumed university study after 12 months deferment, trnee= traineeships, apprt=apprenticeships								
T/RTO= TAFE or Registered Training Organisation, seekg=seeking employment								

The largest scoring coded responses on factors influencing unexpected change of career interest, as shown in Table 6-4, were "the course structure/content", "positive employment experience" and "returning to a previous interest".

The "course structure/content" was reported as an "influential factor" to "unexpected change of career interest" for 23.53% of respondents in this study and 17.24% of respondents in Study One. The majority of these responses referred to university study, the remainder to RTO/TAFE courses.

A "Positive employment experience" post completing high school was reported as an "influential factor" to "unexpected change of career interest" by 9.80% of all participants in Study Two and 10.34% in Study One. This response came from a wide cross section of occupations at eighteen months post school including "workers", "apprentices", "trainees" and "TAFE/RTO" students. Positive course practicum experience was reported as an influence in change of career interest by 3.92% of participants in Study One and 9.80% in Study Two. This was reported by both "university students" and "workers" referring to previous "TAFE/RTO" course practicums.

"Returning to a past interest" was an influential factor in "change of career interest" reported by 13.79% of respondents in Study One and 7.84% in Study Two. Responses in Study Two, included a worker in the food industry who responded *"interested in change to childcare, (from) previous interest".* A university student *"considering drama to archaeology (it was a) childhood interest and I have friends studying it",* another university student *"yes, from construction management to geology back to construction management...I had interest in mining in our region but prefer construction",* and a worker who responded *"I am looking at changing to university and teaching...because of my love of sport, PE back in school".*

Study Two, Section Four, Sources of Unexpected Change

The next group of questions in the interview were designed to explore the areas or source of change that influential in unexpected change of career path. These were Yes/No response questions and any additional comment was also noted.

Results: Study Two, Section Four - Sources of Unexpected Change Unexpected change within family

In response "Unexpected change within family", 15.67% responded as "Yes". Most of the optional comments, which can be seen in full in Appendix F-8, made by respondents related to the unexpected relocation of immediate family, usually parents relocating, or the health of immediate family members who was usually a parent. This result is consistent with Study One in which the same figure, 15.52% of respondents also confirmed an "unexpected change within family".

Results: Study Two, Section Four - Sources of Unexpected Change Unexpected changes within circle of friends

"Unexpected changes within circle of friends" was reported by 31.37% of all participants in Study Two and 31.03% in Study One and the comments by each occupational group can be seen in Appendix F-10.

Results: Study Two, Section Four - Sources of Unexpected Change Unexpected change of location or intended accommodation

"Unexpected change of accommodation or location" was reported with very similar results, as reported by 37.25% of all participants in this study and by 37.93% of all participants in Study One.

Results: Study Two, Section Four - Sources of Unexpected Change Work life balance as intended or planned There were some differences from the question of whether "work life balance as intended or planned " between Study One in which 29.31% of all participants reported their work life balance was not as planned or expected compared to Study Two, 39.22%. In Study Two of the number of respondents by occupation at eighteen months post school, who identified "work life balance" not being as they had planned or expected represented 35% of "workers", two of the four "TAFE/RTO" students, 52.94% of "university students", three of the five "apprentices". One of the two respondents "seeking employment", referred to work life balance from previous employment that involved two hours of inter-city commuting.

Similar comments regarding "work life balance" not being as planned emerged from both studies in that "university" and "TAFE/RTO" students identified the time their studies or studies and part time employment take and those in employment noted the time their working hours taken out of their week.

Results: Study Two, Section Four - Sources of Unexpected Change Sport or hobby time as intended or planned

Responses to the question of whether "sport and hobby time was as intended or planned" gained very similar rates of response 32.76% from Study One reporting that sport and hobby time was not as they had intended or planned compared to 29.41% in Study Two.

Of the fifteen participants that responded sport or hobby time was not as planned, twelve also reported their work life balance was not as planned. Conversely, eight of those who reported their sport or hobby time being as planned said "no" to work life balance being as planned. This shows work life balance and sport and hobby time can be seen as two different concepts by respondents. The similar percentage of "no" responses each study, 29.41% and 33.76% shows almost one in three respondents experience a change from the recreational time they had intended or planned.

Results: Study Two, Section Four - Sources of Unexpected Change Financial resources as intended or planned The question of whether "financial resources were as planned or intended" gained almost identical responses in both studies. In Study One 51.72% reported their "financial resources" were not as intended or planned compared to 50.98% in Study Two. In another similarity between the studies, the reporting of financial resources not "being as planned or intended" included respondents who were full time students and those who were in paid employment. Level of satisfaction with occupation or course as planned or intended

Results: Study Two, Section Four - Sources of Unexpected Change Level of satisfaction with intended occupation or course

A larger percentage of respondents indicated a lower "level of satisfaction" with their intended occupation or course in Study Two, as reported by 54.90% of all participants, compared to Study One (39.66%). This represented 52.94% of "university students" in Study Two compared to 36.36% in the first study, 70% of "workers" compared to 50% in the first study. Smaller differences between the studies were that two of the four "TAFE/RTO" students compared to one of the five "TAFE/RTO" students in the first study reported lower satisfaction with their chosen course or occupation as did both the respondents seeking employment.

While they are small groups, in both Study One and Two, those respondents who were "studying at university post deferment" and those in "apprenticeships" reported higher rates of satisfaction than other occupational groups at eighteen months post school.

Study Two: Section Five, Positive or Negative Change and Sources of Support Unexpected changes that turned out to be quite positive

Respondents were asked "if there were any unexpected changes that turned out to be quite positive" and their responses were noted. These responses were coded to twelve codes with an inter-rater reliability of 95.01%.
The most reported responses to the question of "unexpected change that turned out to be quite positive", as shown in Appendix F-11, were "unexpected job openings", "relocating on campus or share housing" and "changing study provider".

"Unexpected job openings" from advertisements were reported by six respondents and from practicums by one respondent. Combining these results means "unexpected job opportunities" were reported by 13.72% of respondents as an "unexpected change that turned out to be quite positive" which was a very similar figure to Study One (13.79%).

"Relocating to on campus or share rental housing" was reported as an "unexpected change that turned out to be quite positive" by 32.76% of respondents in Study One and 25% in Study Two. "Changing employer" was reported by more participants in Study Two (11.76%) compared to 3.45% in Study One. "Changing course or study provider" was reported by 12.07% of all participants in Study One and 11.76% of those in Study Two. "Unexpected enjoyment of intended job" was also higher in Study Two as reported by 11.76% of all respondents compared to 1.72% in Study One. "Unexpected enjoyment of intended course" was higher in Study One, 15.52% compared to 5.88% in Study Two. "New friendships" was reported at a higher rate in Study Two (9.80%) compared to 1.72% in Study One.

Results: Study Two: Section Five, Positive or Negative Change and Sources of Support Unexpected changes that seemed quite negative at the time

The responses to the question of "unexpected changes that seem quite negatived at the time" were coded to ten codes, as shown in Appendix F-12, with an inter-rater reliability of 97.03%

The most frequent responses for "changes that seemed quite negative at the time" once coded from Study Two were "not getting intended job or course after HSC" as reported by 23.53% of respondents, "the course structure/course" (19.61%) and "relocating/ finding accommodation/ homesick/ living on campus/ share"(17.65%).

As a comparison of reported "changes that seemed quite negative at the time", "relocating/ finding accommodation/ homesick/ living on campus/ share" was reported by 17.65% of all respondents in Study Two and 29.31% in Study One. The response of "not much/no unexpected negative changes to report" was reported by 21.57% of all participants in Study One compared to 9.80% in Study Two, and "not getting intended job or course after HSC" was reported by 12.07% in Study One and 23.53% in Study Two.

Results: Study Two: Section Five, Positive or Negative Change and Sources of Support Unexpected changes that still seem negative

On the question of "Unexpected changes that still seem quite negative" the responses Study One and Two were similar.

Using the same codes as the previous question and with an inter-rater reliability of 95.13%, the leading response on "unexpected changes that still seem quite negative" was "not much/no unexpected negative changes to report" as reported by 58.82% of all participants 70.69% in Study One. As shown in Appendix F-13, the next most frequently reported codes were, "lack of employment/hours/money from working" as reported by 7.84% of respondents in Study Two and 10.34% in Study One. "Relocating/ finding accommodation/ homesick/ living on campus/ share accommodation" was identified in Study One by 6.90% of participants and 5.88% in Study Two.

Results: Study Two: Section Five, Positive or Negative Change and Sources of Support What assisted you to make progress from unexpected change to your intended pathway?

"Parental support/mum/dad/both" remained by far the most significant responses to "what assisted you to make progress from unexpected change" as reported by 58.82% of all respondents in Study Two and 48.28% in Study One. The next most reported response was "self" reported by 13.73% of respondents in Study Two and 8.62% in Study One. "Friends from school or university" was reported much less in Study Two 1.96% compared to 12.07% in

Study One. The respondent's "work place/employer or agencies" were identified by 7.84% of respondents in Study Two and 5.17% in Study One.

Study Two: Section Six, Preparation to manage unexpected change Sources of preparation in managing unexpected change (Likert Scales)

- Seeing parents or family members manage change
- Seeing other students manage unexpected change
- Options shown at school assisted me to manage change
- School prepared me to expect change
- School prepared me to believe things would go to plan
- School gave me skills, strategies to cope with change
- Schools need to do more to prepare students for change

This section used a five item scale from 1 - "strongly agree", 2 - "disagree", 3 - "neither agree nor disagree", 4 - "agree" and 5 - "strongly disagree".

Results: Study Two, Section Six, Preparation to manage unexpected change Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change

The first of seven Likert scale questions was "seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change". This question was designed to try investigate whether respondents who had witnessed role models within their own family manage unexpected change to their career path reported this as assisting themselves in managing such change.

The response to the statement of "Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change" was 41.18% "agree" and 5.88% "strongly agreeing" for 47.06% combined in Study Two compared to 36.21% and 10.34% for 46.55% combined in Study One. Responses by each occupational group are included in Appendix F-14.

Results: Study Two, Section Six, Preparation to manage unexpected change Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change

In Study One 32.76% of respondents "agreed" and 1.72% "strongly agreed" for a combined 34.48% that "Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change." In Study Two, 39.22% responded as "agree" and 3.92% "strongly agree" for a combined 43.14%. Responses by each occupational group are included in Appendix F-15.

Results: Study Two, Section Six, Preparation to manage unexpected change The range of career and training options shown to us at school assisted me in managing unexpected change

Responses to the question of "The range of career and training options shown to us at school assisted me in managing unexpected change" were "agree" 43.10% and "strongly agree" 8.62% from Study One for a combined 51.72%. In Study Two the "agree" (47.06%) and the "strongly agree" (1.96%) when combined were 49.02%. The responses from each occupational group are included in Appendix F-16.

Results: Study Two, Section Six, Preparation to manage unexpected change School prepared me to expect the possibility of changes to my occupational/future plans

Responses to the statement that "School prepared me to expect the possibility of changes to my occupational/future plans" were quite similar between Study One and Two. Responses for Study Two by occupational grouping can be seen in Appendix-17. The combined "agree" (56.90%) and "strongly agree" (5.17%), total for Study One was 62.07% compared to Study Two in which it was 62.75%.

Results: Study Two, Section Six, Preparation to manage unexpected change School prepared me to believe that my career plans would go exactly to plan Most respondents disagreed that "School prepared me to believe that my career plans would go exactly to plan". In Study One, 63.79% "disagreed" and a further 3.49% "strongly disagreed" for a combined total of 67.28% while in Study Two 45.10% "disagreed". The "agree" response in Study One was 15.52% and in Study Two it was 27.45%. The responses by occupational grouping at eighteen months post school can be seen in Appendix F-19.

Results: Study Two, Section Six, Preparation to manage unexpected change School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path

The rate for "agree" responses to the statement that "School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path" differed between Study One and Study Two however, the rate of disagreement was very similar. In Study One 37.93% "agreed" and "3.45%" strongly agreed compared to Study Two in which 58.82% "agreed", there were no strongly agree responses. The rate of "disagree" responses in Study One were 26% with no "strongly disagree" responses which is similar to Study Two where there was a 25.86% "disagree" response and a 1.72% "strongly disagree" response. The response Study Two where there was a grouping for Study Two can be seen in Appendix F-20.

Results: Study Two, Section Six, Preparation to manage unexpected change Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans

Responses to the statement "Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans", differed between Study One and Two in terms of "agree" and "strongly agree" responses however, they were very similar in the percentage of "disagree" responses. In Study One 32.76% "agreed" and a further 6.90% "strongly agreed" compared to Study Two in which 52.94% "agreed" and 11.76% "strongly agreed". The "disagree" responses for Study One were 18.96% and in Study Two they were

19.61%. The responses by occupational grouping for Study Two can be seen in Appendix F-18.

Study Two: Section Seven- Respondents' suggestions for career education

Section Seven of study two asks two open ended questions which can be summarised as:

- To prepare students for unexpected change what should schools do or teach?
- Things I wish I knew in school in relation to managing unexpected change.

Results: Study Two: Section Seven- Respondents' suggestions for career education What should schools do "to assist in preparing students for unexpected change" in their career path?

The open ended questions of what should schools do to "assist in preparing students for unexpected change to career plans?" was asked and content analysis carried out with 22 responses emerging. After inter-rater coding these responses returned an inter-rater reliability of 96.23%. The most frequent responses once coded, as shown in Appendix F-21, were "banking/money/finances/loans", more options/various pathways/other pathways to uni/ways to change" and it is "okay to change/change normal/change can be good."

"Banking/money/finances/loans" was reported by 15.69% of all respondents in this study and 3.44% in Study One. "More options/various pathways/other pathways to uni/ways to change" was reported by 15.69% of respondents in this study and 1.90% in Study One. It is "okay to change/change normal/change can be good" was reported by 13.73% of respondents in this study and 5.17% in Study One.

The most frequent responses in Study One were "not sure/unsure" from 20.69% of participants and another 18.97% of participants responded that they were "not sure how this could be taught" as unexpected change in career path varied by individual. Information from "real life examples" such as former students was identified by 15.52% of all respondents, more than half of these (six) were university students. The next largest scores were from 5.17% of

respondents who commented "that it is okay to change" and 5.17% who responded "look beyond ATAR/uni/and apprenticeships". The responses that "It is okay to change/change is normal/change can be good" were not from any single group. These responses came from one "university student", one "worker" and one "apprentice".

Results: Study Two: Section Seven- Respondents' suggestions for career education Things I wish I knew when I was in school in relation to managing unexpected change and career plans

The responses to the question of "Things I wish I knew when I was in school in relation to managing unexpected change and career plans", after content analysis were coded with an inter-rater reliability of 98.04%. In Study One, 78% of respondents gave a different response to the previous question of what schools should do to "assist in preparing students for unexpected change to career plans". Fifty one per cent gave a different response to the previous question in Study Two.

On the question of "Things I wish I knew when I was in school in relation to managing unexpected change and career plans" the response of "unsure" was reported by 21.57% in this study and by 32.76% in Study One. Cost related categories remained prominent in both studies. The combined the response of "costs", "moving out of home/rental property", and "banking/money/finances" was identified by 23.53% of all respondents compared to a 25% in Study One. Once again these "costs", "banking" and "relocating", as shown in Appendix F-22, are themes that are reported by those in employment as well as those who are full time students. In Study Two, 17.65% of respondents replied that "it is okay to change/change is normal/change can be good", compared to 8.62% in Study One.

Discussion and recommendations for further study- Study Two

Responses identifying "major" change

The results of both Study One and Study Two show respondents in the occupational category at eighteen months post school of "working" reported the highest levels "major" of overall change. It reinforces the point that despite "school to work" and "transition planning" being a feature for schools in New South Wales, those students who had planned to go from school to work, where "work" means paid employment, have experienced the most unexpected change in their post school pathways.

Discussion -Were you able to gain entry to your first choice occupation/training/course?

Did you gain entry to your first choice occupation or training provider?

These responses show that on average over these two graduating classes, two out of every five students may not gain entry into their intended occupation or course or their first choice employer or training provider. This has implications for further study and for career education practice. Further study is recommended to test whether these results which show two out of every five students report not gaining entry into their intended post school employment or training provider is applicable to the broader population by examining a wider range of high schools. If the results found in these two studies are representative of the experience of the broader population of high school students. It also highlights the possibility that schools and career education need to explore ways to better prepare students to be open to unexpected change or make the most of such possibility as suggested by Chen (2005).

Discussion - first choice employment or training provider

In Study Two 45.1% of respondents reported that they did not gain entry in to their first choice employment or training provider. Those that did not gain entry into their intended university or apprenticeship pathways were less likely to be in those fields at eighteen months. Of the

thirteen respondents who did not get in to their first choice university only four were in university at the time of interview (30.77%). Of the four respondents planning on apprenticeships who did not gain an apprenticeship post school, only one was in an apprenticeship (25%) at eighteen months post school. Of the four respondents planning to work post school, three were working and one was in a traineeship.

These results, particularly those showing respondents who did not gain entry in to their intended university or apprenticeship are less likely to be in those fields at eighteen months post school, show that more research is needed on schools to work transition. When reviewed by occupational grouping at eighteen months post school, the numbers in this study are small, so a wider study is recommended on the career pathway of school students who do not gain entry in to their first choice of employment or training provider.

The results showed those in Study One were more likely than those in Study Two to remain in the same field as intended despite not gaining entry in to their first choice provider of course or employment. Based on the size of these samples, further study is recommended to investigate whether these results are replicated with a wider range of high schools. If these results are replicated, it raises questions for the Chaos Theory of Careers as as to whether some students were more resilient or better prepared or more open to change and why some respondents remain in their inteneded field despite unexpected setbacks when others change career path. This may be best reflected in the use of attractors in career counselling and in the case of participants remaining focused despite experiencing unexpected change, particularly reflected in the "point attractor" shown in Figure 3-1, page 45.

Change of university

Change of university was reported by more than one in every ten students intending to go to university after completing high school. This is an aspect of unexpected change worth noting beyond changing university degree as changing from one university to another often requires substantial effort. This may be particularly beneficial for regional high school students as unexpected change of university often involves substantial relocation of accommodation. Further study is recommended to test whether these results are replicated with a wider range of regional and urban high school students. If these results are confirmed, it shows school career education programs may benefit from preparing students for the possibility of not just changing course but changing university or assisting students to explore the ways to change their degree at the same university.

Have you changed course or major?

Respondents changing university course or major represented 34.62% of those commencing or gaining entry to university courses in this study and 56.66% in Study One. These figures support previous studies indicating approximately two thirds of candidates experience change in their university pathway (Baumgardner, 1976). Further study is recommended to investigate whether these results are not particular to these two study groups or particular to regional students or the economic climate of this region. The results, if found to be applicable to a wider group of high school students in their transition to university, are significant in that these two studies show almost half of the participants are likely to experience a change of university degree. Once again the implications for career education practice may be that as recommended by Chen (2005) that schools need to prepare students to be open to change or make the most of the possibility of change.

Changed full time employer, Changed job with the same employer

Fifty percent of the respondents not involved in full time study reported an "unexpected change of full time employer" compared to 55.55% in Study One. As could be expected, those most likely to report changing full time employer were those in the "working" category, while those in the "apprentice" category were more likely to remain with their apprenticeship employer given the four year contract for employment and training involved in an apprenticeship. Respondents in traineeships were likely to stay with their employer for the twelve months of their contract. Given these interviews took place at the eighteen months post school, it is difficult to comment on whether in the longer term those in apprenticeships experience less unexpected change. An average of seventy per cent of those intending to go from school to work in both studies reported a "change of employer". Further study is again recommended to see if these results are replicated with a wider range of high schools and particpants making the transition form school to employment to confirm these results are not particular to this region or particular economics of the time period and region represented.

The questions arising for career counselling and career education practice are whether those seeking to make the transition form school to employment are more likely to experience unexpected change and whether such clients can be better prepared to manage such change? This may not be particular to high school student transitioning to employment. Further study may find that this may not be particular to high school student transitioning form any form of education or training to employment may experience significant unexpected change in terms of change of employer within their first eighteen months post training. If further study found this to be the case, it would give a much broader application of the theory and for example the Chaos Theory of Careers could be applied to assist individuals of all ages in their transition from education or training to employment.

Change of career interest

Unexpected "change of career interest" was reported by 50% of respondents in Study One and 66.67% in Study Two. In both study groups an average of 14% of participants reported changing career interest but had not acted on this in terms of change of job or career path. The concepts raised in responses to this question may warrant further study. An average of 9% of participants also changed job or career path yet had reported not changing career interest, which may demonstrate a level of resilience, acceptance of change or reflect goal orientation which may or may not be beneficial. In career counselling practice, this may represent an opportunity to apply the use of attractors such as the point attractor to increase client's awareness of their previous career path and move toward the introduction of theories such as the Chaso Theory of Careers.

Factors influencing unexpected change of career interest

The "course structure/content" was reported as an "influential factor" to "unexpected change of career interest" for 23.53% of respondents in this study and 17.24% of respondents in Study One. Course content was also identified in another in open ended responses to another interview question, that of "unexpected changes that seemed negative at the time". The "course structure/course" was reported by 12.07% of respondents as an unexpected negative in Study One and by 19.61% in Study Two. The question arises as to whether high schools, universities and training providers can assist students by providing more information about course specific content and structure or whether high schools should prepare students to expect chaotic experiences with post school courses. In practice, this would mean that career education practitioners explore means to show students that studies, such as these, show their satisfaction with course structure and course content can be prone to change and that they may benefit from strategies to adjust to such change.

"Returning to a past interest" was an influential factor in "change of career interest" reported by 13.79% of respondents in Study One and 7.84% in Study Two. The influence of previous interests may warrant further study. It may be an example of lateral thinking in times of unexpected change or an example of respondents attempting to apply further a similar goal orientated approach that failed in the first instance with responses such as "more backup plans". It may also be an example of constructivist concepts and these respondents are exploring their own narrative (Savickas 2006). For career counselling practice, the point arising for discussion is whether it is beneficial to teach students to embrace or be aware of, or explore and widen their past interests in times of unexpected change? This would fit in well with a Chaos Theory of Careers (Pryor and Bright, 2003a) approach and others such as Gottfredson's (1981). "Circumscription and Compromise". It is less likely to fit in with reductionist approaches which encourage career choice be reduced to the best Trait and factor match.

Unexpected changes within circle of friends

Responses on the question of "unexpected changes within circle of friends" are also consistent with Study One. Those in employment, "workers" and "apprentices" were more likely to report "unexpected changes within their circle of friends". A number of "university" respondents acknowledged the loss of contact with former friends yet commented positively on the opportunity to make of new friendships. Despite remaining in their school community to work as an employee, apprentice or trainee, the hours of their occupation or the varied post school pathways of their former school friends mean those in employment reported as much or more "change within circle of friends" as those who relocated.

While "change within circle of friends" was reported by over 30% of respondents it was not listed by any of the respondents in Study One or Study Two as an influential factor in any "change of career interest" or "change of job or career path". The outcome for career education is that "change within circle of friends" may be worthwhile including among the likely sources of unexpected changes in the education of senior students however, it was not pivotal in change of carer interest, job or career path and many respondents made additional comment that change allowed them the opportunity to develop a new circle of friends.

Level of satisfaction with occupation or course as planned or intended

In both studies, respondents in the categories of "apprentices" and "university post deferment" reported higher rates of satisfaction with their occupation or course. As these samples represented a small number of students more study is needed to explore whether students who defer university for twelve months report less unexpected change or whether the "unexpected change" they may encounter has also been deferred. For example, if interviewed in larger numbers and in longitudinal studies would these results be replicated and if so, should high school students consider this when exploring their post school options? Similarly, the question emerges as to whether the secure nature of the commitment to a four year contract of employment and training, often close to their home accommodation, means this pathway is one of less unexpected change for high school students or is such unexpected change merely deferred until these candidates enter larger "open" systems? For career counselling and career education the discussion point is whether some high school school clients are, in a sense, deferring chaos by, for example, deferring university and whether these clients will then eventually experience a similar rate of unexpected change at a similar time in their first year of university to those who did not defer. In short, has their unexpected change merely been

postponed or deferred or have these respondents found a better way to manage the period of transition post school? Do some clients seek to create a "closed system" in the choice of their post school career path, by deferring university for example and will educating these clients in terms of an "open system" such as that advocated in The Chaos Theory of Careers (Pryor and Bright, 2003a) assist such clients?

Discussion-Study Two, Section Five: Positive and Negative unexpected change and sources of support

Unexpected changes that turned out to be quite positive

The largest source of "unexpected change that turned out to be quite positive" was "relocation and accommodation" as reported by 32.76% of respondents in Study One and 25% in Study Two. Relocation is also reported as one of the largest sources of unexpected change that "seemed negative at the time" 29.31% of all respondents in Study One and 17.65% in Study Two. This reinforces the prospect that school career education students may benefit from the inclusion of "relocation and change of accommodation" in the curriculum or in discussion about likely sources of unexpected change. Further study should be carried out to investigate whether relocation post school is identified across a wider range of schools including regional and nonregional students.

Unexpected changes that seemed negative at the time

The highest reported responses on "unexpected changes that seemed quite negative at the time" were "relocating/finding accommodation/homesick/living on campus/share" reported by 17.65% of all respondents in Study Two and 29.31% in Study One. The response of "not much/no unexpected negative changes to report" came from 21.57% of all participants in Study One compared to 9.80% in Study Two and "not getting intended job or course after HSC" 12.07% in Study One and 23.53% in Study Two.

When "employment changes/cutbacks/type of work" is combined with "lack of employment/hours or money from working" it is reported by 17.24% of respondents in Study One and 15.69% in Study Two.

These results suggest the field of career education in schools may benefit from further research on preparing senior students for the possibility of unexpected change in terms of gaining entry into their intended course or occupation and the potential for unexpected changes of that course content or workplace are reported as beneficial by students.

Unexpected changes that still seem negative

The leading response to the question of "unexpected changes that still seem negative" once coded was "not much/no unexpected negative changes to report". This was reported by 58.82% of all respondents in Study Two and 70.69% in Study One. The remaining codes were reported by a smaller percentage of respondents including "lack of employment/hours/money from working" 7.84% in Study Two and 10.34% in Study One. Relocating/finding accommodation/homesick/living on campus/share accommodation was identified in Study One by 6.90% and 5.88% in Study Two

These findings reinforce those raised for discussion in Study One, in which participants making the transition from school seem to go through a challenging period of unexpected change in their first six to ten months post school. Alternately this may reinforce locus of control concepts raised by Salomone and Slaney (1981) in that respondents may attribute themselves more control to past events over time.

Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change

The combined "agree" and "strongly agree" responses scored from Study One and Study Two for "Seeing parents or family members manage unexpected changes to their occupational

plans assisted me in managing unexpected change", were 46.55% in Study One and 47.06% in Study Two. This shows parents and family featured in responses consistently in terms of role models in managing and support for respondents in approaching unexpected change. This is further reinforced when responses to an earlier open ended question in the interview of "who/what assisted you in progressing from unexpected change" are also considered. In response to this open ended question in Study One 48.28% replied "parents". The coded response of "parental support/mum/dad/both" was reported four times more than any other response in Study Two representing 54.90% responses.

The implication for career education practice is that exploring strategies to educate parents about the Chaos Theory of Careers may be beneficial as these studies show they are most likely to be referred to by high school students when they experience unexpected change in their career transition post high school.

With combined agree and strongly agree scores of 34.48% and 43.14% "Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change." When the responses are broken down in to occupational groups at eighteen months 50% of "university" students in Study One and 64.71% in Study Two reported seeing other students manage change as assisting them. These results highlight the potential of other students, recent students and real life examples of managing unexpected change in the career education of senior high school students.

Discussion-Study Two, Section Seven: Respondents' reommendations To assist in preparing students for unexpected change to career plans schools should:

The results after coding for the open ended question of "what should schools do to assist in preparing students for unexpected change to career plans?" differed to Study One in that the highest scoring response "not sure or not sure how you would teach this" 20.70%. There were two categories that were the most frequent response in Study Two; the first was "banking/money/finance/loans", (15.68%) a response reported across a range of groups including "university", "workers", "apprentices" and "TAFE/RTO" students. The other response

that was most frequently reported in Study Two was "more options/various pathways/other pathways to uni/ways to change (5.68%). "It is okay to change/change is normal/change can be good" was reported by13.73% of respondents. This leads to the question of whether a percentage of the population grow to embrace non linearity from their experiences? Could embracing accepting or understanding non linearity in careers be similar to Super's career maturity? Or could some respondents have a predisposition to non-linearity and if so which respondents or why? Thirdly, if this information could be gained would it assist the career education or counselling practitioner to better assist clients?

Things I wish I knew when I was in school in relation to managing unexpected change and career plans

As in Study One, "unsure" was the most frequent response 21.56% in Study Two and 32.76% in Study One. In Study Two 17.65% of responses were coded as "it is okay to change/change is normal/change can be good". These results serve to reinforce the question raised in earlier discussion as to whether respondents come to embrace change dependant on their experiences such as "social learning theory" (Krumboltz 1979) or whether non linearity in careers itself has a maturity point such as Super's Career Maturity (1980).

A Summary of Results from Study One and Two

Unexpected change in the career path of secondary students to post school careers Study One and Study Two.

A summary of points emerging points when considering the results from both studies are presented as:

Participants - were the participant career paths representative of state wide data?

 in terms of career destinations post high school these participants were very similar to ACER DATA 2011 report based on 2010 data, ACER reported 48% in university compared to Study One 47% and Study Two 37%, ACER reported Vocational Training for 24% of respondents, compared to Study One 27% and Study Two 20%, ACER reporting neither as 8% and Study Two this was 4%. ACER reported employment as 22% compared to Study One in which this was 28% and Study Two 39%.

Did respondents report unexpected change?

- While there have been very few studies on high school students' responses to the question of "Overall level of change from what I had planned", when rated on a five item scale by respondents, the results were consistent with other studies.
- In Study One, 72.41% of respondents reported a level of unexpected change from what they had planned in Year 12 as "significant", "large" or "major", compared to 82.35% from Study Two.
- These figures are consistent with studies by Hart, Rayner and Christensen (1971) Baumgardner (1976) Salomone and Slaney (1981) Scott and Hatalla (1990) Betsworth and Hansen (1996) Bright, Pryor and Harpham and Hirshi (2010) which consistently reported the influence of chance events on career paths for at least two thirds of participants.

Did the participants' career paths go to plan?

- When asked "what were you planning to do late in term three of Year 12?" Followed by the question of "is this what you are doing now?" 48.28% of respondents from Study One replied "no" compared to 72.55 % from Study Two.
- Asked "Were you able to gain entry to your first choice occupation/training/course?" 32.76% responded "No" in Study One, compared to 43.14% for Study Two.
- Asked whether they had experienced "any unexpected from the pathway they planned in Year 12?" In Study One 66.67% of respondents said "yes" they had experienced unexpected change from what they had planned in Year 12 whereas in Study Two 86.27% responded "yes".
- When asked "have you changed the university you study at?" 15.79% of university students in Study One and 13.64% in the second study changed university altogether to study at a different institution to the one they had commenced study.
- In response to the question of "Have you changed course of major?" Respondents changing university course or major represented 56.66% of those commencing or gaining entry to university courses in Study One and 34.62% of those in Study Two.
- When asked "have you changed full time employer?"
 70% of those who had commenced full time employment change employer, consistent with the figures from Study One 68.75%.
- On the question of "Have you changed job with the same employer?"
 Changing job with the same employer was not a large factor in unexpected change of planned or intended career path in StudyTwo, as it was identified by 3% of participants. It was a little more so for the Study One as it was identified by 10.34%. Unexpected change of intended career path in for this age group has been more likely in terms of changing employer than changing job with the same employer.
- Thirty respondents, 48.27% of all respondents in Study One reported they had changed job or career path. In Study Two 58.82% reported changing job or career path.
- In both study groups, an average of 14% of participants reported changing career interest but had not acted on this in terms of change of job or career path at the time of interview, eighteen months after completing high school.
- Change of career interest, as opposed to changed job or career path was reported by 50% of respondents in Study One and 66.67% in Study Two.

 An average of 9% of participants also changed job or career path yet had reported not changing career interest, which may demonstrate a level of resilience, acceptance of change or reflect a degree of goal orientation.

Factors influencing change - YES/NO responses

Results were quite similar for each group of participants

- On "Unexpected change within family" in Study One 15.52% replied "Yes" and 84.48%
 "No", in Study Two 15.67% replied "Yes" and 84.31% "No".
- On "Unexpected changes within circle of friends" in Study One 31.03% replied "Yes" and 68.97% "No", in Study Two 31.37% replied "Yes" and 68.63% replied "No".
- On "Unexpected change of location or intended accommodation" in Study One 37.93% replied "Yes" and 62.07% "No" compared to Study Two 37.25% replied "Yes" and 62.75% "No".
- On "The work life balance I had intended or planned" in Study One 70.69% replied "Yes" and 29.31% "No", compared to Study Two in which 60.78% replied "Yes" and 39.22% "No".
- On "Sport or hobby time as I had intended or planned", in Study One 67.24% replied "Yes" and 32.76% "No", compared to Study Two in which 70.59% replied "Yes" and 29.41% "No".
- On "The financial resources I had intended or planned", in Study One 48.28% replied "Yes" and 51.72% "No", compared to Study Two in which 49.02% replied "Yes" and 50.98% "No".
- On "The levels of satisfaction with occupation or course" as planned or intended? In Study One 39.66% replied "No", 60.34% "Yes", compared to Study Two in which 54.90% replied "No" and 45.10% "Yes".

Positive and Negative Unexpected Change

When asked the open ended question of "unexpected changes that turned out to be quite positive?"

Coded results, after content analysis, that were most frequently reported in Study Two were, "relocating including on campus/share housing" 32.75% in Study One and 25.49% in Study Two. This was a factor reported across all groups not just university students with the need to relocate from regional high school. "Unexpected enjoyment of course" was prominent in Study One with 15.52% response. In Study Two an "unexpected job opening or advertisement" gained 12.07% of response, "unexpected enjoyment of intended job" 12.07% and "changing employer" 12.07%. "Changing course or course provider" was prominent in both Study One and Two as reported by 12.07% of all participants in Study One and 11.76% of those in Study Two.

"Unexpected changes that seemed negative at the time" (Open ended question, responses coded after content analysis)

"Not getting intended job or course after HSC" was reported by 12.07% in Study One and 24% in Study Two and this was identified across all groups not just university aspirants. The "course structure/course" gained 10.34% response in Study One and 19.61% in Study Two. "Relocating/finding accommodation/homesick/living on campus/share accommodation" was reported by 29.31% of participants in Study One and 17.65% in Study Two and was reported across the range of participant occupations, not just respondents relocating to study at university.

"Unexpected changes that still seem quite negative" (Open ended question, responses coded after content analysis)

The most frequent coded response after content analysis was "not much/no unexpected negative changes to report" 70.69% in Study One and 58.82% for Study Two. The remaining codes recording much smaller scores. "Lack of employment/hours/money from working" was reported by 10.34% of respondents in Study One and 7.84% in Study Two. "Relocating/finding accommodation/homesick/living on campus/share remained was identified in Study One by 6.90% of respondents and 5.88% in Study Two.

What assisted you to make progress from unexpected change to your intended pathway (*Open* ended questions, responses coded after content analysis).

"Parental support/mum/dad/both" remained by far the most significant responses to "what assisted you to make progress from unexpected change" with 48.28% in Study One and 58.82% of respondents in Study Two. The next most significant score was "self" with 8.62% in Study One and 13.73% in Study Two. Friends from school or university was reported by 12.07% in Study One and by fewer respondents in Study Two 1.96%. The respondent's work place/employer or agencies were identified by 5.17% in Study One and 7.84% in Study Two.

Preparing for unexpected change

Who/What assists individuals prepare for unexpected change? (Five item scale)

Did seeing the way change was managed by their parents, family members or friends assist respondents to manage unexpected change?

"Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change" was reported by a combined "agree" and "strongly agree" total of 46.55% in Study One compared to 47.6% in Study Two.

On "Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change", 32.76% in Study One responded "agree" and 1.72% "strongly agree" for a combined 34.42%. In Study Two in 39.22% of respondents replied "agree" and 3.92% "strongly agree" for a combined 43.14%.

On the statement of "The range of career and training options shown to us at school assisted me in managing unexpected change." The combined "agree" and "strongly agree" response from Study One was 51.72% compared to 49.02% in Study Two.

On "School prepared me to expect the possibility of changes to my occupational/future plans" the combined "agree" and "strongly agree" total was 62.07% for Study One and 62.75% for Study Two.

On "School prepared me to believe that my career plans would go exactly to plan" in Study One 63.70% "disagreed" and a further 3.45% "strongly disagreed" for a combined total of 67.24% while in Study Two 45.10% "disagreed". The "agree" response in Study One was 15.52% and in Study Two 27.45%.

For the statement "Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans" The "disagree" responses for Study One were 18.97% and in Study Two they were 19.61%.

Respondents' recommendations

To the open ended question of "What should schools do to assist in preparing students for unexpected change to career plans?" In Study One the highest scoring responses came under the coded response of "not sure or not sure how you would teach this" 20.69%. The highest scoring code in Study Two was "banking/money/finance/loans" (15.69%). The second highest response was in Study Two which was also in the top three responses in Study One, that "it is okay to change/change is normal/change can be good".

"Things I wish I knew when I was in school in relation to managing unexpected change and career plans," (*Open ended responses coded after content analysis*)

The highest scoring coded response was "unsure" from 32.76% in Study One and 21.57% in Study Two. In Study Two however, this tied with 17.65% of responses coded as "it is okay to change/change is normal/change can be good".

Conclusions of Study Two

The aim of Study One was "to establish whether unexpected change is a perceived experience of high school students in their career transition". The aim of Study Two was to "investigate the generalisability of the results of Study One by replication". This investigation was carried out through an interview study of the former students of the same graduating class of a comprehensive coeducational high school in regional New South Wales. The graduating class from which all of the participants in Study Two completed the New South Wales Higher School Certificate twelve months after those in Study One. In total, fifty one former students from a graduating class of sixty two participated in Study Two. This figure represented 82.26 % of the graduating class from the full range of the school's demographics, academic achievement and career aspirations.

The Hypothesis for Study Two was "that chance will have played an influential role in the career pathway of most school leavers".

The findings in this study were consistent with the hypothesis as 82.35 % of respondents reported an overall level of unexpected change from what they had planned in Year 12 as "significant", "large" or "major". This is also consistent with Study One (72.41%) and studies by Hart, Rayner and Christensen (1971); Baumgardner (1976); Salomone and Slaney (1981); Scott and Hatalla (1990); Betsworth and Hansen (1996); Bright, Pryor and Harpham and Hirshi (2010) which consistently reported the influence of chance events on career paths of at least two thirds of participants.

Aside from the overall level of unexpected change, results were similar across a large number of questions regarding the influence of unexpected change on post school career paths in Study One and Study Two. In Study One 48.27% of all respondents reported they had "changed job or career path" and this was reported by 58.82%% in Study Two. Of those who had commenced full time employment in Study One 68.75% changed employer, which was almost replicated in Study Two as reported by 70%. "Unexpected change of location or intended accommodation" was reported by 37.93% of all respondents in Study One and 37.25% in Study Two. "Financial resources not being as intended or planned" was reported by 51.72% in Study One and 50.98% in Study Two. The "level of satisfaction with occupation or course" being as planned or intended was reported with similar results 60% in Study One and 55% in Study Two.

The results for Study Two showed the generalisability of the results found in Study One were replicated.

Study One and Study Two found the perceived experience of unexpected change on high school to post high school career paths is reported as significant. Given the perceived experience of unexpected change having a significant influence on career paths in the transition from high school, Study Three aims to evaluate the comparative effectiveness of two career interventions, one that emphasizes change based upon the Chaos Theory of Careers and the other based upon traditional Trait based career interventions.

CHAPTER SEVEN

The utility of intervention

This study compares two high school career education classes from the same school, one receiving a traditional Trait and factor based lesson and the other a lesson incorporating the Chaos Theory of Careers

7.1 Introduction

The results of Study One and Two presented in Chapter Five and Chapter Six demonstrated that chance and change were commonplace in the experience of graduating high school students. Unexpected change was reported as a perceived experience in the transition from high school to post high school career paths by at least two thirds of respondents, consistent with a number of studies explored in the literature review. The question that then arises is whether schools and in particular career counselling and career education practitioners can play a role in preparing students for unexpected change in their post school career path by tailoring career interventions to explicitly emphasise these aspects of career.

Building on the work of two studies, one by Davey, Bright, Pryor and Levin (2005) and another by McKay, Bright and Pryor (2005), this study compares two groups of students, one receiving a traditional Trait and factor approach to a career lesson while the other received a lesson incorporating elements emphasised in the Chaos Theory of Careers including unexpected change in career paths.

Davey, Bright, Pryor and Levin (2005) reported a study involving 42 University students who watched a video presenting chaotic career concepts. The respondents' levels of stress, anxiety and depression as well as Career Decision Self-Efficacy were measured one week prior, immediately after and one week post the presentation. The researchers employed the Career Decision Self-Efficacy Scale – Short Form by Taylor and Betz (1996) which "measures an individual's degree of belief that he/she can successfully complete tasks necessary to making career decisions", (Betz and Taylor, 2001.p6). Other measures were taken from the Career Exploration Survey (CES) developed by Stumpf, Colarelli and Hartman (1983) and the Career Exploratory Plans or Intentions Scale (CEPI) developed by Betz and Voyten (1997).

Davey et al. concluded that "overall career decision-making self-efficacy appears to have increased post-intervention, as does Environmental Exploration" (2005 p.11), while the Career Exploratory Plans and Intention Scale (CEPI) "can be seen as high in comparison to the total maximum score possible for this scale." In terms of lasting benefits of the intervention, Davey et. al reported "the effectiveness of the intervention also continued to remain stable one week after follow-up."(2005, p.11)

McKay, Bright and Pryor (2005) conducted a randomised control counselling outcome study comparing chaos-based and trait-factor based career counselling. The study involved 60 participants who were university students split into two groups, each receiving an individual counselling session. One group received an interview involving chaotic career themes, the other a more traditional Trait and factor approach using the Occupational Search Inventory Form 3 (OSI-3; Pryor, 2001). Participants completed the Career Decision Self-Efficacy Scale (CDMSE) and the Irrational Career Related Thoughts Scale (ICRT) (Nevo, 1987). These measures were completed prior to the intervention, 90 minutes after intervention and again at thirty days.

McKay, Bright and Pryor (2005) reported that both groups reported fewer irrational thoughts immediately after counselling while at "...time three irrational thoughts continued to decline for those in the Chaos group whereas for those on the Trait and factor group they increased..." (2005, p 18) On the Career Decision Self-Efficacy Scale a control group that received no career counselling was also involved. "There were increases on each measure immediately after the counselling for the Trait Matching and Chaos group but not the Control Group...These improvements continued one month later in the Chaos group only with the exception of Goal Selection where the Trait Matching group also sustained improvement", McKay, Bright and Pryor (2005, p.20).

This study proposes to apply elements of the studies by Davey et.al (2005) and McKay et al. (2005) to investigate the utility of Chaos Theory of Careers intervention, compared to Trait and factor intervention, in the high school career education setting. The Trait and factor intervention will involve students completing an Occupational Search Index (Pryor 2010) which surveys

participants interests and skills coding these elements and matching them to suggested occupations. In contrast, reducing the range of occupations to those that match participant's skills and interests, the Chaos Theory of Careers lesson will highlight the broader possibility of occupations including the changing nature of the world and occupational pathways.

Study Three used three instruments, the Career Decision Self-Efficacy-Short Form (CDSE-SF), the Career Exploratory Plans and Intention Scale and the Career Exploration Survey. Measures were taken prior to intervention, immediately post-intervention and again at 28 days for the two different groups of students, one receiving a careers lesson based on Trait Matching the other a lesson incorporating the Chaos Theory of Careers (CTC).

Participants

Thirty three students completed Chaos Theory of Careers intervention and thirty four students completed the Trait and factor based intervention. These class groups were assigned as the same class groups as the school's scheduled career classes. Students were already assigned to these classes based on the same school timetable as the school's English classes. These groups were of similar levels of ability in terms literacy, based on both school based tesing and national external testing (NAPLAN, National Assessment Program-Literacy and Numeracy). The classes were co-educational and the average age of participants was fifteen.

Design

The study employed a mixed between subjects design with one independent variable with two conditions – Chaos-based or Traditional career intervention with repeated dependent variable measures at three levels pre, immediately post and a follow up at 28 days post intervention.

Method

In order to minimise disruption to the participants' high school and to implement an intervention that would suit most school career lessons, this study was designed to fit around career lessons at the researcher's school. The studies ran as part of the school's career education program with the timetabled classes during the scheduled career education lessons which ran

once a fortnight. This approach avoided the need to randomly allocate students as students were already allocated to class groups on a reasonably even basis in terms of literacy, yet randomly in all aspects of career education background. These classes had already been assigned by the school on the basis of similar abilities in the subject of English.

For the school involved in this study, Career education lessons were timetabled once per fortnight. To complete the studies in a way that would best fit in with the school, students would be required to complete pre testing in a scheduled career education lesson then completed the intervention and post test in the next scheduled lesson (one fortnight later). The same measures were again completed at twenty eight days.

Materials

In a scheduled 50 minute career education lesson, students were pre tested using the CDSE-SF, the CEPI and CES. The following fortnight students completed the intervention lesson with some extended time following the lesson to complete the CDSE-SF, the CEPI and CES. With the cooperation of the teachers of the lesson following the timetabled careers lesson, students were able to have 60-70 minutes on the intervention lesson, followed by a five minute break to stand and stretch, then an additional twenty five to thirty minutes to complete the CDSE-SF, CEPI and CES as a post intervention measure. This time was also designed to approximate a typical school double period. Finally, at twenty eight days post the intervention, students were then re-tested using the same instruments at the beginning of their scheduled career education lesson.

So that all students received the same learning opportunities, the class groups that received the chaos intervention completed the Trait Matching lesson later in the school year and the group that originally completed the Trait Matching lesson also received the chaos lesson later that same school year. All students received feedback on their results in each measure in their scheduled career lessons that followed the final testing.

Procedure

Both groups were surveyed using the CDSE-SR, the CEPI and the CES prior to the intervention, immediately after the intervention and again at twenty eight days. Twenty eight days was chosen as a period of time as it represented two cycles of the school's established two week timetable until the next scheduled career lesson.

Study Three involved 35 students in the Chaos Theory of Careers group and 33 in the Trait and factor group from the scheduled career education class groups for that school. Study three began in March of 2012 in Term One of Year 10.

Measures

The Career Decision Self-Efficacy Scale-Short Form

The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was developed by Betz and Taylor (1996) who originally developed a 50 item scale(1983), the CDSE "measures an individual's degree of belief that he/she can successfully complete tasks necessary to making career decisions" (Betz and Taylor, 2001.p 6). Betz and Taylor developed the shorter 25 item form by eliminating five of the ten items from each subscale. The original 25-item scale used a 10 point response continuum. This study uses a five point continuum for which the developers Betz and Taylor report "There is now evidence that the five level response continuum (No Confidence at all; Little Confidence, Moderate Confidence and Complete Confidence) provides comparably reliable assessment..."(2006, p 9). Betz and Taylor cite studies by (Paulsen, 2001; Smith, 2001) where values of coefficient alpha for the five subscales were Self Appraisal (.81,.81), Occupational Information (.82,.82), Goal Selection (.84 and .87), Planning (.84 and .82) and Problem Solving (.80 and .81). "If anything alphas were somewhat higher when the five level response continuum was used." (Betz andTaylor 2006, p.9) For evidence of test retest reliability Betz and Taylor point out that Luzzoo (1993b) "…reported a six week test-retest coefficient of .83 for the CDSE total score" (p. 9).

For this study the wording of several items on the CDSE-SF were adjusted to suit Australian high school participants, usually these changes involved the use of terms more commonly used

with American students such as "major" and "college". In question two the word "area" and "studies" were added to read "Select one major area of study from a list of potential major studies you are considering", Question 4 was changed to read "...aspect of your studies..." instead of "...chosen major...", In question 7, "...chosen education path..." was used to replace "...chosen major...", question 23 was changed to read "... about education providers like TAFE and universities..." instead of "...graduate or professional schools..." and in question 25 the word "major" was changed from the original to "courses".

Career Exploratory Plans or Intentions Scale

The Career Exploratory Plans or Intentions Scale CEPI developed by Betz and Voyten (1997) is a five item self report inventory designed to measure an individual's intention to perform career decision making behaviours. Respondents are asked if they "...intend to spend more time learning about careers than I have been", "plan to talk to a lot of people about careers", are "committed to learning more about my abilities and interests", "intend to get all the education I need for my career choice", and "plan to talk to advisers or counsellors about career opportunities for different paths of study". Responses were on a five item scale of "strongly disagree", "disagree somewhat", "neutral", "agree somewhat" and "strongly agree".

The Career Exploration Survey

The Career Exploration Survey (CES) was developed by Stumpf, Colarelli and Hartman (1983). The CES was used in the study by Davey, Bright, Pryor and Levin (2005), in which 42 University students watched a digital video presenting chaotic career concepts and measures of stress were taken one week prior, immediately after and one week post the presentation. Stumpf et al. (1983) point out that the CES allows researchers to evaluate career-development programs on a variety of criteria and "permits the researcher to choose outcome measures most appropriate" (1983, p. 219). This study used the same version of the CES as Esters and McCulloch (2008) an edition revised by Blustein (1989b) incorporating a six item subscale on "Environmental Exploration" and a five item subscale on "Self Exploration". The rationale behind selecting these subscales was in keeping with reasoning of Stumpf et al. "One can gather career information from a variety of sources, but two are major: the environment and oneself" (1983, p. 192).

The instrument (CES) asked respondents to indicate to "...what extent you have behaved in the following ways over the last three months?" over a five item continuum with 1 being "a little", 2 - "somewhat", 3 - "a moderate amount", 4 - "a substantial amount" and 5 - "a great deal". The questions on the subscale Environmental Exploration comprised of six questions: "investigated career possibilities", "went to various career orientation programs", "obtained information on specific jobs or organisations", "obtained information on the labour market and general job opportunities in my anticipated career area" and "sought information on specific areas of career interest". The five questions on "Self-Exploration" were: "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career".

Method

Intervention Lessons

The lessons presented for each group followed the same lesson plans as outlined Appendices G and H. One group receiving a career education lesson that incorporated a Chaos Theory of Careers Approach and the other group a lesson that incorporated a Trait and factor approach.

Both groups were surveyed using the CDSE-SR, the CEPI and the CES prior to the intervention, immediately after the intervention and again at twenty eight days. Twenty eight days was chosen as a period of time as it represented two cycles of the school's established two week timetable until the next scheduled career lesson.

Results

Study Three

An intervention study comparing career education lessons incorporating change to traditional lessons.

A repeated measures Analysis of Variance (ANOVA) was used with three levels of dependent variable – pre, post and follow up.

The Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) has five subscales, each with five items. The score for each are added together and the mean of the five items calculated for the score on each subscale.

Career Decision Self-Efficacy Scale - Short Form Self Appraisal – Study Three

The five questions that made up the subscale of "self appraisal" were spread throughout the twenty five question short form of the Career Decision Self-Efficacy Scale. Respondents were asked to complete a five item scale where 1 was "no confidence at all", 2 was "very little confidence", 3 - "moderate confidence", 4 - "much confidence" and 5 - "complete confidence". The questions on "self appraisal" asked "how much confidence would you have that you could:" "Accurately assess your abilities", "determine what your ideal job would be", "decide what you most value in an education", "figure out what you are and what you are not ready to sacrifice to achieve your career goals" and "define the type of lifestyle that you would like to live".

For Study Three the first subscale measured in the Career Decision Self-Efficacy Scale-Short Form, "self appraisal", the pre test mean for the Chaos group, as shown in Figure 7.1, was 3.48, rising to 3.93 after the intervention and maintaining a score of 3.88 at 28 days post intervention. The Trait and factor group pre test mean was 3.61 and rose to 3.72 post intervention and returned to 3.58 at 28 days. In terms of effect size, the partial Eta Squared scores for "self appraisal" were .24 and, using guidelines proposed by Cohen (1988) in which .14=large effect, these results indicate quite a large effect size. Figure 7.1: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale Self Exploration in Study Three.



The interaction effect for "self appraisal"-intervention was significant "self appraisal"intervention returning a Wilks' Lambda value of .88 and p<.05 and Partial Eta squared scores for "self appraisal"-intervention .13 which again using Cohen (1988) reflect a moderate to large effect in terms of interaction. Tests of between-subjects effect were non significant at the interval at the intervention. The tests of between subject effects size, using Partial Eta squared, was between small and moderate at .02 for the intervention. In tests of within subject contrasts there was a significant effect (p<.05) and a significant effect for the "self appraisal"-intervention interaction (p<.05).

The reliability for the three measures, pre, post and 28 days on "self appraisal" was 0.67.

Career Decision Self-Efficacy Scale - Short Form Occupational Information – Study Three The five questions that made up the subscale "occupational information" were spread throughout the twenty five question short form of the Career Decision Self-Efficacy Scale-Short Form. The questions on "occupational information" asked "how much confidence would you have that you could:" "Use the internet to find information about occupations that interest you", "find out the employment trends for an occupation over the next ten years", "find out about the average earnings of people in an occupation", "talk with a person already employed in a field you are interested in", and "find information about education providers like TAFE and universities".

For the second subscale tested in the Career Decision Self-Efficacy Scale-Short Form, "occupational information" the pre test mean as shown in Figure 7.2, for the Chaos group of thirty five participants was 3.40, rising to 3.78 after the intervention and maintaining a score of 3.76 at 28 days post intervention. The Trait and factor group of thirty three participants returned a pre test mean of 3.52 and 3.50 post intervention and returning to 3.46 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "occupational information" were .13 and, using guidelines proposed by Cohen (1988) these results fall between a moderate and large effect size.



Figure 7.2: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Occupational Information" in Study Three

The interaction effect for occupational information-intervention was significant returning a Wilks' Lambda value of .82 and p<.05 and Partial Eta squared scores for "occupational information"-intervention .18 which, using Cohen (1988), reflect a large effect in terms of interaction. Tests of between-subjects effect were non significant at the interval. The tests of between subject effect size using Partial Eta squared was small and moderate at .02 for the intervention. In tests of within subject contrasts there were significant (p<.05) and also significant for "occupational information"-intervention interaction (p<.05).

The overall reliability for the three measures, pre, post and 28 days on "occupational information" was 0.73.
Career Decision Self-Efficacy Scale - Short Form Goal Selection - Study Three

The five questions that made up the subscale "goal selection" were also spread throughout the twenty five question short form of the Career Decision Self-Efficacy Scale-Short Form. The questions on "goal selection" asked "How much confidence would you have that you could:" "select subjects for the HSC, TAFE or further study", "select an occupation from a list of potential occupations you are considering", "choose a career that will fit your preferred lifestyle", "Make a career decision and then not worry about whether it was right or wrong", and "Choose an education pathway or career that will fit your interest".

For the subscale "goal selection", the pre test mean for the Chaos group of thirty five participants, as shown in Figure 7.3, was 3.40, the mean increased to 3.86 after the intervention and decreased to a mean of 3.68 at 28 days post intervention. The Trait and factor group of thirty three participants the pre test mean was 3.54, the mean increased to 3.68 post intervention and decreased to 3.50 at 28 days. In terms of effect size, the partial Eta Squared scores for "goal selection" were .31 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 7.3: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Goal Selection" in Study Three.

The interaction effect for "goal selection"-intervention was significant returning a Wilks' Lambda value of .92 and p<.05 and Partial Eta squared scores for "goal selection"-intervention .09 which using Cohen (1988) reflected a moderate effect in terms of interaction. Tests of between-subjects effect were non significanct at the intervention. The tests of between subject effect size using Partial Eta squared was between too small at (.00) for the intervention. In tests of with subject contrasts were non significant and for "goal selection"-intervention interaction also non significant.

The overall reliability for the three measures, pre, post and 28 days on "goal selection" was 0.7.

Career Decision Self-Efficacy Scale - Short Form Planning - Study Three

The fourth subscale tested in the Career Decision Self-Efficacy Scale-Short Form (CDSE-SF) was "planning". The five questions that made up the subscale called "planning" were spread throughout the twenty five questions of the CDSE-SF. The questions on "planning" asked "how much confidence would you have that you could": "Make a plan of your goals for the next five years", "determine the steps you need to take to complete your chosen education path", "prepare a good resume", "identify employers, firms, and training providers relevant to your career possibilities" and "successfully manage the job interview process".

For the CDSE-SF subscale "planning", as shown in Figure 7.4, the pre test mean for the Chaos group of thirty five participants was 3.42, the mean increased to 3.68 after the intervention and decreased to 3.63 at 28 days post intervention. For the Trait and factor group of thirty three participants the pre test mean was 3.29 and increased to 3.47 post intervention and decreased to 3.36 at 28 days. In terms of effect size, the partial Eta Squared scores for goal selection were .18 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 7.4: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Planning" in Study Three.



The interaction effect for planning-intervention was non significant returning a Wilks' Lambda value of .98 and Partial Eta squared scores for "planning"-intervention of .02 which using Cohen (1988) reflect a small effect in terms of interaction. Tests of between-subjects effect were non significant at the intervention. The tests of between subject effect size using Partial Eta squared showed a small effect at .03 for the intervention. Tests of within subject contrasts were significant for "planning" (p<.05) and non significant for the "planning"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days on "planning" was 0.79.

Career Decision Self-Efficacy Scale-Short Form Problem Solving - Study Three

The fifth and final subscale tested in the Career Decision Self-Efficacy Scale-Short Form was "Problem Solving". The five questions that made up the subscale "problem solving" were spread throughout the twenty five question of the Career Decision Self-Efficacy Scale-Short Form. The questions on "problem solving" asked "how much confidence would you have that you could": " determine the steps to take if you are having academic trouble with one of your subjects", "persistently work at your education or career goal even when you get frustrated", "change education pathways if you did not like your first choice", "change occupations if you are not satisfied with the one you enter" and "identify some reasonable courses or career alternatives if you are unable to get your first choice".

For the subscale of "Problem Solving" the pre test mean, as shown in Figure 7.5, for the Chaos group of thirty five participants was 3.34, the mean increased to 3.75 after the intervention and decreased slightly to 3.72 at 28 days post intervention. For the Trait and factor group of thirty three participants the pre test mean was 3.23 and increased to 3.50 post intervention and decreased to 3.29 at twenty eight days. In terms of effect size, the partial Eta Squared scores for goal selection were .29 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 7.5: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Problem Solving" in Study Three.

The interaction effect for "problem solving"-intervention was non significant returning a Wilks' Lambda value of .92 and Partial Eta squared scores for "problem solving"-intervention .08, which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared was between moderate effect at .06 for the intervention. Tests of within subject contrasts were significant (p<.05) and significant (p<.05) at "problem solving"-intervention interaction.

The overall reliability for the three measures, prior to intervention, post intervention and at 28 days on "problem solving" was 0.75.

Career Decision Self-Efficacy Scale - Short Form Total Score - Study Three

Aside from the five subscales fifth the Career Decision Self-Efficacy Scale-Short Form provides an overall measure for self-efficacy calculated through the sum of all twenty five responses.

For study three, as shown in Figure 7.6, the pre test mean for Chaos group of thirty five participants was 85.20, rising to 95.00 after the intervention maintaining a score of 93.37 at 28 days post intervention. The Trait and factor group of thirty three participants the pre test mean was 85.91 the mean increased to 89.36 post intervention and decreased to 85.97 at 28 days. In terms of effect size, the partial Eta Squared scores for the career decision self-efficacy short form total were .36 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 7.6: Graph showing the Career Decision Self-Efficacy-Short Form results for the overall "Total Score" in Study Three.



The interaction effect for "total scores" and intervention was significant (p<.05) returning a Wilks' Lambda value of .89 and Partial Eta squared scores for "total scores"-intervention .08 which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared was between moderate effect at .11 for the intervention. Tests of within subject contrasts were significant (p<.05) and significant (p<.05) for the "total scores"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days on the career decision selfefficacy scale "total scores" was 0.93.

Career Exploratory Plans or Intention Scale Study Three

The CEPI comprised of five items and a single scale where score are calculated using the sum of values. The five item scale was 1 "strongly disagree", 2 "disagree somewhat", 3 "Neutral", 4 "agree somewhat" and 5 "strongly agree". The five questions were "I intend to spend more time learning about careers than I have been", "I plan to talk to lots of people about careers", "I am committed to learning more about my abilities and interests", "I intend to get all the education I need for my career choice" and "I plan to talk to advisors or counsellors about career opportunities for different study plans and or majors".

The Career Exploratory Plans or Intention Scale scores are calculated using the sum of values. Higher scores represent a greater intention to engage in career decision making related activities. The pre test mean for the Chaos group of thirty five participants, as shown in Figure 7.7, was 19.46, the mean increased to 20.43 after the intervention and increased slightly to a mean score of 20.49 at 28 days post intervention. The Trait and factor group of thirty three participants the pre test mean was 19.46 rising slightly to 19.53 post intervention and fell further to 18.58 at 28 days, as shown in Figure 8. In terms of effect size, the partial Eta Squared scores for the CEPI were .074 and, using guidelines proposed by Cohen (1988) these results show a moderate effect size. Figure 7.7: Graph showing the results for the "Career Exploratory Plans or Intention Scale (CEPI)" in Study Three.



The interaction effect for problem CEPI-intervention was non significant returning a Wilks' Lambda value of .91 and Partial Eta squared scores for "problem solving"-intervention of .09 which, using Cohen (1988), reflect a moderate effect in terms of interaction. Tests of between-subjects effect were significant at the intervention (p<.05). The tests of between subject effect sizes using Partial Eta squared showed a small effect at .03 for the intervention. In tests of within subject contrasts were significant (p<.05) and were non significant for the CEPI-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days on the Career Exploratory Plans or Intention Scale was .79.

The Career Exploration Survey

The Career Exploration Survey comprised of two subscales, "environmental exploration" comprising of six items and "self exploration" which used five items. Respondents were asked to "indicate to what extent you have behaved in the following ways over the last 3 months by circling the number corresponding to your response". The items numbered were 1 "little", 2 "somewhat", 3 "a moderate amount", 4 "a substantial amount" and 5 "a great deal". Scores are calculated using the sum of values. Higher scores in environmental exploration represent a greater external career exploration. Higher "self exploration" scores indicate greater internal career exploration.

Career Exploration Survey Environmental Exploration - Study Three

The subscale Environmental Exploration asked respondents "indicate to what extent you have behaved in the following ways over the last 3 months:" "investigated career possibilities", "went to various career orientation programs", "Obtained information on specific jobs or organisations", "obtained information on the labour market and general job opportunities in my anticipated career area" and "sought information on specific areas of career interest".

The pre test mean, as shown in Figure 7.8, for the Chaos group of thirty five participants for environmental exploration was 15.49, the mean increased to 18.26 after the intervention and increased slightly to 18.89 at 28 days post intervention. The Trait and factor group of thirty three participants the pre test mean was 16.94 the mean rose to 18.48 post intervention and returning to 17.30 at 28 days. In terms of effect size, the partial Eta Squared scores for environmental exploration were .26 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 7.8: Graph showing the results for the Career Exploration Survey-subscale, "Environmental Exploration", in Study Three.



The interaction effect for "environmental exploration"-intervention was almost significant returning a Wilks' Lambda value of .92 and p=.07 and Partial Eta squared scores for environmental exploration-intervention were .08 which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect sizes using Partial Eta squared was too small an effect at .00 for the intervention. In tests of within subject contrasts results were significant (p<.05) and at "environmental exploration"-intervention interaction was also significant (p<.05).

The overall reliability for the three measures, pre, post and at 28 days for the Career Exploration Survey subscale "Environmental Exploration" was .88.

The second subscale measured by the Career Exploration Survey, "Self Exploration" comprised of five items. Scores were calculated using the sum of values. Respondents were

asked to indicate to "what extent you have behaved in the following ways over the last three months". The five questions were: "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career".

The pre test mean for "Self Exploration", as shown in Figure 7.9, for the Chaos group of thirty five participants was 13.26, the mean increased to 15.66 after the intervention and further increased to a mean of 16.20 at 28 days post intervention. The Trait and factor group of thirty four participants the pre test mean was 15.00, the mean increased slightly to 15.12 post intervention and decreased to 14.30 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "self exploration" were .12 and, using guidelines proposed by Cohen (1988) these results show a moderate to large effect size.

Figure 7.9: Graph showing the results for the Career Exploration Survey subscale-"Self Exploration" in Study Three.



The interaction effect for "self exploration"-intervention was significant returning a Wilks' Lambda value of .85 and p<.05 and Partial Eta squared scores for "self exploration" exploration-intervention were .15 which using Cohen (1988) reflect a large effect in terms of interaction. Tests of between-subjects effect did non significant at the intervention. The tests of between subject effect size using Partial Eta squared was below a small effect at .00 for the intervention. Tests of within subject contrasts were significant p<.05 and at "self exploration" - intervention, interaction was also significant (p<.05).

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey subscale "self exploration" was .87.

Discussion and Concluding Comments

Study Three - Intervention study

The aim of this study was to evaluate the comparative effectiveness of two career education interventions, one that emphasizes change based upon the Chaos Theory of Careers and the other based upon traditional Trait based career interventions. The results of this study are discussed and concluding comments made in terms of each subscale as measured prior to the intervention, post intervention and at 28 days.

The Career Decision Self-Efficacy Scale-Short Form

The Career Decision Self-Efficacy Scale Short form tested five subscales pre, post and at 28 days post intervention for two groups of Year Ten career education classes, one receiving a traditional Trait and factor styled lesson and the other group received a lesson incorporating the Chaos Theory of Careers. The post intervention testing shows the self-efficacy measures for both groups rose after the lesson. The testing at 28 days shows the group receiving the lesson incorporating the concepts of the Chaos Theory Of Careers had benefits that were similar to the Trait and factor based lesson and, on some self-efficacy subscales, arguably stronger than the more traditional approach.

Career Decision Self-Efficacy Scale-Short Form Self Appraisal - Study Three

Results for the Career Decision Self-Efficacy Scale-Short Form, "self appraisal", the pre test mean for the Chaos group, as shown in Figure 8.1, was 3.48, the mean increased to 3.93 after the intervention and maintained a mean of 3.88 at 28 days post intervention. The Trait and factor group pre test mean was 3.61 and the mean increased to 3.72 post intervention and returned to 3.58 at 28 days. On the subscale "self appraisal" the mean for both groups increased after the intervention and at 28 days the Trait and factor group returned to pre test levels and the mean for the Chaos group decreased slightly. The conclusion from this is that while more study needs to be carried out to investigate whether such results are replicated on

the self-efficacy scale of "self appraisal" the Chaos Theory approach may be as effective as a Trait and factor approach initially and may retain these benefits longer.

Occupational Information - Study Three

Results for the CDSE-SF subscale "occupational information" went from a pre test mean for the Chaos group of 3.40 rose to 3.78 and maintained a mean of 3.76 at 28 days. The Trait and factor group returned a pre test mean of 3.52 which remained at 3.50 post intervention and 3.46 at 28 days. The Chaos group showed a bigger benefit from the intervention, with an increase in the mean of .38 however, the difference in scores between intervention and 28 days were similar, a decrease of .02 for Chaos group's mean and .04 for the Trait and factor mean. Further study is needed to investigate whether these results are replicated. Across the other subscales it was unusual for both groups not to record an increase in mean scores post intervention and in this case there was not an increase post intervention for the Trait and factor group, based on this inconsistency of results, further study is recommended

Goal Selection - Study Three

Results for the subscale "goal selection" showed the mean scores for both groups' increased post intervention with a slightly larger increase for the Chaos group who recorded a .46 increase in the mean of compared a .14 increase for the Trait and factor group. Both groups recorded a similar decline in mean scores over 28 days, the mean for both groups declining exactly .18. In terms if career education practices, based on the results of this study both theTrait and factor approach and the Chaos Theory approach seem beneficial on "goal selection", however, as this is only a single study, further study is recommended.

Planning - Study Three

The subscale of planning recorded almost identical results with the mean for both groups increasing after the intervention, .26 for the Chaos group and .18 for Trait and factor group. At 28 days the mean decreased by .5 for Chaos group and decreased .11 for the Trait and factor group. These results seem to indicate that the Trait and factor approach and the Chaos Theory approach have similar benefits on the subscale of Planning and Goal Setting. This seems unusual as the Chaos approach emphasises change while the Trait and factor approach would

seem to lend itself more readily to planning and goal setting. More study is recommended to investigate whether these results are replicated with other groups of students.

Career Decision Self-Efficacy Scale - Short Form Problem Solving - Study Three

For the subscale of problem solving both groups recorded higher mean scores post intervention. An increase in mean scores of .41 was recorded post intervention for the Chaos group and an increase of .27 for the Trait and factor group. At 28 days the Trait and factor group recorded a decrease in mean scores (.21) compared to the Chaos group which deceased .03. Based on these results a Chaos Theory approach may be better for career education for the self-efficacy scale "problem solving", however, as results are from a single study, more testing is recommended.

Career Decision Self-Efficacy Scale - Short Form Total Score - Study Three

The "Total Score" for the Career Decision Self-Efficacy Scale - Short Form is calculated from the sum of all five of the above subscale results. Both the Chaos group for which the mean increased by 9.80 and the Trait and factor group (3.45) returned increased mean scores post intervention. When tested at 28 days the Chaos group showed some decrease in mean scores (1.63) decrease) and the Trait and factor group recorded a 3.39 decrease. While more testing is required, based on these results the Chaos Theory approach has similar benefit to the Trait and factor approach post intervention and may be as beneficial or arguably more beneficial at 28 days.

The results across each subscale of the Career Decision Self-Efficacy Scale-Short Form show the Chaos Theory approach may be just as valuable in career education as the Trait and factor approach and may have more lasting benefits on subscales "Self Appraisal" and "Problem Solving". The benefits of either approach seem to be quite similar for two of the subscales which are traditionally included in a Trait and factor approach, "Goal Setting" and "Planning". As this is a single study with two groups of students from the same age group in the same regional high school, further study is recommended to test whether results are replicated. The Career Exploratory Plans or Intention scale (CEPI)

The Career Exploratory Plans or Intention Scale tests intentions and plans with questions such as "I intend to spend more time learning about...", "I plan to talk to...", "I am committed to learning more...", "I intend to get all the education I need..." and "I plan to talk to advisors...". The Chaos group reported a substantial increase in mean post intervention (.97) and a small increase (.06) at 28 days. The Trait and factor group reported a small increase in mean post intervention (.06) and the mean decreased by .95 at 28 days. This shows the Chaos intervention may have a stronger influence on intentions and plans while Trait and factor lessons have smaller effect with benefits for Career Exploratory Plans or Intentions decreasing over 28 days. If these results are representative of a broader population the Chaos Theory approach may have more application in settings which career education practitioners wish to stimulate client's career explorations, or at least their intention to undertake career exploration. As these results are replicated with other groups of participants.

The Career Exploration Survey (CES) Environmental Exploration - Study Three

While the Career Exploratory Plans or Intentions measured intention and plans the Career Exploration Survey (CES) asked about career exploration actions undertaken in the past three months. The CES asks respondents to indicate "to what extent" they have "behaved in the following ways over the last 3 months". The rationale behind using the CES was to test whether the interventions lead to actions and not just intentions, however, it should be noted the period of time between the pre test and the intervention was two weeks and the period of time between the intervention lessons and the post intervention testing was a five minute break. The final measure was at 28 days after the intervention. If respondents are reporting actions they have taken since the pre testing such as investigating careers, attending career expos and

obtaining information on specific jobs, it may be that the pre testing has prompted career actions or that the intervention lesson has given respondents a positive perspective on the concepts measured and respondents are mistakenly reporting on intentions. Both groups reported an increase between the pre and post testing, the Trait and factor group returning to a score slightly above the pre test score and the Chaos group making slight gains after 28 days. The conclusion is that "career exploration" requires more testing through further study as it may be that the respondents perceived these concepts more favourably post intervention and reporting on their intentions rather than actual behaviours. Another possibility is that the pre test motivated action in the fortnight between the scheduled career education lessons of pre testing and intervention. More testing is required with a shorter time period between the pre test and the intervention to explore whether these results are replicated.

The Career Exploration Survey (CES) Self Exploration – Study Three

A similar conclusion and discussion arises from the second subscale examined by Career Exploration Scale, "Self Exploration" and as in the previous subscale, "Environmental Exploration", respondents were asked about behaviours and not about intentions. In this study, the Chaos group recorded a rise in mean scores between pre testing and the testing post intervention, the Trait and factor group a recorded a small increase in mean scores. At 28 days the Chaos group reported a small increase in mean scores and the Trait and factor group recorded a small decrease in mean scores. A difference between the two subscales is that the first subscale "environmental exploration" involved physical behaviours such as collecting career information while behaviours for the "self exploration" subscale were more internal. The "self exploration" subscale asked respondents to indicate "to what extent" they have "behaved in the following ways over the last 3 months", including "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career". These "self exploration" behaviours could be completed with fewer resources than the "environmental exploration", however there was only five minutes between the intervention and the post intervention testing. The pre test may have increased the participants' retrospective thinking about careers in the fortnight between the test and the intervention post test or the intervention itself may be prompting a more positive outlook and respondents may be mistakenly reporting intentions rather than actual behaviours.

Study Three shows that both the groups of participants, those completing the career education lessons incorporating the Chaos Theory of Careers (CTC) and the group completing the Trait and factor based lesson reported gains post intervention. In Study Three the CTC group showed slightly larger gains from some subscales post intervention and maintains similar or slightly better results in terms of retaining these benefits in testing at 28 days. More testing is required to see if these results are repeated with other groups of high school students. Study Four aims to investigate the generalisability and robustness of the results of Study Three by replication with an older group of high school students and different timing between pre testing and intervention.

CHAPTER EIGHT

Study Four

Introduction

Study Three found that both groups of participants, those completing the career education lessons incorporating the Chaos Theory of Careers (CTC) and the group completing the Trait and factor based lesson reported gains in a range of self-efficacy measures post intervention. When these groups were tested again at 28 days the group receiving the Chaos Theory of Careers intervention maintained similar or slightly better results.

Some unusual results came from Study Three for the Career Exploration Scale "Self Exploration" as respondents reported increased behaviours post intervention. This was unusual as there was only a five minute break between the intervention and the post test. This meant it was extremely unlikely that respondents could have enacted the reported increased career behaviours such as attending career orientations post intervention. There was two weeks between the pre test and the intervention in Study Three as this time period followed scheduled career lessons at this school. More study is required with a shorter period between the pre test and the intervention.

Study Four aims to investigate the generalisability and robustness of the results of Study Three by replication with an older group of high school students and different timing of pre testing.

Study Four involved a Year 11 Advanced English class split randomly into two groups. There were three aspects to the rationale of selecting this particular group of students to study. The first part of the rationale was that none of these students were in any classes taught by the researcher. The second was to test older students than those in Study Three. The third part of the rationale was to test a group of participants for whom a shorter time period between the pre test and the intervention could be applied.

Participants

Study Four involved a Year 11 Advanced English class split randomly in to two groups in term three after Year 11 after their school assessment had been completed. Part of the rationale behind selecting this group, was that none of these students were in any classes taught by the researcher.

Study Four differed to Study Three in that it was based on a school group one school year older than the participants of Study Three. The average age of participants in Study Four was seventeen. While participants in study three were all students from career education classes taught by the researcher, these participants had no timetabled lessons with the researcher, they were from the same coeducational comprehensive high school of 750 students where the researcher worked as Careers teacher.

Method

The participants from were divided randomly in to two groups, one completing the same Chaos Theory of Careers lesson described for Study Three and the other the same Trait and factor based lesson as Study Three. As Year Eleven English classes ran each day on the timetable, whereas the participants in Study Three received a scheduled careers lesson once a fortnight, it allowed the pre testing for this study to be done the day before the intervention lesson. The post testing as in Study Three was carried out at 28 days post intervention.

The Lessons

The lessons presented for each group followed the same lesson plans as outlined in Study Three and Appendices G and H.

Both groups were surveyed using the CDSE-SR, the CEPI and the CES prior to the intervention, immediately after the intervention and again at 28 days. Twenty eight days was chosen as a period of time post intervention, as it represented two cycles of the school's established two week timetable until the next scheduled career lesson.

Study Four involved twelve students in the Chaos Theory of Careers group and fourteen in the Trait and factor group from the same Year Eleven English Advanced class. Study Four began in September of 2012, late in Term Three (September) of Year 11.

Measures

The same measures as used in Study Three were used in Study Four with the same amount of time for completion pre, immediately post intervention and again at 28 days. The Career Decision Self -Efficacy Scale - Short Form (Taylor and Betz, 1983), Career Exploratory Plans or Intention Scale (Betz and Voyten, 1997) and the Career Exploration Survey (Stumpf et al. 1983).

The results for Study Four from pre test, post test immediately after intervention and again at 28 days were entered in to SPSS analysis version 22. An analysis for a general linear model and repeated measures was applied for the fourteen students that were in the Trait and factor group and the twelve who were in the Chaos Theory of Careers group.

The CDSE-SF has five subscales, each with five items. The score for each are added together and the mean of the five items calculated for the score on each subscale.

Results

Study Four

The Career Decision Self-Efficacy Scale - Short Form Self Appraisal – Study Four

For Study Two the on the CDSE-SF subscale, "self appraisal", the pre test mean, as shown in Figure 8.1, for the Chaos group was 3.62, which increased to 3.83 after the intervention and increased further to a mean of 3.97 when measured at 28 days post intervention. For the Trait and factor group the pre test mean was 3.86 which increased to 4.03 post intervention and decreased to 3.84 at 28 days. In terms of effect size, the partial Eta Squared scores for "self

appraisal" were .35 and, using guidelines proposed by Cohen (1988) in which .14=large effect, these results indicate quite a large effect size.

Figure 8.1: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Self Appraisal" in Study Four.



The interaction effect for "self appraisal" - intervention was significant, returning a Wilks' Lambda value of .77 and p<.05. Partial Eta squared scores for "self appraisal"-intervention were .23 which again using Cohen (1988) reflect a large effect in terms of interaction. Tests of between-subjects effect were non significant at the interval at the intervention. The tests of between subject effect size using Partial Eta squared was small at .01 for the intervention. Tests of within subject contrasts were significant p<.05 and were also significant for the "self appraisal" - intervention interaction (p<.05).

The overall reliability for the three measures, pre, post and 28 days for the subscale "Self Appraisal" was .68.

Results

The Career Decision Self-Efficacy Scale - Short Form Occupational Information – Study Four

For the second subscale tested in the Career Decision Self-Efficacy Scale - Short Form, "Occupational Information", the pre test mean for the Chaos group of twelve participants, as shown in Figure 8.2, was 3.62 which increased to 3.77 after the intervention and increased slightly to a mean score of 3.82 at 28 days post intervention. The Trait and factor group of 14 participants recorded a pre test mean of 3.83 which increased to 4.03 post intervention and decreased to 3.79 at 28 days. In terms of effect size, the partial Eta Squared scores for "occupational information" were .23 and, using guidelines proposed by Cohen (1988) these results represent a large effect size. Figure 8.2: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Occupational Information" in Study Four.



The interaction effect for "occupational information" - intervention was non significant returning a Wilks' Lambda value of .88 and Partial Eta squared scores for "occupational information" intervention were .18, which reflects a large effect in terms of interaction. Tests of betweensubjects were non-significant at the interval. The tests of between subject effect size using Partial Eta squared small to moderate at .02 for the intervention. Tests of within subject contrasts were non significant and at "occupational information"-intervention the interaction was also non significant.

The overall reliability for the three measures, pre, post and 28 days for the subscale "Occupational Information" was .70. Results The Career Decision Self-Efficacy Scale - Short Form Goal Selection – Study Four

For the third subscale tested in the CDSE-SF "goal selection" the pre test mean, as shown in Figure 8.3, for the Chaos group of twelve participants was 3.78, which increased to 3.82 after the intervention and maintained a mean score of 3.82 at 28 days post intervention. For the Trait and factor group of fourteen participants the pre test mean was 3.70 which increased to 4.00 post intervention and decreased to 3.83 at twenty eight days. In terms of effect size, the partial Eta Squared scores for goal selection were .16 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 8.3: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Goal Selection" in Study Four.



The interaction effect for "goal selection"- intervention was non significant returning a Wilks' Lambda value of .89 and Partial Eta squared scores for "goal selection"-intervention were .11, which reflects a moderate effect in terms of interaction. Tests of between-subjects effect were non significant at the intervention (p=.85). The tests of between subject effect size using Partial Eta squared was too small at .00 for the intervention. Tests of with subject contrasts were non significant (p=.34) and at "goal selection"-intervention the interaction was also non significant.

The overall reliability for the three measures, pre, post and 28 days for the subscale "Goal Selection" was .70.

Results The Career Decision Self-Efficacy Scale - Short Form Planning – Study Four

For the fourth subscale tested in the Career Decision Self-Efficacy Scale - Short Form subscale "planning" the pre test mean, as shown in Figure 8.4, for the Chaos group of twelve participants was 3.65, the mean increased to 3.85 after the intervention and increased slightly to a mean of 3.97 at 28 days post intervention. For the Trait and factor group of fourteen participants the pre test mean was 3.73 which increased to 3.91 post intervention and decreased to a mean of 3.84 at 28 days. In terms of effect size, the partial Eta Squared scores for "goal selection" were .27 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 8.4: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Planning" in Study Four.



The interaction effect for "planning" - intervention was not significant returning a Wilks' Lambda value of .93 and Partial Eta squared scores for planning-intervention .07, which show a moderate effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared showed too small an effect at .00 for the intervention. Tests of within subject contrasts was significant for planning (p<.05) and non-significant for "planning-intervention".

Results The Career Decision Self-Efficacy Scale - Short Form Problem Solving – Study Four

For the fifth and final subscale tested in the Career Decision Self-Efficacy Scale-Short Form, "problem solving", as shown in Figure 8.5, the pre test mean for the Chaos group of twelve participants, was 3.50, which increased to 3.80 after the intervention, maintaining a score of 3.78 at 28 days post intervention. The Trait and Factor group of fourteen participants the pre test mean was 3.76 rising to 4.00 post intervention and returned to 3.76 at 28 days. In terms of effect size, the partial Eta Squared scores for goal selection were .35 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

The results for this subscale saw a similar pattern emerge from the two studies, in which both groups increase post intervention and the Trait and factor group returns scores closer to the pre test mean and the Chaos group remained closer to retaining the post intervention scores. In the previous Study Three, the subscale of problem solving both groups had had higher scores post intervention plus .41 chaos and plus .27 Trait and factor. The Trait and factor group returning towards the pre test scores after 28 days minus .21 compared to the Chaos group only falling.03. A Chaos Theory Approach in career education lessons may be better for problem solving however, given the size of these groups, more testing is recommended.

In this study the mean scores for both groups increased post intervention plus .30 for Chaos and plus .24 for Trait and factor, the Chaos group was close to maintaining these gains after 28 days with a small decline (.02) while the Trait and factor group returned to their pre test score.

Figure 8.5: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Problem Solving" in Study Four.



The interaction effect for "problem solving" - intervention was non significant returning a Wilks' Lambda value of .90 and Partial Eta squared scores for "problem solving" -intervention of .10, which reflected a moderate effect in terms of interaction. Tests of between-subjects effect reflected did not show significance at the intervention p=.49. The tests of between subject effect size using Partial Eta squared was small at .02 for the intervention. Tests of within subject contrasts were non significant and at "problem solving"-intervention the interaction was also non significant.

The overall reliability for the three measures, pre, post and 28 days for the subscale "Problem Solving" was .77.

Results Career Decision Self-Efficacy Scale - Short Form Total Score - Study Four Aside from the five subscales, the Career Decision Self-Efficacy Scale-Short Form provides an overall measure for self-efficacy calculated through the sum of all twenty five responses.

For Study Four the "total scores" mean on the Career Decision Self-Efficacy Scale-Short Form for Chaos group of twelve participants, as shown in Figure 8.6, was 90.83, rising to 95.25 after the intervention maintaining a score of 96.75 at 28 days post intervention. The Trait and factor group of fourteen participants the pre test mean was 94.36 which increased to 99.86 post intervention and returned to 95.29 at 28 days. In terms of effect size, the partial Eta Squared scores for the career decision self-efficacy short form total were .42 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 8.6: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Total Scores" in Study Four.



The interaction effect for "total scores" - intervention was non significant, returning a Wilks' Lambda value of .86 and Partial Eta squared scores for "total scores"-intervention .14 which

using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were non significant at the intervention. The tests of between subject effect size using Partial Eta squared showed a moderate effect at .01 for the intervention. Tests of within subject contrasts were significant (p<.05) and at the "total scores"- intervention interaction was non significant.

The overall reliability for the three measures, pre, post and 28 days on the Career Decision Self-Efficacy Scale - Short Form for the overall measure "total scores" in Study Four was .92.

The Career Exploratory Plans or Intentions Scale

The CEPI comprised of five items and a single scale where score are calculated using the sum of values. Higher scores represent a greater intention to engage in career decision making related activities. The pre test mean, as shown in Figure 8.7, for the Chaos group of twelve participants was 20.25, rising to 20.50 after the intervention and increasing to a mean score of 21.08 at 28 days post intervention. The Trait and factor group of fourteen participants the pre test mean was 21.64 which decreased to 20.93 post intervention and returned to 21.64 at 28 days. In terms of effect size, the partial Eta Squared scores for the CEPI were .07 and, using guidelines proposed by Cohen (1988) these results show a moderate effect size.





The interaction effect for "CEPI"-intervention was non-significant returning a Wilks' Lambda value of .93 and Partial Eta squared scores for "CEPI"-intervention .07 which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared showed a small effect at .05 for the intervention. Tests of within subject contrast results were non significant and non significant for the "CEPI"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the "Career Exploratory Plans or Intentions Scale (CEPI)" was .72.

Results The Career Exploration Survey Environmental Exploration – Study Four The Career Exploration Survey comprised of two subscales, "environmental exploration" comprising of six items and "self exploration" five items. Scores are calculated using the sum of values. Higher scores in environmental exploration represent a greater external career exploration. Higher "self exploration" scores indicate greater internal career exploration.

The pre test mean, as shown in Figure 8.8, for the Chaos group of twelve participants for "environmental exploration" was 18.17, rising to 20.83 after the intervention and increasing to a score of 22.00 at 28 days post intervention. The Trait and Factor group of fourteen participants the pre test mean was 17.57 rising to 21.43 post intervention and returning to 21.07 at twenty eight days. In terms of effect size, the partial Eta Squared scores for environmental exploration were .46 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 8.8: Graph showing results for the Career Exploration Survey, subscale "Environmental Exploration" in Study Four.



The interaction effect for "environmental exploration"-intervention was non significant returning a Wilks' Lambda value of .92 and Partial Eta squared scores for "environmental exploration"-

intervention were .08, which reflect a moderate effect in terms of interaction. Tests of betweensubjects effect were non significant at the intervention. The tests of between subject effect size using Partial Eta squared was between too small an effect at .00 for the intervention. Tests of within subject contrasts were significant (p<.05) and non-significant at the "environmental exploration"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey subscale of Environmental Exploration was .80.

Results The Career Exploration Survey Self Exploration – Study Four

The second subscale measured by the Career Exploration Survey, "Self Exploration", comprises of five items. Scores are calculated using the sum of values. The pre test mean for the Chaos group of twelve participants for "self exploration", as shown in Figure 8.9, was 15.67, the mean increased to 16.75 post intervention and increased further to a score of 18.67 at 28 days post intervention. For the Trait and factor group of fourteen participants the pre test mean was 17.36 which increased slightly to 18.29 post intervention and decreased to 17.86 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "Self Exploration" were .16 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 8.9: Graph showing results for the Career Exploration Survey, subscale Self Exploration in Study Four.

The interaction effect for "self exploration"-intervention was non significant returning a Wilks' Lambda value of .83 and Partial Eta squared scores for "self exploration"-intervention were .17 which reflects a large effect in terms of interaction. Results for tests of between-subjects intervention were non-significant. The tests of between subject effect size using Partial Eta squared was a small effect at .01 for the intervention. In tests of within subject contrasts results were significant (p<.05) and for "self exploration"-intervention interaction was non significant.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey subscale of "Self Exploration" was .83.
Discussion and Concluding Comments Study Four Intervention study

The Career Decision Self -Efficacy Scale - Short Form, Study Four

The Career Decision Self-Efficacy Scale Short form tested five subscales pre, post and at 28 days post intervention for two groups of Year Ten education classes, one receiving a traditional Trait and factor styled lesson and the other a lesson incorporating unexpected change in career path. The post intervention testing shows that the self-efficacy mean score for both groups increased after the intervention and the testing at 28 days shows the intervention incorporating the Chaos Theory of Careers had benefits that were similar and in some cases, arguably stronger, than the traditional Trait and factor lesson.

Results for the CDSE-SF subscale "self appraisal" went from a pre test mean for the Chaos group of 3.62 rose to 3.83 and increased to 3.97 at 28 days. The Trait and factor group returned a pre test mean of 3.86 which increased to 4.03 post intervention and decreased to 3.84 at 28 days. Both groups saw a similar increase in post intervention scores for "self appraisal", however the Trait and factor group returned to mean scores that were similar pre intervention mean, while the Chaos group scores increased slightly. This is a similar result to the Trait and factor group to Study Three.

The results from Study Three which applied the intervention study to Year Ten career education classes and the results from Study Four which applied the same intervention to Year 11 English classes, suggest both the Trait and factor approach and the Chaos Theory approach are beneficial post intervention and the Trait and factor group tends to return to pre intervention levels while the Chaos Theory group were more likely to maintain the benefits at twenty eight days. When considering approaches for career education, these results show a Chaos Theory approach may be more beneficial than a Trait and factor approach on the selfefficacy subscale "Self Appraisal". Results for the subscale "occupational information" in Study Four showed both groups scores increasing post intervention with the Trait and factor groups' mean score returning to similar pre test levels after 28 days. For the Chaos the post intervention scores were maintained at 28 days and increased slightly. This differs from the previous study in which the Trait and factor group did not record an increased score after the intervention however, both studies show the Chaos Theory approach recording increased scores post intervention and a tendency to maintain these benefits at 28 days.

Results for the subscale "goal selection" were quite different for Study Four to Study Three. In the previous study, both groups' mean scores increased post intervention with a slightly bigger increase for the Chaos group (.46) compared to .14 for the Trait and factor group. In Study Four the results almost reversed with the Trait and factor group recording a larger gain post intervention (.30) compared to .04 for the Chaos group. For the Trait and factor group almost half that increase was retained at 28 days, while the chaos maintained the same mean score.

Based on the results in Study Four a case may be put forward that "goal selection" is more likely to increase post intervention for the Trait and factor group however, with differing results in the first two studies more study is required on this subscale. In terms of career education practice these results show that the Trait and factor approach may be a better approach for the self-efficacy subscale "goal selection" than the Chaos theory approach as results in the first study were similar for each approach and in this study they were stronger for the Trait and factor approach. The Trait and factor approach has been as effective, or more beneficial than the Chaos Theory approach on "goal selection".

Results for Study Three and Study Four on the subscale of "planning" are similar. In Study Three and in Study Four mean scores for both groups increased after the intervention with a .26 increase for chaos and .18 for Trait and factor. Decreases for mean scores at 28 days were also similar, .5 for the Chaos group and .11 for Trait and factor group. In Study Four the mean scores for Chaos group increased (.20) post intervention and similarly for the Trait and factor group the mean increased by .18. A small difference in this study was that Chaos group recorded a small increase in mean scores at 28 days (.12) while the Trait and factor group

recorded a slight decrease (.07). For career education practice the results from two studies on the subscale of "planning" show the Chaos Theory approach and the Trait and factor approach have similar benefits for high school students.

The results for the subscale of "problem solving" saw a similar pattern emerge from the two studies. Both the Chaos and the Trait and factor groups increase post intervention with the Trait and factor group mean returning towards to the pre test mean at twenty eight days and the Chaos group mean remaining closer to the post intervention scores. In this study the mean scores of both groups increased post intervention, (.30) for the Chaos group and .24 for the Trait and factor group. The Chaos group maintained much of the increased mean after 28 days with a small decline (.02) while the Trait and factor group returned to their pre test mean.

In both Studies Three and Four for "Problem Solving" mean scores increased post intervention and the Chaos approach seems to have more lasting benefit at 28 days. These results show that the the Chaos Theory approach, with its emphasis on concepts such as "change is constant" and demonstrating positive outcomes to unexpected change, seems to better serve high school students in terms of the self-efficacy subscale of "Problem Solving". As these results are based on two Year 10 career education classes and two smaller groups of Year 11 students from the same school, further study is recommended to test whether similar findings ocurr with other groups of students.

Career Decision Self-Efficacy Scale - Short Form Total Score - Study Four

The "Total score" the Career Decision Self-Efficacy Scale-Short Form is calculated from the sum of all five of the above subscales. Results in Study Four were consistent with Study Three in that both the Chaos group (4.42) and the Trait and factor group (5.52) returned an increase in mean scores post intervention. A small difference in this study was that the Chaos group maintained these results with a small increase in the mean at 28 days (1.5). As in Study Three the Trait and factor group returned towards the pre test mean (4.57) decrease. While more testing is required, the results from Study Three were largely replicated in Study Four, the

conclusion from these studies is that the Chaos Theory approach has similar benefit to the Trait and factor approach post intervention and is reportedly as beneficial, or arguably, slightly more beneficial at 28 days.

Based on the results from these two studies using the Career Decision Self-Efficacy Scale-Short Form as a measure, further study is warranted as for those involved in career education in high schools. The Chaos Theory approach seems to be as beneficial post intervention and arguably more beneficial at 28 days post interventnion than the Trait and factor approach on the self-efficacy subscales of "Self Appraisal", "Occupational Information" and "Problem Solving". Conversely, the Trait and factor approach in theses two studies is shown to be as beneficial as the Chaos Theory approach on the subscale of "Planning" and arguably more beneficial on the subscale of "Goal Setting". In short if further study finds these results are replicated with other groups of high school students, then career education practitioners may find they can best serve their students by including a Chaos Theory approach for self-efficacy elements such as "Self Appraisal", "Occupational Information" and "Problem Solving" and a "Trait and Factor Approach" for "Goal Setting" and consider the benefits of either or of both approaches as beneficial to "Planning".

The Career Exploratory Plans or Intention scale - Study Four

The Career Exploratory Plans or Intention scale (CEPI), tests intentions and plans with questions such as: "I intend to spend more time learning about", "I plan to talk to", "I am committed to learning more", "I intend to get all the education I need" and "I plan to talk to advisors". The scores for Chaos group have been more consistent in the two studies showing large increase in mean post intervention in the Study Three which was largely maintained at 28 days while in Study Four there was a small increase in the mean post intervention (.25), and an increase (.58) at 28 days. The Trait and factor results took an unusual shape decreasing (.71) after intervention and increased to return to the test mean score at 28 days. More study is required on the Career exploratory plans or Intentions Scale, there is some indication the Chaos approach is beneficial however, results, particularly those for Trait and factor in each of these studies were inconsistent.

The Career Exploration Survey

While the CEPI measured the participants' intentions and plans the Career Exploration Survey (CES) investigated actions by asking respondents to indicate to what extent they have "behaved" in the following ways over the "past three months". It is important to test actions and not just intentions as such results could better inform career education. It should be noted the period of time between the pre test and the intervention was two weeks in Study Three and it was over night in Study Four. The period of time between the intervention lessons and the post intervention testing in both studies was five minutes. If the respondents in these studies are reporting actions they have taken since completing the pre testing, such as investigating a career, attending career information events and obtained information on specific jobs orientations, it may be that the pre testing has prompted these career actions. Another possibility is that the intervention lesson has given respondents a positive perspective on the concepts measured and respondents are mistakenly reporting on intentions rather than actual behaviours enacted post intervention.

The Career Exploration Survey Environmental Exploration - Study Four

The results for "environmental exploration" are different in each of these studies. In Study Three both groups reported an increase in mean scores between the pre and post testing, the Trait and factor group returning to a score slightly above the pre test score and the Chaos group mean increased slightly after 28 days. In Study Four both groups made similar increases post intervention 2.66 for the Chaos group and 3.86 for the Trait and factor group. As in the Study Three the Chaos group recorded slight gains at 28 days (.17) however the Trait and factor group while returning to pre test means in Study Three experienced a much slighter decrease in mean at 28 days in Study Four (.36). The conclusion is that "Environmental Exploration" requires more testing through further studies as it may be that respondents are reporting their perception or intention towards these concepts more favourably post intervention rather than actually completing these behaviours. While the participants in Study Three had a fortnight between pre test and intervention, those in Study Four were pre tested the day before the intervention making it difficult to have initiated behaviours such as gathering career information and attending orientation programs either overnight, between pre test and intervention, or in the five minute break between intervention and the post test.

The Career Exploration Survey Self Exploration - Study Four

Similar conclusion and discussion arise from the CES Self Exploration subscale as to the CES Environmental Exploration subscale. The Chaos group recorded an increase in mean scores between pre testing and post intervention, the Trait and factor group a recorded a slight increase in mean. At 28 days the Chaos group reported a slight increase in mean and the Trait and factor group a slight decrease in mean. The points raised earlier apply as the questions on this subscale asked about actions in the form of behaviours in the last three months.

One difference is that while the first subscale "environmental exploration" involved physical behaviours such as the collection of career information; the behaviours examined in the "self exploration" subscale are more internal. The "self exploration" subscale asked to what extent respondents' behaviours in the past three months had "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career". The pre test may have increased the participants' retrospective thinking about careers between the test and the intervention post test or the intervention itself may be prompting a more positive outlook from respondents.

On "self exploration", the Chaos group recorded an increase in mean scores between pre testing and the test post intervention, the Trait and factor group recorded a slight increase. Results for Study Four are similar to Study Three in that both groups recorded similar increases (1.08) chaos and (.93) Trait and factor. In Study Three the Chaos group saw some gains at 28 days (1.92) and the Trait and factor group maintained approximately half the post intervention gains at 28 days with a small decrease in mean scores (.43).

In summary the results of this study were largely similar to Study Three. The participants in Study Three had received career education lessons in Year Nine once a fortnight. The participants in Study Four were Year Eleven students from the same school as the participants in Study Three. While these Year Eleven students did not receive career education throughout Year Eleven, they had received lessons in their previous years as part of their Year Nine and Year Ten curriculum. Study Five proposes to investigate the generalisability of the results of Study Three by replication with a similar group of Year Ten high school students without any prior career education.

The aim of Study Five is to investigate the generalizability of the results of Study Three by replication with a similar group of high school students without any prior career education.

CHAPTER NINE

Study Five

Utility of intervention

Studies comparing two high school career education classes, one receiving a traditional trait and factor based lesson and the other a lesson incorporating the Chaos Theory of Careers

Introduction

Study Five aims to investigate the generalisability of the results of Study Three by replication with a similar group of high school students without any prior career education. Participants in Study Three were Year 10 students and the studies ran in their timetabled career classes. A difference being that these students had previously received career lessons once a fortnight through Year Nine. The participants in Study Five were Year Ten students who had not received any timetabled career lessons in Year Nine.

Study Five was run with the same methods as Study Three, in which the participants were from Year 10 career education classes at a coeducational comprehensive high school of 750 students in regional New South Wales. The rationale behind this study was to test whether results reported in study three are replicated under similar conditions in Study Five.

The participants were from the same high school as the participants in Study Three and Study Four and the same high school in which the researcher is the careers teacher. These studies were run in the calendar year following the previous intervention Studies, Three and Four. The same timeline of delivery as Study Three was used based on the timetabled careers of once per fortnight. A difference between Study Three and Five is that participants in Study Five had not received any career education lessons prior to the study. The procedure involved pre testing in one scheduled lesson, delivering the intervention lesson and post testing in the next scheduled lesson, one fortnight after the pre test, both groups then completed the final round of testing in the scheduled lesson at twenty eight days post intervention. The participants in Study Five received the same intervention lessons as those in Study Three and Four where the intervention for one group was a career education lesson that ran for 60-70 minutes incorporating the Trait and factor approach and the other group received a lesson incorporating the Chaos Theory of careers.

Method

Intervention Lessons

The lessons presented for each group followed the same lesson plans as outlined Appendices G and H. One group receiving a career education lesson that incorporated a Chaos Theory of Careers Approach and the other group a lesson that incorporated a Trait and factor approach.

Both groups were surveyed using the CDSE-SR, the CEPI and the CES prior to the intervention, immediately after the intervention and again at twenty eight days. Twenty eight days was chosen as a period of time as it represented two cycles of the school's established two week timetable until the next scheduled career lesson.

Study Five involved 20 students in the Chaos Theory of Careers group and 20 in the Trait and factor group from the scheduled career education class groups of that school. Study Three began in March of 2012 in Term One of Year 10 so that the participants had received no previous school based career education lessons.

Measures

The participants in Study Five were tested using the CDSE-SR, the CEPI and the CES as described in Study Three and Appendix K, prior to the intervention, immediately after the intervention lesson and again at twenty eight days. Twenty Eight days representing two cycles of the school timetable until the next scheduled career lesson.

The results from these measures were entered in to SPSS analysis version 22, using analysis for General linear model and repeated measures. Twenty students were in the Trait and factor group and twenty were in the Chaos group.

Results

The Career Decision Self-Efficacy Scale - Short Form Results-Subscale Self Appraisal

The Career Decision Self-Efficacy Scale-Short Form five subscales, each with five items. The score for each are added together and the mean of the five items calculated for the score on each subscale.

For Study Five on the first subscale of the CDSE-SF, "self appraisal" the pre test mean, as shown in Figure 9.1, for the Chaos group was 3.07, this increased to 3.16 after the intervention and further increased to a mean of 3.59 at 28 days post intervention. The Trait and factor group pre test mean was 3.26 and increased to 3.70 post intervention and returned to 3.47 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "self appraisal" were .27 and, using guidelines proposed by Cohen (1988) reflect quite a large effect size.

Figure 9.1: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Self Appraisal" in Study Five.



The interaction effect for "self appraisal"-intervention was significant returning a Wilks' Lambda value of .63 and p<.05. Partial Eta squared scores for "self appraisal"-intervention were .37 which reflects a large effect in terms of interaction. Tests of between-subjects effect were non significant at the interval intervention. The tests of between subject effects size using Partial Eta squared were small at .04 for the intervention. Tests of within subject contrasts were significant (p<.05) and non significant for the "self appraisal"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the subscale of "self appraisal" was .78.

Results The Career Decision Self-Efficacy Scale - Short Form Occupational Information - Study Five The second subscale tested in the Career Decision Self-Efficacy Scale-Short Form was "occupational information". As shown in Figure 9.2, the pre test mean for the Chaos group of 20 participants was 2.96, and increased to 3.24 after the intervention and increased again to a mean score of 3.63 at 28 days post intervention. For the Trait and factor group of 20 participants the pre test mean was 3.18 which increased to 3.53 post intervention and decreased to 3.36 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "occupational information" were .47 and, using guidelines proposed by Cohen (1988) these results represent a large effect size.

Figure 9.2: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Occupational Information" in Study Five.



The interaction effect for "occupational information"-intervention was significant returning a Wilks' Lambda value of .64 and p<.05 and Partial Eta squared scores for "occupational information"-intervention .36 which reflected a large effect in terms of interaction. Tests of between-subjects effect were non-significant. The tests of between subject effect size using Partial Eta squared was too small at .01 for the intervention. In tests of within subject contrasts

results were significant (p<.05) and also significant for the "occupational information"intervention interaction (p<.05).

The overall reliability for the three measures, pre, post and 28 days for the subscale of occupational information was .67.

Results The Career Decision Self-Efficacy Scale - Short Form Goal Selection – Study Five

The third subscale tested in the CDSE-SF subscale "goal selection" in which the pre test mean, as shown in Figure 9.3, for the Chaos group of 20 participants was 2.88, which increased to 3.29 after the intervention and further increased to a mean score of 3.66 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 3.13 which increased to 3.71 post intervention and returned to 3.50 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "goal selection" were .49 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 9.3: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Goal Selection" in Study Five.



The interaction effect for "goal selection"-intervention was significant returning a Wilks' Lambda value of .63 and p<.05 and Partial Eta squared scores for "goal selection"-intervention .37 which reflect a large effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was small at .03 for the intervention. Tests of within subject contrasts were significant (p<.05) and significant for the "goal selection"-intervention interaction (p<.05)

The overall reliability for the three measures, pre, post and 28 days for the subscale of "goal selection" in Study Five was .74.

Results The Career Decision Self-Efficacy Scale - Short Form Planning – Study Five The fourth subscale tested in the CDSE-SF subscale "planning" the pre test mean, as shown in Figure 9.4, for the Chaos group of twenty participants was 2.88, the mean increased to 3.09 after the intervention and rising to a score of 3.38 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 3.06 which increased to 3.49 post intervention and returned to 3.35 at twenty eight days. In terms of effect size, the partial Eta Squared scores for goal selection were .33 and, using guidelines proposed by Cohen (1988), these results show a large effect size.

Figure 9.4: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Planning" in Study Five.



The interaction effect for "planning"-intervention was significant returning a Wilks' Lambda value of .75 and (p<.05). Partial Eta squared scores for "planning"- intervention were .25 which shows a large effect in terms of interaction. Tests of between-subjects effect were non significant at the intervention. The tests of between subject effect size using Partial Eta squared showed a small effect at .03 for the intervention. Tests of within subject contrasts were significant for "planning" (p<.05) and non-significant for the "planning"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the subscale of "planning" in Study Five was .70.

The Career Decision Self-Efficacy Scale - Short Form Results-Problem Solving

The fifth and final subscale tested in the Career Decision Self-Efficacy Scale-Short Form

was "problem solving", the pre test mean for the Chaos group of twenty participants, as shown in Figure 9.5, was 3.09, which increased to 3.22 after the intervention and further increased to a mean of 3.65 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 2.93 which increased to 3.60 post intervention and decreased to 3.29 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "goal selection" were .47 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 9.5: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Problem Solving" in Study Five.



The interaction effect for "problem solving"-intervention was non-significant returning a Wilks' Lambda value of .56 and p<.05. Partial Eta squared scores for "problem solving"-intervention were .44, which reflected a moderate effect in terms of interaction. Tests of between-subjects effect reflected were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was too small at .00 for the intervention. In tests of within subject

contrasts results were significant (p< .05) and at "problem solving"-intervention the interaction was non-significant.

The overall reliability for the three measures, pre, post and 28 days for the subscale of "problem solving" in Study Five was .69.

Career Decision Self-Efficacy Scale-Short Form Total Score-Study Five

Aside from the five subscales fifth the Career Decision Self-Efficacy Scale-Short Form provides an overall measure for self-efficacy calculated through the sum of all twenty five responses.

For Study Five the mean for the "Total Score" on the Career Decision Self-Efficacy Scale-Short Form for the Chaos group of twenty participants, as shown in Figure 9.6, was 74.40, which increased to 80.00 after the intervention and further increased to a mean of 89.55 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 77.80 which increased to 90.15 post intervention and decreased to 84.85 at twenty eight days. In terms of effect size, the partial Eta Squared scores for the Career Decision Self-Efficacy-Short Form total were .55 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 9.6: Graph showing the Career Decision Self-Efficacy - Short Form results for the "Total Scores" in Study Five.

The interaction effect for the Career Decision Self-Efficacy Scale - Short Form -"total scores" was significant (p<.05) returning a Wilks' Lambda value of .47 and Partial Eta squared scores for "total scores"-intervention .53 which using Cohen (1988) reflect a large effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was between small effect and moderate effect at .02 for the intervention. Tests of within subject contrasts were significant (p<.05) and at the intervention were also significant (p<.05).

The overall reliability for the three measures, pre, post and 28 days on the Career Decision Self-Efficacy Scale-Short Form- "total scores" in Study Four was 0.92.

Results The Career Exploratory Plans or Intentions Scale Study Five

The Career Exploratory Plans or Intentions Scale comprised of five items and a single scale where scores are calculated using the sum of values. Higher scores represent a greater intention to engage in career decision making related activities. The pre test mean for the Chaos group of twenty participants, as shown in Figure 9.7, was 19.95, this decreased slightly to a mean of 19.65 after the intervention and increased to a mean score of 20.60 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 18.60 which increased to 19.40 post intervention and decreased to 18.85 at twenty eight days. In terms of effect size, the partial Eta Squared scores for the CEPI were .02 and, using guidelines proposed by Cohen (1988) these results show a small effect size.

Figure 9.7: Graph showing the results for the "Career Exploratory Plans or Intentions Scale (CEPI)" in Study Five.



The interaction effect for "CEPI"-intervention was non significant returning a Wilks' Lambda value of .93. Partial Eta squared scores for "CEPI"-intervention were .07 which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were not significant at the intervention. The tests of between subject effect size using Partial Eta squared showed a moderate effect at .07 for the intervention. Tests of within subject contrasts were non significant and non significant at "CEPI"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploratory Plans or Intentions Scale in Study Five was .78.

Results The Career Exploration Survey Environmental Exploration - Study Five

The Career Exploration Survey comprised of two subscales, "environmental exploration" comprising of six items and "self exploration" which comprised of five items. Scores were calculated using the sum of values. Higher scores in "environmental exploration" represent a greater external career exploration. Higher "self exploration" scores indicate greater internal career exploration. The pre test mean, as shown in Figure 9.8, for the Chaos group of twenty participants for "environmental exploration" was 11.40, which increased to 14.30 after the intervention and further increased to a mean of 18.75 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 14.65 which increased to 17.10 post intervention and decreased to 16.15 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "environmental exploration" were .43 and, using guidelines proposed by Cohen (1988) these results show a large effect.





The interaction effect for "environmental exploration"-intervention was significant returning a Wilks' Lambda value of .74 and p<.05. Partial Eta squared scores for "environmental exploration"-intervention were .01 which reflects a small effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was a small an effect at .01 for the intervention. In tests of within subject contrasts results were significant (p<.05) and significant for the "environmental exploration"-intervention interaction (p< .05).

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey on the subscale Environmental Exploration was .88. Results The Career Exploration Survey Self Exploration- Study Five

The second subscale measured by the Career Exploration Survey (CES), "self exploration" comprises of five items. Scores are calculated using the sum of values. The pre test mean, as shown in Figure 9.9, for the Chaos group of twenty participants for "self exploration" was 12.9, which increased to 14.00 after the intervention and further increased to a score of 17.55 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 13.25 which increased to a mean of 16.00 post intervention and decreased to 14.85 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "environmental exploration" were .38 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 9.9: Graph showing the results for the Career Exploration Survey, Subscale Self Exploration in Study Five.



The interaction effect for "self exploration"-intervention was significant returning a Wilks' Lambda value of .64 and (p<.05). Partial Eta squared scores for "self exploration"-intervention were .36 which reflects a large effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was too small for effect at .00 for the intervention. In tests of within subject contrasts were significant (p<.05) and at self exploration-intervention the interaction was also significant (p<.05).

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey on the subscale Self Exploration was .84.

Discussion and Concluding Comments Study Five Intervention study

The Career Decision Self-Efficacy Scale - Short Form

For this study the Career Decision Self-Efficacy Scale Short form was used to test five subscales pre, post and at 28 days post intervention for two groups of Year Ten career education classes. Of the two groups of participants, one group received a traditional Trait and factor styled lesson and the other a lesson incorporating the Chaos Theory of Careers. The post intervention testing shows that the self-efficacy measures for both groups increased post intervention. The testing at 28 days shows lesson incorporating the Chaos Theory of Careers had benefits that were similar and in some cases, arguably stronger, than the traditional lesson.

As the aim of Study Five was to investigate the generalisability of the results of Study Three by replication with a similar group of high school students without any prior career education the following discussion will compare the results of Study Five with Study Three.

Self Appraisal subscale Study Five

Results for the CDSE SF subscale "self appraisal" were very similar the two previous studies, Study Three and Four in which both the Chaos intervention group and the Trait and factor group recorded similar increases post intervention and at 28 days the Chaos group had returned to similar pre test levels while the Chaos group maintain or recording small increases post intervention scores. In this study, Study Five, the Trait and factor group recorded a larger post intervention gain (.44) than the Chaos group (.09), and instead of returning toward pre test levels as in the previous two studies, the mean decreased by approximately half (.23). The Chaos group which had maintained or made slight increases in the mean score in the previous two studies at 28 days, made larger gains in this study (.43).

This may be an unusual result, in terms of an increase in mean scores at 28 days post intervention for the Chaos group after only a small increase in mean score post intervention, or it may show that the Chaos approach tends to maintain benefits at 28 days, as the mean score for the Chaos group has increased at 28 days in two of the three studies. While further study is recommended with a wider range of high school student groups, these three studies show that while the Trait and factor approach, given that it requires a level of self appraisal in terms of considering one's interests and skills, is as effective or arguably slightly more effective than the Chaos Theory approach immediately post intervention for the "self appraisal" aspects of self-efficacy, however, the Chaos Theory of Careers approach may be more beneficial with high school students at twenty eight days post intervention.

Occupational Information subscale - Study Five

The results for the subscale "occupational information" in Study Three showed the mean score for both the Trait and factor group and the Chaos group increased post intervention with the Trait and factor group mean returning towards pre test levels at 28 days. Results in this study (study five) were similar to Study Three in that both groups increased post intervention (.28) Chaos and (.35) for the Trait and factor group, at 28 days the mean for the Trait and factor

group decreased by approximately half of this gain (.17) while the Chaos group increased (.39). This increase at 28 days may be unusual for the Chaos group as this result is larger than that of the previous two studies. The pattern emerging from the three studies shows evidence of self-efficacy scores for "occupational information" increasing post intervention for both the Chaos and Trait and factor approach. Based on the three studies in career education practice both the Trait and factor approach and the Chaos approach could be used to stimulate high school students toward seeking occupational information, immediately post intervention however, the Chaos Theory approach seems to have more lasting benefit.

Goal Selection subscale - Study Five

Results for the subscale" goal selection" in this study, Study Five, show a similar pattern for the Trait and factor group in that it had an increase (.35) post intervention and decreased by approximately half that increase (.17) at 28 days. The result in this study that differs to Study Three and Four is that the Chaos group reported gains (.39) at 28 days. More study is required as results on "goal selection" particularly for the Chaos approach, have varied in each of these three studies, however some pattern was observed in which the Trait and factor intervention demonstrated gains post intervention that returned part of the way toward to pre test mean scores at 28 days. While there are benefits of both approaches, in these three studies the Trait and factor approach seems to show more benefits on the self-efficacy subscale of "goal selection".

Planning subscale-Study Five

In the previous two studies, Study Three and Four, both groups increased scores post intervention however, the Trait and factor group returned towards pre test scores at 28 days while the Chaos group scores remained closer to the post intervention. In this study the Trait and factor mean scores increased(.43) post intervention and the Chaos group increased (.21) Instead of returning to similar pre test levels as they did in Study Three and Four, the Trait and factor group mean decrease by a smaller amount (.14) at 28 days. The difference in this study from Study Three and Four was that the Chaos group recorded a small increase (.21) post intervention and further increased (.29) at 28 days. Results from the three studies show that on the subscale of "planning", both the Trait and factor approach and the Chaos approach have benefits post intervention and results have varied at 28 days. The results for the practice of career education in high school may be that pending the needs and context of the individual student or school, both Trait and factor approaches and Chaos approaches are worth considering as potentially equally beneficial for high school students on the self-efficacy subscale of "planning".

Problem Solving subscale -Study Five

The results for the subscale of "problem solving" in Study Five saw a similar pattern emerge from the previous two studies, in which the mean for both groups increased post intervention and at 28 days the Trait and factor group mean returns towards the pre test mean and the Chaos group remained closer to retaining the post intervention mean. In this study, Study Five, the Trait and factor group recorded a much bigger increase (.67) than the Chaos group (.13) post intervention. The result that is different in this study compared to Study Three and Four is that the Chaos group recorded an increase (.43) at 28 days and the Trait and factor group mean decreased by approximately half the post intervention increase (.31).

The results in this study were much closer than the previous two studies. Both approaches recorded increased results post intervention and the Chaos approach recorded slightly increased mean scores for problem solving at 28 days. While the differences in this study were small, the results when these results are observed with those of Study Three and Study Four the pattern emerging seems to indicate in the high school career education setting both approaches increase self-efficacy scores on the subscale of "problem solving" and of the two approaches the Chaos approach seem to retain more of those benefits at twenty eight days post intervention.

Career Decision Self-Efficacy Scale - Short Form Total Score - Study Five The "Total" score for the Career Decision Self-Efficacy Scale-Short Form is calculated from the sum of all five of the above subscales. Results in Study Five had some differences to Studies Three and Four in which both groups reported increases in mean scores post intervention and at 28 days the Trait and factor group returned towards a mean score slightly above their pre test mean and the Chaos group remained closer to their post test mean. In Study Five the Trait and factor group recorded a large post intervention increase (12.35) and decreased by less than half of this at 28 days (5.30). The Chaos group recorded a smaller increase post intervention (5.60) and unlike Studies Three, Four and Five, recorded a further increase in mean (9.55) at 28 days. This may be an unusual result however, it is the second time in three studies that the Trait and factor group has recorded a higher mean score post intervention and the second time in which the Chaos group mean score has increased at 28 days. The first three studies showing the Chaos Theory approach and the to the Trait and factor approach both have Career Decision Self-Efficacy benefits at the time of the intervention and at 28 days post intervention the Chaos approach demonstrates similar or stronger benefits on most subscales.

Results from Study Four enhances points raised in discussion of Studies Three and Four which suggested career education practitioners may find they can best serve their students by including a Chaos Theory approach for self-efficacy elements such as "Self Appraisal", "Occupational Information" and "Problem Solving" and a "Trait and Factor Approach" for "Goal Setting" and consider the benefits of either or of both approaches as beneficial to "Planning".

The Career Exploratory Plans or Intention scale Study Five

The Career Exploratory Plans or Intention scale (CEPI) is designed to test participants career related intentions and plans with questions such as "I intend to spend more time learning about", "I plan to talk to ", "I am committed to learning more ", "I intend to get all the education I need" and "I plan to talk to advisors". For this study the scores for the Chaos group have been more consistent with the previous two studies showing a large increase in mean post

intervention in the Study Three and holding well at 28 days and in Study Four making a small increase post intervention (.25), and a further increase (.58) at 28 days. The Trait and factor results took an unusual shape in this study, decreasing (.71) after intervention and returned to the exact pre test score at 28 days. More study is required on the Career Exploratory Plans or Intentions Scale. There is some indication the Chaos approach is beneficial however, results, particularly results for the Trait and factor approach, have been inconsistent in these studies.

Results for the Career Exploratory Plans or Intention scale have differed in each of the three studies. In the first two studies the Chaos group showed increases in mean post intervention and small increases (.25) (.58) at 28 days. In this study, Study Five, the Trait and factor mean increased post intervention (.80) and at 28 days returned toward pre test levels, decreasing .55. These results for the Trait and factor approach are similar to those of Study Four. A difference in this study was that the Chaos group recorded a decrease in mean (.35) post intervention and an increase (.95) at 28 days.

Further study is recommended with the CEPI and career education intervention with high school students, based on the inconsistency of these results. For career practitioners the results of these three studies are inconsistent, showing both or either of the Trait and factor approach and the Chaos Theory approach may be beneficial to high school students possibly depending on variables regarding each individual or group that were not known in these studies. For this reason, further study is recommended with a wider range of high school students. Despite the inconsistencies, the one pattern that has emerged in each of the three studies is that at twenty eight days the Chaos Theory approach has recorded an increased mean score, the fact that in this particular study the mean score decreased slightly, immediately post intervention, shows the inconsistency of results and reinforces the need for further study.

The Career Exploration Survey – Study Five

While the CEPI measured intention and plans the Career Exploration Survey (CES) asked participants to indicate the career actions they had undertaken in the past three months.

Respondents were asked to rate on a five item scale to the extent they have "behaved" in the following ways over the last three months. It is valuable to investigate actions and not just intentions, as it may better inform career education in schools. The results from the Career Exploration Survey however, raise the possibility that participants are mistakenly reporting on intentions rather than actions. This is likely as period of time between the pre test and the intervention was two weeks in Study Three and Study Five. The period of time between the intervention lessons and the post intervention testing was five minutes which means it would be highly unlikely respondents could complete the listed actions as a result of the intervention and report these actions in the post test held five minutes after the intervention.

The results in Study Three saw both groups report an increase in mean scores between the pre and post testing, the Trait and factor group returning to a mean score slightly above the pre test score and the Chaos group making slight increase in mean after 28 days. In this study, Study Five, both groups reported an increase in mean post intervention (2.90) for the Chaos group and (2.45) for the Trait and factor group. The Chaos group recorded further increases in mean (4.35) at 28 days while the Trait and factor group decreased (.95). Both groups report a benefit from the Career Exploration Survey in terms of "environmental exploration" but it seems unlikely these are behaviours being reported and more likely intentions post intervention.

Similar conclusion and discussion arises from the CES "self exploration" subscale the Chaos group recorded a rise in mean scores between pre testing and post intervention testing, the Trait and factor group recorded a slight increase in mean. Results for the Trait and factor group in Study Five are similar to Study Three and Four in that there was a rise post intervention (2.75) with a decrease (1.25) at 28 days. In Study Three, both groups saw a similar rise (1.08) for the Chaos group and (.93) for the Trait and factor group. In this study, as in Study Three the Chaos group recorded an increase in mean at 28 days (3.55). The points raised earlier apply as these questions asked about actions in the last three months, while the first subscale environmental exploration involved physical behaviours like collecting career information which require the physical availability of resources, the behaviours in the "self exploration" subscale require more internal reflection. Their internal nature means they can potentially be enacted upon more readily than "environmental exploration" as they require fewer physical resources.

The "self exploration" subscale asked behaviours in the past three months "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career". As discussed with the previous subscale "environmental exploration", respondents may be reporting a more positive outlook towards these concepts without having acted or "behaved" as described in the test question itself.

Summary

The aim of Study Five was to investigate the generalisability of the results of Study Three by replication with a similar group of high school students without any prior career education.

Study Three and Five showed both the Chaos Theory of Careers group and the Trait and factor group showed increase in mean scores post intervention on "self exploration", "goal selection", "planning", "problem solving" and "environmental exploration". The Chaos Theory group was more likely than the Trait and factor group to retain the benefits of the intervention at 28 days retain. An exception may be "goal selection" in which the mean for the Trait and factor group increased at 28 days in Study Five.

While Study Three involved Year 10 students, Study Four Year 11 students, and Study Five involved Year 10 students with no previous career education, all participants were from the same school at which the researcher was a careers teacher. Study Six proposes to investigate whether results from Studies Three and Five can be replicated in a different school.

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CHAPTER TEN

Study Six

Introduction

Study Six aims to test the benefits of career lessons incorporating a Chaos Theory of Careers compared to those using a Trait and factor approach and to investigate whether results from Studies Three and Five can be replicated in a different school.

Study Six ran at a different school to the researcher's, thirty kilometres away from the researcher's school with part of the rationale being to test whether responses and findings would be any different when the researcher does not teach the respondents and had not met any of these respondents before.

Design

This Study compared two high school career education classes, one receiving a traditional Trait and factor based lesson and the other a lesson incorporating the Chaos Theory of Careers. Both groups of participants were pre tested, tested immediately post intervention and tested again at 28 days.

The aims of Study Six were to test the benefits of career lessons incorporating a Chaos Theory of Careers compared to those using a Trait and factor approach and to investigate whether results from Studies Three and Five, can be replicated in a different school.

Study Six was run with the similar methods as Study Three, where the participants were from Year 10 career education classes, the difference being the classes were from a high school in which the researcher was not known to the students. The students in this study were from a comprehensive coeducational high school of 450 students in regional New South Wales with very similar Index of Socio-Educational Advantage (IACS) scores. The school involved in Study Six had an IACS of 939 while the school in Study Five had an IACS of 917 for the same year. Both school had an IACS for 2013 that was below the national average of 1000 .The Index of Socio-Educational Advantage is used by the "My School website" for comparison of national test results on literacy and numeracy and takes in to account parents' occupations and education as well as the school's geographic location and the proportion of Indigenous students (Retrieved 17 February 2015 from <u>http://www.myschool.edu.au/MoreInformation</u>). The participants in this study were Year 10 students from a comprehensive coeducational high school of 450 students in rural New South Wales. The students were assigned to the Chaos or Trait and factor group based on their timetabled career education classes already scheduled by the school. The host school's career teacher was present for all aspects of the studies observing all aspects of the delivery of the intervention lessons and assisted the researcher in the testing phase of each of lesson. The intervention lessons ran to the same lesson plan and timing as the previous three studies.

A difference from Study Three and Five was the time between pre test and intervention which was four days as this particular school had career education lessons timetabled once per school week. Consistent with Studies Three, Four and Five the time between intervention and post test was a five minute break and the final testing was took place 28 days post intervention.

The participants received the same intervention lessons as Study Three and Four where the intervention for one group was a career education lesson that ran for 60-70 minutes incorporating the Trait and factor approach and the other group received a lesson incorporating the Chaos Theory of Careers.

Method

Intervention Lessons

The lessons presented for each group followed the same lesson plans as outlined in Appendices G and H. One group receiving a career education lesson that incorporated a Chaos Theory of Careers Approach and the other group a lesson that incorporated a Trait and factor approach.

Both groups were surveyed using the CDSE-SR, the CEPI and the CES prior to the intervention, immediately after the intervention and again at twenty eight days. Twenty Eight days was chosen as a period of time as it represented two cycles of the school's established two week timetable until the next scheduled career lesson.

Study Six involved Twenty One students in the Chaos Theory of Careers group and twenty in the Trait and factor group from the career education class groups scheduled by their school. Study Five began in March of 2012 in Term One of Year 10 so that the participants had received no previous school based career education lessons.

Measures

The participants in Study Six were tested using the CDSE-SR, the CEPI and the CES as described in Study Three and Appendix K, prior to the intervention, immediately after the intervention lesson and again at twenty eight days.

The participants for Study Six were tested prior to, immediately after intervention and again at 28 days and these results were entered in to SPSS analysis version 22, using analysis for General linear model and repeated measures. Twenty students were in the Trait and factor group and twenty one were in the Chaos Theory of Careers group.

Results

The results for this study were gathered from testing prior to, immediately after intervention and again at 28 days were entered in to SPSS analysis version 22, using analysis for General linear model and repeated measures, fourteen students were in the Trait and factor group and twelve were in the change group.

The Career Decision Self-Efficacy Scale-Short Form Subscale Self Appraisal

The CDSE-SF has five subscales, each with five items. The score for each are added together and the mean of the five items calculated for the score on each subscale.

For this study on the first subscale "self appraisal" the pre test mean for the Chaos group of twenty one participants, as shown in Figure 10.1, was 3.48, which increased to 3.70 after the intervention and further increased to a mean of 3.79 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 3.16 which increased to 3.38

post intervention and decreased to 3.17 at twenty eight days. In terms of effect size, the Partial Eta Squared scores for "self appraisal" were .20 and, using guidelines proposed by Cohen (1988) the results here indicate a large effect size.

Figure 10.1: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Self Appraisal" in Study Six.



The interaction effect for "self appraisal"-intervention was significant returning a Wilks' Lambda value of .83 and p<.05. Partial Eta squared scores for "self appraisal"-intervention were.17 which using Cohen (1988) reflects a large effect in terms of interaction. Tests of between-subjects effect results were non-significant at the interval and significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared was large at .17 for the intervention. Tests of with subject contrasts were significant (p<.05) and significant for the "self appraisal"-intervention interaction (p<.05).

The overall reliability for the three measures, pre, post and 28 days for Career Decision Self-Efficacy Scale-Short Form subscale "self appraisal" in Study Six was .59.

Career Decision Self-Efficacy Scale - Short Form Subscale Occupational Information

For the second subscale tested in the Career Decision Self-Efficacy Scale - Short Form subscale "occupational information" the pre test mean for the Chaos group of 21 participants, as shown in Figure 10.2, was 3.65, which increased to 3.73 after the intervention and increased slightly to a mean score of 3.82 at 28 days post intervention. For the Trait and factor group of 20 participants the pre test mean was 3.16 and 3.32 post intervention and returned to 3.27 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "occupational information" were .08 and, using guidelines proposed by Cohen (1988) these results represent a large effect size.

Figure 10.2: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Occupational Information" in Study Six.


The interaction effect for "occupational information"-intervention was non significant returning a Wilks' Lambda value of .98 and Partial Eta squared scores for "occupational information"intervention .02, which reflect a small effect in terms of interaction. Tests of between-subjects effect were significant at the interval (p<.05). The tests of between subject effect size using Partial Eta squared was large at .24 for the intervention. In tests of within subject contrasts results were non significant. The interaction was also non significant for the "occupational information"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for Career Decision Self-Efficacy Scale-Short Form subscale "occupational information" in Study Six was .68.

Results Career Decision Self-Efficacy Scale - Short Form Goal Selection –Study Six

The third subscale tested in the CDSE-SF subscale "goal selection" the pre test, as shown in Figure 10.3, for the Chaos group of 21 participants the mean was 3.57, which increased to 3.78 after the intervention and maintained a mean score of 3.68 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 3.03 which increased to 3.31 post intervention and returned to 3.28 at twenty eight days. In terms of effect size, the partial Eta Squared scores for goal selection were .17 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 10.3: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Goal Selection" in Study Six

The interaction effect for "goal selection"-intervention was non significant returning a Wilks' Lambda value of .98 and Partial Eta squared scores for "goal selection"-intervention .02 which reflects a small effect in terms of interaction. Tests of between-subjects effect did reflect significance at the intervention p<.05. The tests of between subject effect size using Partial Eta squared was large at .20 for the intervention. Tests of within subject contrasts were significant (p<.05) for "goal selection" and non-significant for the "goal selection"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for Career Decision Self-Efficacy Scale-Short Form subscale "goal selection" in Study Six was .66.

Results Career Decision Self-Efficacy Scale - Short Form Planning – Study Six

The fourth subscale tested in the CDSE-SF subscale "planning" the pre test mean, as shown in Figure 10.4, for the Chaos group of twenty one participants was 3.45, which increased to 3.63

after the intervention and increased slightly to a score of 3.69 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 2.98 rising to 3.30 post intervention and returned to 3.14 at twenty eight days. In terms of effect size, the Partial Eta Squared scores for goal selection were .18 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 10.4: Graph showing the Career Decision Self-Efficacy-Short Form results for the subscale "Planning" in Study Six



The interaction effect for "planning"-intervention were non significant returning a Wilks' Lambda value of .93. Partial Eta squared scores for "planning"-intervention was .07, which shows a moderate effect in terms of interaction. Tests of between-subjects were significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared showed a large effect at .17 for the intervention. Tests of with subject contrasts were significant for "planning" (p<.05) and results were non significant for the "planning"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for Career Decision Self-Efficacy Scale-Short Form subscale "planning" in Study Six was .75.

Results

Career Decision Self-Efficacy Scale - Short Form

Problem Solving - Study Six

The fifth and final subscale tested in the CDSE-SF subscale "problem solving" the pre test mean, as shown in Figure 10.5, for the Chaos group of twenty one participants was 3.56, which increased to 3.77 after the intervention and further increased to a mean a score of 3.90 at 28 days post intervention. For the Trait and factor group of fourteen participants, the pre test mean was 3.27 which increased to 3.33 post intervention and returned to 3.12 at twenty eight days. The main effect for time was not significant with multivariate tests showing Wilks' Lambda of .98 for "problem solving". In terms of effect size, the Partial Eta Squared scores for problem solving were .02 and, using guidelines proposed by Cohen (1988) these results show a small effect size.

Figure 10.5: Graph showing the Career Decision Self-Efficacy - Short Form results for the subscale "Problem Solving" in Study Six



The interaction effect for "problem solving"-intervention was non significant returning a Wilks' Lambda value of .86. Partial Eta squared scores for "problem solving"-intervention was .14 which reflected a large effect in terms of interaction. Tests of between-subjects effect did show significance at the intervention p<.05. The tests of between subject effect size using Partial Eta squared was large at .19 for the intervention. Tests of within subject contrasts were non significant for "problem solving" and for the "problem solving"-intervention interaction was also non significant.

The overall reliability for the three measures, pre, post and 28 days for Career Decision Self-Efficacy Scale – Short Form subscale "problem solving" in study six was .73.

Results Career Decision Self-Efficacy Scale - Short Form Total Score - Study Six

Aside from the five subscales fifth the Career Decision Self-Efficacy Scale-Short Form provides an overall measure for self-efficacy calculated through the sum of all twenty five responses.

For study one the CDSE "total scores" as a mean for Chaos group of twenty one participants, as shown in Figure 10.6, was 88.5, which increased to 93.09 after the intervention maintaining a mean of 94.33 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 76.50 which increased to a mean of 83.20 post intervention and returned to 79.90 at twenty eight days. In terms of effect size, the partial Eta Squared scores for the career decision self-efficacy short form total were .27 and, using guidelines proposed by Cohen (1988) these results show a large effect size.



Figure 10.6: Graph showing the Career Decision Self-Efficacy - Short Form results for the "Total Scores" in Study Six

The interaction effect for the CDSE-SF "total scores"-intervention was non significant and returned a Wilks' Lambda value of .90 and Partial Eta squared scores for "total scores"-intervention of .09, which using Cohen (1988) reflect a moderate effect in terms of interaction. Tests of between-subjects effect were significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared was moderate at .09 for the intervention. Tests of within subject contrasts were significant (p<.05) for "total scores" and at the "total scores"-intervention interaction was non significant.

The overall reliability for the three measures, pre, post and 28 days on the Career Decision Self- Efficacy-Short Form "total scores" in Study Six was 0.92.

Results The Career Exploratory Plans or Intentions Scale Study Six

The Career Exploratory Plans or Intentions Scale (CEPI) comprised of five items and a single scale where scores are calculated using the sum of values. Higher scores represent a greater intention to engage in career decision making related activities. The pre test mean, as shown in Figure 10.7, for the Chaos group of twenty one participants was 20.10, this decreased to 19.86 after the intervention and at 28 days post intervention increased to a mean score of 20.43. For the Trait and factor group of twenty participants the pre test mean was 16.55 which increased to 17.70 post intervention and remained at a mean of 17.70 at twenty eight days. The main effect for time was non-significant with multivariate tests showing Wilks' Lambda of .93 for p=.28. In terms of effect size, the Partial Eta Squared scores for the CEPI were .07 and using guidelines proposed by Cohen (1988) these results show a moderate effect size.

Figure 10.7: Graph showing the results for the "Career Exploratory Plans or Intentions Scale (CEPI)" in Study Six.



The interaction effect for problem "CEPI"-intervention was non-significant returning a Wilks' Lambda value of .95. Partial Eta squared scores for "CEPI"-intervention was .06 which reflects a small to moderate effect. Tests of between-subjects effect were significant at the intervention (p<.05). The tests of between subject effect size using Partial Eta squared showed a large effect at .28 for the intervention. Tests of with subject contrasts were non-significant for CEPI and non-significant for the "CEPI"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploratory Plans or Intentions Scale in Study Six was .74.

Results The Career Exploration Survey Environmental Exploration - Study Six

The CES comprised of two subscales, "environmental exploration" comprising of six items and "self exploration" five items. Scores for each subscale were calculated using the sum of values. Higher scores in "environmental exploration" represent a greater external career exploration. Higher "self exploration" scores indicate greater internal career exploration. The pre test mean, as shown in Figure 10.8, for the Chaos group of twenty one participants for "environmental exploration" was 15.52, which increased to 16.67 after the intervention and increasing to a score of 18.38 at 28 days post intervention. For the Trait and factor group of twenty participants the pre test mean was 16.6 which increased to 17.7 post intervention and returning to 17.15 at twenty eight days. In terms of effect size, the Partial Eta Squared score for "environmental exploration" was .18 and, using guidelines proposed by Cohen (1988) these results show a large effect size.

Figure 10.8: Graph showing the results for the Career Exploration Survey, subscale "Environmental Exploration" in Study Six.



The interaction effect for "environmental exploration"-intervention was non significant returning a Wilks' Lambda value of .92. Partial Eta squared scores for "environmental exploration"intervention were .08, which reflects a moderate effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was too small an effect at .00 for the intervention. Tests of within subject contrasts for "environmental exploration" were significant (p<.05) and non significant for the "environmental exploration"-intervention interaction.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey subscale "Environmental Exploration" in Study Six was .80. Results The Career Exploration Survey Self Exploration – Study Six

The second subscale measured by the Career Exploration Survey, "Self Exploration", comprised of five items. Scores were calculated using the sum of values. The pre test mean as shown in Figure 10.9, for the Chaos group of twenty one participants for "self exploration" was 13.62, which increased to 14.76 after the intervention and further increased to a mean of 15.57 at 28 days post intervention. The Trait and factor group of twenty participants the pre test mean was 15.60 rising slightly to 16.25 post intervention and returning to 15.6 at twenty eight days. In terms of effect size, the partial Eta Squared scores for "self exploration" were .08 and, using guidelines proposed by Cohen (1988) these results show a moderate effect size.

Figure 10.9: Graph showing the results for the Career Exploration Survey, subscale "Self Exploration" in Study Six.



The interaction effect for "self exploration"-intervention was non significant returning a Wilks' Lambda value of .95. Partial Eta squared scores for "self exploration"-intervention were .06, which reflects a small to moderate effect in terms of interaction. Tests of between-subjects effect were non-significant at the intervention. The tests of between subject effect size using Partial Eta squared was a small effect at .03 for the intervention. In tests of within subject contrasts results were non-significant for "self exploration "and for the "self exploration"-intervention"-intervention interaction were also non-significant.

The overall reliability for the three measures, pre, post and 28 days for the Career Exploration Survey subscale Self Exploration in Study Six was .84.

Discussion and Concluding comments Study Six Intervention study

The Career Decision Self-Efficacy Scale - Short Form

The Career Decision Self-Efficacy Scale - Short Form tested five subscales pre, post and at 28 days post intervention for two groups of Year Ten education classes, one receiving a traditional Trait and factor styled lesson and the other a lesson incorporating the Chaos Theory of Careers. The post intervention testing shows that the self-efficacy measures for both groups as mean scores increased after the intervention and the testing at 28 days shows the lesson incorporating the Chaos Theory of Careers had benefits that were similar and in some cases arguably stronger than the traditional lesson.

The aim of Study Six was to test the benefits of career lessons incorporating a Chaos Theory of Careers compared to those using a Trait and factor approach and to investigate whether results from Studies Three and Five, can be replicated in a different school. The following discussion will compare the results of Study Six to the previous studies, particularly Study

Three and Five as, like Study Six, participants in these studies were from Year Ten high school career education classes.

Self Appraisal subscale

Study Six

Results for the CDSE SF subscale "self appraisal" in this study, Study Six, were very similar to the two previous studies, Study Three and Four in which both the Chaos intervention group and the Trait and factor group recorded similar increases in mean post intervention, at 28 days the Trait and factor group had returned to similar pre test levels while the Chaos group maintained or recorded small increases in mean post intervention scores. In Study Five, the Trait and factor group recorded a larger increase in mean post intervention gain (.44) than the Chaos group (.09), and decreased by .23 at 28 days. The Chaos group which had maintained or made slight gains in the previous two studies at 28 days, recorded larger increases in mean score in this study (.43). In three out of the four studies, the Trait and factor group made similar gains to the Chaos group and returned towards the pre test score at 28 days while the Chaos group was more likely to maintain the post intervention increases in mean score. For career education practitioners seeking to increase high school student's self-efficacy measures for "self appraisal" both the Trait and factor approach and the Chaos Theory approach seem to have similar benefit immediately post intervention. For those seeking to maintain or improve "self appraisal" levels at 28 days post intervention, these studies indicate that the Chaos Theory approach seems to be more beneficial.

Occupational Information subscale

Study Six

The results for "occupational information" in this study showed both the Trait and factor group and the Chaos group recorded increased mean scores post intervention with the Trait and factor group returning towards pre test levels at 28 days. Results in this study were similar to Study Three and Study Five in that the mean for both groups increased post intervention (.08) for Chaos and .16 for the Trait and factor group. The mean for the Trait and factor group decreased by approximately half of this gain (.05) at 28 days while the mean for the Chaos group further increased (.09) at 28 days. The pattern emerging from the four studies shows evidence of self-efficacy scores for "occupational information" increasing for both the Chaos Theory approach and Trait and factor approach post intervention with the Chaos group more likely to hold these results at 28 days.

Goal Selection subscale Study Six

Results in this study are similar to Study Four in which the Trait and factor group recorded higher gains post intervention (.28) compared to the Chaos group (.21) The difference in this case being that the Trait and factor group recorded a slight decrease in mean .03 at 28 days while the Chaos group mean decreased further (.10). Results have varied in these three studies, however there seems to be a pattern emerging in which both the Trait and factor intervention and the Chaos intervention demonstrated positive gains immediately post intervention on the subscale of "goal selection". While the results for the Trait and factor groups teneded to return part of the way toward the pre test mean when measured at 28 days, it could be argued that the Trait and factor approach averaged slightly higher post test gains. For career practitioners the case could be put forward that the Trait and factor approach is more effective for "goal setting measures" while supporters of the Chaos Theory approach may argue that this results shows the versatility of the Chaos approach as results on the "self appraisal" and occupational information subscales compare favourably to the Trait and factor almost as well as the Trait and factor approach on "goal setting"

Planning subscale

Study Six

Results for this study were similar to the previous three studies with both groups increasing their mean score Chaos (.18) and the Trait and factor group (.32) post intervention with the Trait and factor decreasing (.16) at 28 days. A difference in this study was that the Trait and factor group made larger gains post intervention. Results for the Study Three and Study Four on "planning" were very similar with both groups recording increases post intervention and small decreases at 28 days. While the Chaos recorded a slight increase in mean at 28 days in Study Four and the Trait and factor group a decrease, the Trait and factor group recorded a

larger post intervention increase. For career education practitioners the results of these four studies show that on the subscale of "planning" both the Chaos Theory approach and the Trait and factor approach have merit post intervention and at 28 days. The Trait and factor approach arguably records slightly larger increases immediately post intervention, which is consistent given the intervention matching ocupations to participant's interests and discussing the steps toward entry into those occupations inceases in mean score immediately post intervention. The Chaos Theory approach is arguably more likely to retain or improve on its post intervention benefits at 28 days. This may mean in practice in the high school setting, depending on individual and school context, that the Trait and factor approach is, possibly, as effective as, or, more effective than the Chaos approach on "Goal Setting" and "Planning". Given the boost in mean scores post intervention there may be argument that the Trait and factor approach would continue to present higher scores than the Chaos Theory approach if the "goal setting and "planning" was revisited at 28 days or once per ten week school term as goal setting and planning needs to be monitored and revisited. Conversely, supporters of the Chaos approach may suggest that its benefits may also continue if revisited on a schedule.

In these four studies the Chaos approach has shown it may retain the benefits of the intervention above the Trait and factor approach for "self appraisal", and "occupational information" while there may be a case that the Trait and factor approach is arguably as beneficial or more beneficial for the subscales of "goal setting" and that both approaches have benefits on the subscale of "planning", the Trait and factor approach with higher scores post intervention and the Chaos approach more likely to hold or improve results at 28 days.

Problem Solving subscale Study Six

Study Six returned similar results on the subscale of "problem solving" to Study Three and Four. Both the Chaos group and the Trait and factor group recorded increased mean scores post intervention however, the Trait and factor group returned towards pre test scores at 28 days while the Chaos group scores remained closer to the post intervention mean. In this study, the Trait and factor scores increase post intervention was small post intervention (.06)

and decreased (.21) at 28 days. The Chaos group recorded a small increase in mean (.13) after 28 days. Both approaches are recording increased results post intervention and Chaos had more lasting benefits for the subscale of "problem solving".

For career education, these studies show versatility of the Chaos Theory approach across five self-efficacy subscales and the results highlight the benefit of the Chaos approach at 28 days post intervention. Both the Chaos Theory approach and the Trait and factor approach showed positive increases in mean immediately post intervention. The Chaos Theory approach was more likely to hold or improve on post intervention gains than the Trait and factor approach in "Self Appraisal, "Occupational Information" and "Problem Solving". While the Trait and factor approach had slightly higher increases in mean score post intervention and some decrease at 28 days, the Chaos approach was more likely to hold or improve on post to be beneficial for "goal setting" with the the strength of the Trait and factor approach again being its higher scores immediately post intervention.

In practice the high school career education providers who use the Trait and factor approach may argue that these reults show that the approach is stronger on Goal Setting and Planning declines in mean scores on self-efficacy at twenty eight days reinforce the need to revisit plans and goals setting periodically such as once per ten week school term. For the Chaos Theory approach the "revisiting" of the concept is perhaps happening every day as once participants understand the concept of Chaos Theory it may be reinforced in the change they see every day. In this sense, the Chaos Theory approach may be reinforced over time while in the case of the Trait and factor approach, the "goal setting" and "planning" when affected by change, will require revisiting and adjustment.

The concept being raised for discussion is that the Chaos approach is to some extent more readily revisited and reinforced without a facilitator, as Gleick (1987) suggests now that we have identified Chaos, it is all around us. While further study is recommended to investigate whether these results apply to a wider range of school students, the implication for practice is that once understood by the client, the Chaos Theory may almost be self reinforcing, thus

require less re visiting with the client which may explain the tendency for scores from the Chaos intervention to maintain and in some cases increase benefit at 28 days.

Career Decision Self-Efficacy Scale - Short Form Total Score - Study Six

The total score the Career Decision Self-Efficacy Scale-Short Form is calculated from the sum of all five of the above subscales. Results in Study Six had similarity to Studies Three and Four and some similarity to Study Five. Both groups in this study reported increases in mean scores post intervention. As in Study Three and Four, the Chaos group mean increased (4.59) and had a small increase (1.24) at 28 days. As in Study Four and Five the Trait and factor group recorded a higher increase in mean post intervention mean (6.70) than the Chaos group and which decreased by approximately half (3.30) at 28 days. The four studies showed both the Chaos Theory approach and the Trait and factor approaches have benefits post intervention for Career Decision Self-Efficacy. Further study may show that the Chaos Approach may be just as beneficial or arguably a more beneficial at 28 days post intervention.

The Career Exploratory Plans or Intention scale Study Six

The Career Exploratory Plans or Intention scale (CEPI) tests career information gathering intentions and plans with questions such as "I intend to spend more time learning about...", "I plan to talk to...", "I am committed to learning more...", "I intend to get all the education I need..." and "I plan to talk to advisors...". The mean scores for the Chaos have been more consistent in the two studies showing a large increase post intervention in the Study Three which was maintained at 28 days and in Study Four making a small increase in mean post intervention (.25), and an increase (.58) at 28 days. In Study Five, the Trait and factor results took an unusual shape, decreasing (.71) after intervention and returned to the exact pre test mean at 28 days. In this study, Study Six, the Chaos group results were unusual decreasing

(.24) post intervention and rising (.57) at 28 days while the mean for the Trait and factor group increased (1.15) post intervention and remained on the same mean at 28 days. More study is recommended on the Career Exploratory Plans or Intentions Scale and its use with high school students post career education interventions as the results in this study and the previous three have been inconsistent.

The Career Exploration Survey Study Six

While the CEPI measured intention and plans the Career Exploration Survey (CES) asked about actions in that it asks respondents to indicate to what extent they have "behaved" in the following ways over the last three months. It is valuable to investigate whether the career education interventions in these studies are reflected in participants to test actions and not just intentions however, given the varied consistency of results, participants in these studies may mistakenly be reporting in the post intervention measurement on their intentions rather than behaviours.

It should be noted the period of time between the pre test and the intervention was four days in Study Six, and the period of time between the intervention lessons and the post intervention testing was the same as all of the studies, a five minute break and the final measure was 28 days after the intervention. If respondents are reporting actions they have taken since the pre testing such as investigating careers, attending career expos and obtaining information on specific jobs orientations, it may be that the pre testing has prompted career actions in the fortnight between the pre test and intervention post test. Alternatively, the intervention lesson may have given respondents a positive perspective on the concepts measured as it is unlikely they could complete such career behaviours in the five minutes between intervention and post test.

Results in this study were similar to the other studies with both the Chaos group (1.15) and Trait and factor (1.10) groups recording an increase in mean scores post intervention. The Chaos group recorded a further increase (1.71) at 28 days while the Trait and factor group retained half the post intervention increase (.55) at 28 days. Both groups have recorded increased mean scores post intervention which leads to discussion on the time between pretesting and intervention which were four days apart and the intervention and post testing which was the same in each study, five minutes.

Both groups report a benefit from the Career Exploration Survey in terms of "environmental exploration" however, it seems unlikely these are behaviours being reported and more likely intentions are being reported post intervention.

Similar conclusion and discussion arises from the Career Exploration Survey, "self exploration" subscale. The Chaos group recorded an increased mean between post intervention and the Trait and factor group recorded a small increase in mean. At 28 days, the Chaos group reported a small increase in mean and the Trait and factor group a slight decrease. The points raised earlier apply as these questions asked respondents about their career investigation related behaviours in the last three months and there was only five minutes between the intervention and the post test. While the first subscale "environmental exploration" involved physical behaviours like collecting career information the behaviours in the "self exploration" subscale are more internal. The "self exploration" subscale asked respondents to rate the extent to which they had demonstrated "self exploration" related behaviours in the past three months including "reflected on how my past integrates with my future career", "focused my thoughts on me as a person", "contemplated my past", "been retrospective in thinking about my career" and "understood a new relevance of past behaviour for my future career". The pre test may have increased the retrospective thinking about careers in the four days between the test and the intervention and post test or the intervention itself may be prompting a more positive outlook and respondents are mistakenly reporting on their intentions or outlook rather than behaviours.

Study Six returned similar results to the previous study with both the Chaos group (1.14) and the Trait and factor group (.65) recording increased mean scores post intervention and the Trait and factor group returned towards the pre test mean while the Chaos group made some gains (.81). Chapter seven, eight, nine and ten reported on each of four studies. Chapter Eleven will review all of the studies and aims to provide a side by side comparison of each study.

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CHAPTER ELEVEN

A side by side comparison of the four intervention studies

Conclusions and Recommendations

Chapter seven, eight, nine and ten reported on each of the four intervention studies. Each chapter gave details on the particular study, the participants and results. There were differences between each group of participants, Study Three involved Year 10 students, Study Four involved Year 11 students, Study Five involved Year 10 students who had no previous career education and Study Six involved Year 10 students from a different school to those in the previous studies. A common aim of Studies Four, Five and Six was to investigate the generalizability of results by replication. This chapter will endeavour to present a side by side comparison of each subscale across all four studies so as to compare the generalizability of results.



Figure 11.1: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short Form on the subscale "Self Exploration" for Study Three, Four, Five and Six.

The results for the Career Decision Self-Efficacy Scales-Short Form on the subscale of "Self Appraisal", as shown in Figure 11.1, show that both the Trait and factor approach and the Chaos Theory of Careers approach recorded similar post intervention increases in mean scores. When tested at 28 days, the results for the Trait and factor group tended to return toward the pre test means, while the results for the Chaos group tended to hold or improve on the post intervention means. Further study is recommended to test whether these results are replicated with a wider range of high school students. The implication for career education practice with high school students is that both approaches are effective post intervention, while the Chaos Theory seems to be more beneficial at 28 days post intervention.



Figure 11.2: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short Form on the subscale "Occupational Information" for Study Three, Four, Five and Six.

For the Career Decision Self- Efficacy Scales – Short Form on the subscale of "Occupational Information", as shown in Figure 11.2, the Chaos Theory approach has shown a pattern in which mean scores increased post intervention and were maintained or slightly improved at 28 days. Aside from Study One, the Trait and factor approach showed similar post intervention improvement in three out of the four studies with mean scores which returned towards the pre test means at 28 days. The conclusion is that both approaches are beneficial, particularly post intervention. While the differences between the two approaches were quite small in Study Five and Six, they suggest that for "Occupational Information", the Chaos Theory approach may be slightly more beneficial at 28 days post intervntion. Further study is required to investigate whether the Chaos approach has similar or better rates of benefit at 28 days.



Figure 11.3: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short Form on the subscale "Goal Selection" for Study Three, Four, Five and Six.

On the Career Decision Self-Efficacy Scales-Short Form for the subscale of "Goal Selection", as shown in Figure 11.3, the Trait and factor approach tended to show higher post intervention means than the Chaos Theory of Careers approach and both groups had similar decreases in mean at 28 days. The conclusion is that across the four studies both approaches showed benefit post intervention and that further study may show the Trait and factor approach has a better post intervention benefit for high school students than the Chaos approach for "goal selection".



Figure 11.4: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short Form on the subscale "Planning" for Study Three, Four, Five and Six.

On the Career Decision Self-Efficacy Scales-Short Form for the subscale of "Planning", as shown in Figure 11.4, both approaches recorded similar increases in mean scores post intervention. For the Trait and factor group the mean tended to return approximately half way toward the pre test means while for the Chaos Theory of Careers group the mean scores tended to hold or slightly improve on the post intervention scores at 28 days. While these results show the Chaos approach may be more beneficial at 28 days, the Trait and factor approach averaged slightly larger post intervention increases in mean scores and the differences between pre test mean and the mean at 28 days was very similar for each approach in three of the four studies. These results show a Chaos Theory of Careers approach.



Figure 11.5: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short Form on the subscale "Problem Solving" for Study Three, Four, Five and Six.

The Career Decision Self-Efficacy Scales - Short Form on the subscale of "Problem Solving", as shown in Figure 11.5, recorded very similar results in terms of increases in mean scores post intervention. At 28 days post intervention, the Trait and factor approach usually decreased by half of this gain or more, while the Chaos approach recorded smaller decreases in two studies and slight gains in another two studies at 28 days. The conclusion is that on the subscale of "Problem Solving" both approaches are beneficial post intervention and while further study is recommended, the Chaos Theory of Careers approach may be just as beneficial or more beneficial at 28 days.



Figure 11.6: Graphs showing a side by side comparison of Career Decision Self-Efficacy -Short From on the "Total Score" for Study Three, Four, Five and Six.

The Career Decision Self-Efficacy Scales –Short Form "Total Scores", as shown in Figure 11.6, demonstrated similar increases of mean scores for both the Trait and factor approach and the Chaos Theory of Careers approach post intervention. The Trait and factor group was slightly more likely to return towards their pre test mean scores, while the Chaos group showed smaller decreases and slight gains. The conclusion is that based on the Career Decision Self-Efficacy-Short Form- "Total Scores", both the Trait and factor approach and the Chaos approach are beneficial to students post intervention and further study may show the Chaos approach has lasting benefits at 28 days.



Figure 11.7: Graphs showing a side by side comparison of for Career Exploratory Intentions or Plans Scale in Study Three, Four, Five and Six.

Results for the Career Exploratory Intentions or Plans Scale, as shown in Figure 11.7, were mixed in terms of consistency. Two studies showed the Chaos group recorded increased mean scores post intervention and the other two did not. The same applied to the Trait and factor group. On all four studies, the Chaos group made increases to their post intervention mean at 28 days and only in one test did the Trait and factor group record a mean at 28 days that was lower than their pre test mean. More study needs to be carried out on the Career Exploratory Intentions or Plans Scale to investigate whether results are more consistently reported than across these four studies.



Figure 11.8: Graphs showing a side by side comparison of Career Exploration Survey, subscale Environmental Exploration for Study Three, Four, Five and Six.

The Career Exploration Survey returned unusual results with respondents returning higher scores when asked about actions and behaviours they had carried out in the past three months. The measure was included to see if respondents acted on the interventions however, it was anticipated that this action would most likely take place between the intervention and the testing at 28 days. As the post intervention testing occurred after a five minute break from the intervention lesson, respondents had very little time to demonstrate any behaviours stimulated by the intervention lesson. Despite this increase, mean scores were reported for both approaches. This suggests that either the initial pre test in the career education lesson one fortnight before the intervention, in Study Three and Study Five prompted these responses or respondents are reporting perceptions or intentions resulting from the intervention rather than their behaviours and actions. The measures taken at 28 days post intervention may give a better indication of behaviours arising or influenced by the intervention.

The Career Exploration Survey measures at 28 days for "environmental exploration", as shown in Figure 11.8, showed the Trait and factor group mean scores recording decreases in mean but remaining above the pre test mean while the Chaos Theory group reported further increases at 28 days. The conclusion based on the measures at 28 days is that both approaches prompt behaviours or action in terms of seeking career information as both recorded results above their pre test mean. The Chaos Theory of Careers approach may have more lasting for "environmental exploration" effect at 28 days. More research is required to ensure respondents are reflecting on actual behaviours rather than intentions.



Figure 11.9: Graphs showing a side by side comparison of Career Exploration Survey, subscale Environmental Exploration for Study Three, Four, Five and Six.
The second subscale tested in the Career Exploration Survey was "Self Exploration". Similar points should be noted to those regarding the subscale "Environmental Exploration" in that both groups reported increased mean scores post intervention however, there was only a five minute break between the intervention and post intervention testing. Like the questions on environmental exploration the "Self Exploration" questions asked respondents if they have demonstrated "behaviours" in the past three months.

The difference between the behaviours referred to in the subscale "Environmental Exploration" and "Self Exploration" is that more of the "Self Exploration" behaviours involved internal reflection such as "reflecting on how my past will influence my future". The behaviours for "self exploration" could take place in a shorter or more flexible time frame with fewer physical resources than those listed under "environmental exploration" such "attending career information presentations". It is unlikely though that these could have been achieved in the five minute break between intervention and post testing. While the "Self Exploration" behaviours could be undertaken in a shorter or more flexible time frame than the environmental exploration, it seems likely that the increased mean results have been prompted by the pre test itself a fortnight earlier than the intervention or that the responses reflect the respondents' intentions or perceptions post intervention rather than actions post intervention.

The Career Exploration Survey testing at 28 days is more likely to have allowed respondents time to demonstrate the behaviours being measured on "Self Exploration". The results at 28 days, as shown in Figure 11.9, demonstrated that the Trait and factor group tended to towards their pre test mean, while for the Chaos Theory of Careers group the mean scores increased from the post intervention mean. The conclusion for "Self Exploration", based on the measures at 28 days is that both approaches prompt behaviours or action in terms of respondents reflecting about themselves and their career path as both recorded results above their pre test mean. The Chaos Theory approach may have more lasting on "Self Exploration" effect at 28 days. Given the comments on the initial increases reported post intervention however, more research is recommended to ensure respondents are reflecting on actual behaviours rather than intentions.

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CHAPTER TWELVE- CONCLUSION AND RECOMMENDATIONS

Introduction

Purpose

The purpose of this research was firstly, to investigate the perceived experience of chance and planning in the lives of secondary students as they move from high school to post high school career pathways. The second purpose of this research was to evaluate the comparative effectiveness of two career interventions, one that emphasizes change based upon the Chaos Theory of Careers and the other based upon traditional Trait based career interventions.

Contribution

The Literature review found there were very few career education intervention studies (Davey et.al. 2005, McKay et.al. 2005 and Hirschi et.al. 2010). The research within this thesis involved four intervention studies testing high school students of different age groups and time of academic year from two different high schools, as well as testing different time of delivery variables between post test and intervention. This research contributes to the field as it will build on research already presented by others on the relationship between career planning and chance as well as explore the value of teaching/counselling with secondary students. These intervention strategies could potentially be used by a large range of career educators and counsellors in school and within individual counselling situations.

The research has the potential to be used locally and worldwide, reflecting a wide application. It also has the potential to benefit the profession by providing and trialling strategies for practical use in career education and counselling. The New South Wales state wide feedback from the "2013 School to Work Report" shows the potential extent of application in reporting that in Years 9 and 10, 48 767 students participated in timetabled career education classes. Studies such as these may be of benefit in advancing the inclusion of "unexpected change" into career education, not in terms of replacing other approaches, but inclusion alongside other approaches and theories of careers to represent a holistic approach to career education.

This research has a substantial degree of currency. Chaos Theory is the last listing and most recent development point on Brown's (2007) History of Career Development Theories. In 2011

Pryor and Bright's book "The Chaos Theory of Careers, A New Perspective on Working in the Twentieth Century" was published. According to Hirschi (2010) "Another limitation of current literature is that most studies were conducted with adults or college students and less is known about how adolescents perceive chance events in their career development" (p.39). As recently as December 2014, four research papers were developed for the "National Career Development Strategy" with a new framework approved by state and territory ministers. This document states, "Career development skills can readily be fostered within the existing Australian school curriculum, based on the eleven competencies identified in the Australian Blueprint for Career Development." (p.9). Of these eleven competencies, two focus on change, "change and growth through life", and "understanding the changing nature of life and work roles".

RESEARCH QUESTIONS

What did this study find in terms of the Research Questions?

The research questions put forward at the beginning of this thesis were:

1. What are the current major approaches to careers counselling? Are these linear, reductionist, Trait and factor? Do they account for or include chance? If included, does it provide strategies for further application, intervention, counselling and education of clients?

2. What research exists on the role of chance in careers?What papers and studies have been put forward?

3. What evidence is there of chance and planning existing in the lives of secondary students as they move from high school to post high school career pathways? What do the studies run for this thesis find?

4. Is there a benefit from planning and chance intervention for career education clients?

What benefits do students show from career counselling education strategies that include chance?

RESEARCH QUESTIONS ADDRESSED

In concluding this thesis it is essential to examine whether the research questions were addressed?

1. What are the current major approaches to careers counselling?

Are these linear, reductionist, trait and factor? Do they account for or include chance? If included, does it provide strategies for further application, intervention, counselling and education of clients?

Current approaches to career counselling remain largely traditional. While there is mention of chance and unexpected change in career education policy including Australian national guidelines, such as the Australian Blueprint for Career Development and some state policies, such as the Victorian Careers Curriculum Framework, there is only a small amount of literature on the practical application in career counselling and very little on practical application for use with high school students.

Despite the inclusion of change and unexpected change in career education policy, a high emphasis on more traditional approaches of the "planned" rather than "unplanned" remain. For example, high school students are encouraged to complete "School to work transition plans" in New South Wales and "Action Plans" in Victoria.

2. What research exists on the role of chance in careers? What papers and studies have been put forward?

The literature review found a number of studies that reported the influence of chance and unexpected change on career paths there were very few studies that were based on high school students.

3.1 What evidence is there of chance and planning existing in the lives of secondary students as they move from high school to post high school career pathways?

There are very few studies on chance and planning and its influence on the career paths of secondary students as they move from high school to post high school options. The studies that are available suggest results for high school students may be similar to studies with other age groups such as university students and older groups.

3.2 What did the studies run for this thesis find?

Hypothesis 1

That change and unplanned events play a significant role in the careers of secondary to post secondary career pathways.

The results of the studies run for this thesis confirm that unexpected change and unplanned events are a perceived experience for the majority high school students in their career pathway post completing high school.

These interview studies were run with a combined total of over one hundred participants. Study One represented 87.88% of an entire graduating class and Study Two involved 82.26% of the entire graduating class from the following year to those involved in Study One. The studies involved a twenty five to thirty minute phone interview conducted at eighteen months after completing the New South Wales Higher School Certificate comparing student career paths to that stage to the pathway "planned" in their final year of school.

The interview results from Study One and Two revealed a number of aspects, aside from the overall level of unexpected change, Study One and Two confirmed the hypothesis that unexpected change plays a significant role in the careers of secondary to post secondary career pathways.

In both Study One and Two the majority of respondents reported they had experienced unexpected change from the career pathway they had planned in Year 12. The majority of those who had commenced full time employment had an unexpected change of employer. On average, half those beginning a university course changed their degree or major. In Study One and Study Two at least half of the respondents reported that they had changed job or career path. Unexpected change of career interest, as opposed to changed job or career path, was also reported by more than half of the respondents.

These results are consistent with studies by Hart, Rayner and Christensen (1971) Baumgardner (1976) Salomone and Slaney (1981) Scott and Hatalla (1990) Betsworth and Hansen (1996) Bright, Pryor and Harpham and Hirshi (2010) which consistently reported the influence of chance events on career paths of at least two thirds of participants.

Both Study One and Study Two found the perceived experience of unexpected change on high school to post high school career paths is reported as significant or larger by more than 70% of participants.

The aim of Study Two was to investigate the generalisability of the results found in Study One. To this end, the results between each of the studies were similar and on several items the results were very much alike. Unexpected "change of university" was reported by 15.79% of university students in Study One and 13.64% of university students in Study Two. "Unexpected changes within circle of friends" were reported by 31.03% of respondents in Study One and very similar in Study Two as it was reported by 31.37% of respondents. "Unexpected change of location or intended accommodation" was reported by 37.93% of respondents in Study One and by 37.25% of respondent in Study Two. "The financial resources" were not as "intended or planned" for 51.72% of respondents in Study One and 50.98% in Study Two. "Sport or hobby

time" was not as "intended or planned" as reported by 32.76% of those in Study One and 29.41% of those in Study Two.

The generalisability of results from Study One was evident in Study Two as reflected in the similarity of findings.

For the Chaos Theory of Careers the results of Study One and Two show that the perceived experience of unexpected change during the eighteen months post completing school is reported at similar rates to previous studies on university students, college graduates and adults in employment. For those involved in the career education of high school students these studies confirm the majority of high school students report their transition from school as being influenced by unexpected change which justifies consideration of career education practices that incorporated change, such as the Chaos Theory of Careers.

4. Is there a benefit from planning and chance intervention for career education clients? What benefits do students show from career education strategies that include chance?

As mentioned above, there is a limited amount of study available on the benefit of chance related intervention to career education for high school students. A study by Davey, Bright, Pryor, & Levin, (2005) found the use of video emphasising chaotic concepts returned positive measures on decision making and self -efficacy. In another study with university students McKay, Bright & Pryor (2005) tested trait matching methods compared to chaos intervention and found the chaos approach had a more lasting benefit.

Hypothesis 2

That intervention designed to show clients a relationship between both planning and chance events, namely lessons incorporating the Chaos Theory of Careers can be beneficial in career education.

Four intervention studies were run for this thesis with groups of participants from two different high schools. Each study involved a comparison of two groups of high school students, one

that received an intervention in the form of a career education lesson based on the Chaos Theory of Careers and the other group received an intervention in the form of a career education lesson based on a Trait and factor approach. Both groups were tested prior to the intervention, post intervention and again at 28 days using the Career Decision Self-Efficacy -Short Form developed by Taylor and Betz(1996), the Career Exploration Survey developed by Stumpf, Colarelli and Hartman (1983) and the Career Exploratory Plans or Intentions Scale developed by Betz and Voyten (1997).

The conclusion for the intervention studies comparing a Chaos Theory of Careers approach to a Trait and factor approach in a high school career education setting is that both approaches are effective in increasing results in measures of self-efficacy post intervention. On the subscale of "Goal Selection" the Trait and factor approach is stronger post intervention and both approaches are beneficial to the subscale of planning both post intervention and at 28 days. Across the subscales of "Self Appraisal", "Occupational Information" and "Problem Solving" as well as "Career Exploration" the Chaos approach recorded more lasting benefits (at 28 days) than the Trait and Factor approach.

The results on the Career Exploratory Plans or Intentions Scale contained inconsistencies for scores post intervention. The measures at 28 days also showed the Chaos approach recorded improved results in four of the studies and the Trait factor approached also recorded improved results at 28 days in two of the studies. Based on these results further study is recommended to investigate whether more consistent results are found with high school students for both or either of these approaches.

The Career Exploration Survey which asks respondents the extent to which they have undertaken career exploration behaviours in the last three months also showed inconsistent results post intervention. The inconsistency was that the mean score increased immediately post intervention yet there was very little time between the actual intervention and the post intervention testing in which respondents could enact such behaviours. It may be that the responses reported reflected respondents' intentions. The measures at 28 days allow respondents time to enact career behaviours post intervention. At 28 days the results for the Chaos Theory approach showed increased scores in both the Self Exploration and Environmental exploration subscale.

Further study is recommended to examine whether results with other high school students are consistent with these results. Study methods that may clarify this include using the Career Exploration Survey in isolation as a measure, in case high school students, where multiple measures are used, mistakenly continue to provide their responses under the intructions from a previous measure, such as their career intentions.

Recommendations for Future Research- Studies One and Two

Study One and Two, which involved interviews with former high school students at eighteen months post completion high school, found that unexpected change and unplanned events are a perceived experience for over 70% of participants. The interviews for this study also investigated the sources of unexpected change for participants and the sources of support in managing unexpected change on their post school career pathway. As a result of these studies a number of recommendations for future research arise.

Unexpected change in the transition from high school is confirmed

Study One and Two confirmed that high school students report experiencing unexpected change at similar or higher rates than the existing data from other studies on high school students, university students and graduates. This was reported both longitudinally, when comparing interview data on respondents' intended post school career path in their final year in school with data gathered at eighteen months after finishing school. The studies also considered the perceived experience of unexpected change retrospectively through the interview at eighteen months after completing school. Based on these results it is recommended that high school students be considered as experiencing similar or higher rates of unexpected change as other age groups and thus be considered for similar career education in terms of preparation for unexpected change. It is recommended that, given the majority of respondents report experiencing unexpected change in the transition from high school, as also shown by Hirschi (2010), initiatives to include unexpected change in the career education, such

as the Chaos Theory of Careers, be included in the career education curriculum of high school students and the training of career education providers.

It is also recommended that further study be carried out to investigate unexpected change on a longitudinal basis so that data is gathered at intervals and relies less on retrospective perception. Both of these study groups were from the same regional high school. It is recommended that further study be carried out with a wider range of high school students to investigate the generalizability of these results.

Parents

Parents and family consistently featured in responses as role models in managing unexpected change and in terms of support for respondents in transition from unexpected change. More study is recommended to investigate the benefits of interventions designed to educate the parents of high school students about the Chaos Theory of Careers and the role that parents can play in supporting their children through and beyond high school.

Another avenue of study that arises from these studies is research into students' reported sources of assistance in understanding and managing unexpected change. While results in these two studies showed "parents" were the highest reported source of support for students in making the transition from unexpected change, another avenue of further study may be the sources of unexpected change with a wider group of high school students. This may reveal other sources of support and thus persons who could potentially be trained to assist high school students and broaden the range of strategies to support students.

Peers

When respondents were asked to suggest approaches schools should consider adopting to assist in teaching students about the possibility of unexpected change in their career path, learning from real life experiences of former students was mentioned as one of the most frequesnt responses. Further study is recommended on the use of former students and recent students as real life examples of managing unexpected change in the career education of

senior high school students. The implication for the practice of career education in high schools is that inviting the participation of recent high school graduates into career education lessons for senior students may benefit high school students' transition from high school and their management of unexpected change.

Periods of Unexpected Change

Responses from participants identified a higher period of unexpected change around their first six to ten months post high school. Further study is recommended to investigate whether former high school students from other schools report a similar experience and whether there is any benefit in high school career education preparing students for such a period of unexpected change.

In terms of career education practice, if this six to ten month transition period was identified in wider studies, career education practice can better prepare senior students for anticipated periods of change. As well as preparing high school students for unexpected change, further study may highlight the benefits of training those persons likely to be called upon to support these former students in their transition from high school, such as parents, peers and emplyers and training providers. This means training support providers such as parents and teachers and possibly further study into identifying whom the key support providers are and the most effective ways to train such key support providers in concepts such as the Chaos Theory of Careers.

Such key support providers for students in transition who may benefit from training in the Chaos Theory of Careers may include high school educators and parents as already identified, peers, employers of young workers such as apprentices and trainees and education providers such as university service and vocational colleges.

Deferment

Those who commenced university after deferment to work for twelve months reported higher rates of satisfaction with their course. It should be noted the number of participants who entered university study after twelve months deferment represented a small number of participants in these studies, for example, five participants in Study One and Two in Study Two. The question arises as to whether those who defer have, to some extent, also deferred their

unexpected change and will experience similar "unexpected change" once commencing their intended path or, whether this approach, deferment, reduces the impact or assists students in the management of and transition from unexpected change post high school. For career education with senior students as thousands of students contemplate deferring university study after completing high school for "gap years", more study on this aspect is recommended.

Relocating

Relocating and unexpected change of accommodation was reported both as one of the highest "unexpected changes that turned out to be quite positive" and as an "unexpected change that turned out to be negative". This may be particular to regional high school students, however as this was reported across all occupational groups, not only those respondents relocating for university study, further study is recommended to investigate whether "relocation" is reported by a wider group of school students from a range of urban and regional locations. It may be that "relocation" is an issue that the majority of students are likely to encounter within eighteen months post high school and as such the benefits of including the management of "unexpected change of location and accommodation" in the career education of senior high school students should also be investigated.

More Planning versus Being Open to Change

In response to open ended questions that asked respondents "what schools should teach in relation to managing unexpected change in career path" and what participants "wish they knew about unexpected change when in school", a number of respondents commented on the need for "more back up plans" while other respondents noted that it was "okay to change" and that "change can be good". The implication is that when their plans do not work out due to unexpected change, one set of respondents indentify the solution to be more effort required on planning while others came to identify the concept that change is to be expected. Further research is recommended to investigate whether the response from some respondents when experiencing non linearity and unexpected change is to pursue more linearity, while others embrace unexpected change, if there are pre determining differences between these groups that make either response more likely and for career education practice, whether maintaining or changing either approach is beneficial.

Perception of unexpected change

Study One and Two reported on the "perceived experience of unexpected change". The concept of perceived experience of unexpected change as rated by the respondent retrospectively, as opposed to an observer arises as a number of respondents rated their experience of "unexpected change" as less significant than another observer might. Conversely, other respondents may have rated a similar experience as more significant than others. More study is recommended to investigate whether and why individuals interpret unexpected change differently, and whether there is any benefit in their management of unexpected change that may lend itself to improved outcomes for students in career education.

Wider range of participants

While a potential strength of these studies has been the depth and breadth of information gathered by investigating a very large percentage of the students from the same two graduating classes in a regional comprehensive high school, further study is recommended with a wider range of participants and schools. The findings of these studies will be enhanced if future study involves a wider range of schools as that will mean the participants are not from the one researcher's school or region. Studying with participants from a wider range of schools would further test the generalizability of these results, including whether they can be applied to students in different regional and urban areas as well as varied economic influences and varied access to post school pathways of education and employment.

Size of sample, particularly by occupational group at eighteen months

An additional benefit of the recommended future research with a wider range of high school participants would be that of sample size, particularly when considering responses from participants by occupation at eighteen months. While interviews for Study One and Two involved over one hundred respondents and gained a range of data, when the data is considered by occupational group at eighteen months post school, the sample sizes, in some cases, are quite small. Further study, with a greater range and number of participants is therefore recommended.

Longitudinal study

These studies were able to use a small amount of longitudinal data from the respondent's end of school interviews on intended occupation, education or employment provider, location and accommodation and compare this data to the participant's responses on these elements at eighteen months post school. Aside from this information, the remaining interview questions, at eighteen months post school, relied on questions which were retrospective and as such relied on the respondent's perceived experience. A series of longitudinal data collections points may have relied less on possible inaccuracy in which a respondent may, upon reflection, attribute a different perspective to that which they may have reported at closer intervals to the actual event or change.

Using a previously established instrument for a section of the interview

The questions for these interview studies, Study One and Study Two, were developed entirely for the purpose of these studies. While there are various limitations acknowledged with any instrument, including those used in previous studies on unexpected change in career paths as referred to in the Literature review, the use of an established instrument for part of these studies may have increased the opportunity to better compare findings with past and future studies. One of the challenges with this approach was that there are very few studies on high school students and unexpected change in career path post school and thus fewer instruments available to consider applying to these studies.

Recommendations for Future Research- Based on Study Three, Four, Five and Six

Career Education Intervention Studies

These studies were with two classes taught by the researcher, another class not taught by the researcher, but from the researcher's school and a fourth study with students from a school thirty kilometres from the researcher. While reports are attached in the Appendix from other teachers who were present during these studies that confirm that these observers regarded the presentation across the studies to be consistent, further study is recommended to examine whether these results are replicated with other students from other schools and demographics.

Time

The studies are limited to measures taken post intervention and 28 days, questions arise as to whether results would have been similar over other periods of time?

In terms of timing, the studies were limited to fitting within the available timetable schedule of school career education lessons at two schools. This meant two of the studies had a fortnight between pre test and intervention, another at a different school had four days, as career lessons were once per week, and the study with a Year Eleven class had one day. Further study is recommended to investigate whether results may be different with a different amount of time between pre test and intervention.

The intervention could have run for a longer period. It is rare that a unit of work in a school is just one lesson, many high school education topics are taught over several lessons. Further study is recommended with a longer intervention period, such as several career education lessons. In this case, to run a study of multiple career education lessons, if it was to fit in to a typical school career education timetable of one career lesson per week or fortnight, risked other influences coming into play over that time such as fatigue, maturation of subjects, cross contamination as each group discusses the process with each other in other classes.

Other Career Education Approaches and age groups

The studies were limited to the comparison of two approaches to career education the Chaos Theory of Careers and a Trait and factor approach. Further studies may show greater benefits through the comparison of other approaches to career education. Results may be different with older or younger students. Year 12 students planning their post school careers may react differently to a more linear approach, immediately or over time, than Year Ten and Year Eleven students.

There was no wait group to compare the interventions with a group not receiving any career education however there could be ethical educational grounds restricting the possibility of this.

Participants

Future study incorporating pre testing to measure which participants were more open to change could also expand on these results, however there is also a limit to testing and fatigue with this Year Ten age group, particularly within a school timetable.

SUMMATION

The Literature review for these studies found that a number of studies with adults, college and university students reported chance and unexpected change as influential in career paths however, there were very few studies on the influence of unexpected change on the transition of high school students post completion of high school. The Literature review found there was a further shortage of studies reporting on the benefits of including unexpected change, such as the Chaos Theory of Careers, in the career education lessons of high school students.

In concluding this thesis it is essential to revisit the hypotheses stated at the beginning of this thesis which were as follows:

Hypothesis 1

Change and unplanned events play a significant role in the careers of secondary to post secondary career pathways.

Hypothesis 2

Intervention to show clients a relationship between both planning and chance events, namely lessons incorporating the Chaos Theory of Careers can be beneficial in career education.

After two studies, which interviewed over one hundred former high school students from the same graduating classes at eighteen months post completing high school, unexpected change as reported is clearly a perceived experience by the majority of respondents. When compared to the post school pathway that respondents had planned in high school, the overall level of unexpected change was reported as "significant", "large" or "major" by the majority of respondents.

Study One and Two confirmed the hypothesis that change and unplanned events play a significant role in the careers of secondary to post secondary career pathways

Four studies were run to test the second hypothesis by comparing two high school career education classes, one receiving an intervention in the form of a Trait and factor styled career

lesson and the other a Chaos Theory of Careers based lesson. The self-efficacy measures from pre testing, post testing and testing at 28 days show that both approaches are effective in increasing results in measures of self-efficacy post intervention. The testing at 28 days shows the Chaos Theory Approach is just as beneficial as the Trait and factor approach and on a number of subscales, "Self Appraisal", "Occupational Information" and "Problem Solving" as well as "Career Exploration" the Chaos approach is arguably more beneficial.

The results from the four intervention studies confirm the second hypothesis that intervention to show clients a relationship between both planning and chance events, namely lessons incorporating the Chaos Theory of Careers can be beneficial in career education.

Drodge (2002) points out that there is some value in all theories of career and they can be used some of the time, but that no theory should be used all of the time at the expense of others. "The emergence of a new career perspective should not be interpreted as a signal for the rejection of exiting models of career development and counselling." (p. 53)

Based on the results of these studies, the Chaos Theory of Careers warrants consideration alongside the Trait and factor approach, in the career education curriculum of high school students and the training of career education practitioners.

CHAPTER THIRTEEN – APPENDICES

Appendix A-1 Ethics Approval Letter ACU

	Human Research Ethics Committee Committee Approval Form
Principal In	vestigator/Supervisor: Jim Bright Strathfield Campus
Co-Investig	ators:
Student Re	searcher: Anthony Borg Strathfield Campus
Ethics app	oval has been granted for the full
A Study of F	Planning and Chance in the Career Education of High School Students.
for the peri	pd: 20/07/2011- 31/07.2012
Human Res	earch Ethics Committee (HREC) Register Number: N2010 67
Special Cor	idition/s of Approval
Prior to con	mmencement of your research, the following permissions are required to be submitted to EC:
SERAPS ap	proval
Letter of per	mission from Muswellbrook High School principal (received)
The followin Research In	ng <u>standard</u> conditions as stipulated in the <i>National Statement on Ethical Conduct in</i> ivolving Humans (2007) apply:
(i)	that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual constructions mathematications and
	 security of records
	 compliance with approved consent procedures and documentation compliance with special conditions, and
(ii)	that researchers report to the HREC immediately any matter that might affect the ethical
	acceptability of the protocol, such as:
	unforeseen circumstances or events
	 adverse effects on participants
The HREC v also be rand campuses ea	rill conduct an audit each year of all projects deemed to be of more than low risk. There will om audits of a sample of projects considered to be of negligible risk and low risk on all ach year.
Within one m Form and su	nonth of the conclusion of the project, researchers are required to complete a <i>Final Report</i> bmit it to the local Research Services Officer.
If the project Report Form date of the e	continues for more than one year, researchers are required to complete an Annual Progres and submit it to the local Research Services Officer within one month of the anniversary thics approval.
	Agan
Signed	Dato: 00/07/0044
oigned	(Research Services Officer, Melbourne Campus)

Appendix A-2 Ethics Approval Letter SERAP



Mr Tony Borg 7 Pinot Street MUSWELLBROOK NSW 2333

DOC 11/258546

Dear Mr Borg

M

SERAP Number 2010217

I refer to your application to conduct a research project in New South Wales government schools entitled A Study of Planning and Chance in the Career Education of High School Students. I am pleased to inform you that your application has been approved. You may now contact the Principals of the nominated schools to seek their participation. You should include a copy of this letter with the documents you send to schools.

This approval will remain valid until 31-07-2012.

The following researchers or research assistants have fulfilled the Working with Children screening requirements to interact with or observe children for the purposes of this research for the period indicated:

lame	Approval expires	
Inthony Borg	31-07-2012	

I draw your attention to the following requirements for all researchers in New South Wales government schools:

- School Principals have the right to withdraw the school from the study at any time. The
 approval of the Principal for the specific method of gathering information for the school
 must also be sought.
- The privacy of the school and the students is to be protected.
- The participation of teachers and students must be voluntary and must be at the school's convenience.
- Any proposal to publish the outcomes of the study should be discussed with the Research Approvals Officer before publication proceeds.

When your study is completed please forward your report marked to Manager, Schooling Research, Department of Education and Training, Locked Bag 53, Darlinghurst, NSW 2010.

Yours sincerely

Miled St

Dr Max Smith Senior Manager Student Engagement and Program Evaluation 5/ October 2011

Student Engagement and Program Evaluation Bureau NSW Department of Education and Communities Level 3, 1 Oxford Street, Darlinghurst NSW 2010 – Locked Bag 53, Darlinghurst NSW 1300 Telephone: 02 9244 5619– Fax: 02 9266 8233 – Email: <u>seran@det nsw.edu.au</u>

APPENDIX B

Appendix B- 1 Approval from school principal for Study One, Two, Three, Four and Five



MUSWELLBROOK HIGH SCHOOL

P.O. Box 198 Muswellbrook. 2333

 Telephone
 (02)
 6543
 1033

 Fax No.
 (02)
 6543
 3927

Monday 28 February 2011

To whom it may concern,

I hereby give provisional approval for Mr Anthony Borg to undertake his research project: 'A study of Planning and Chance in the Career Education of High School Students' at Muswellbrook High School. This approval is contingent upon the approval of the NSW DET's SERAP office as well as the approval of the Australian Catholic University's Ethics Committee.

I request that Mr Borg liaises with myself and relevant members of the school executive preceding and following each study. In agreeing to this request I must emphasise that it is agreed that at no time is the identity of any student, past or present, revealed in any way.

I would like to commend the initiative demonstrated by Mr Borg in this endeavour and acknowledge the value of this research at a local and national level.

Kind regards,

Gareth Erskine Principal

Appendix B-2: Principal Approval for Study Six

	SCONE HIGH SCHOOL "Helping young people create their futures"
28 th July 201	1
To whom it r	may concern
l herby give j Planning and approval is co the Australia	provisional approval for Mr Anthony Borg to undertake his research project: 'A study o I Chance in the Career Education of High School Student's at Scone High School. This ontingent upon the approval of the NSW DER's SERAP office as well as the approval of m Catholic University's Ethnic Committee.
l request that following eac identity of an	Mr Borg liaises with myself and relevant members of the school executive preceding and ch study. In agreeing to this request I must emphasise that it is agreed that at no time is t ny student, past or present, revealed in any way.
Regards,	
	_ 4 .
Lindy Hunt	
Principal	
FR	PO Box 285 Scone NSW 2337 P: (02) 6545 1455 F: (02) 6545 3269 E: scone-h.school@det.nsw.edu.au

APPENDIX C

Appendix C-1: Information letter from School to Participants for Study Three



MUSWELLBROOK HIGH SCHOOL

Principal Mr Gareth Erskine B. Ed., P.E.

King Street, Muswellbrook NSW 2333

Dear Parents/Guardians,

As schools are being asked to encourage teachers to continue their training and professional development, I am pleased to confirm that our Careers teacher, Mr Tony Borg has received full approval to run several university studies in Career Education.

Please find attached the parent permission consent forms which can be returned to Mr Borg in room C20.

These studies have had to go through a thorough approval processes with the University, the NSWDET and the school to show they have educational merit and that **no student can be identified in any way in their reporting**. The main points are:

- No student from the school can be identified or identifiable in any report on these studies, meaning that
 no names or information where a reader could guess someone's name can be reported.
- What are they? The studies for Year 10 students will investigate whether students receiving career's lesson that include both planning and adapting to change is beneficial compared to traditional career planning. This is relevant as schools are being asked to prepare students to adapt to a changing future and be resilient. These are the sort of topics normally covered in careers lessons, the main difference is that you are giving permission for information to be collected so that some comparisons of each approach can be made so that future career education can be better informed.
- The university approval process categorises this study as a 'no risk' study, as the topics of careers
 planning and adapting careers to change could normally covered in careers lessons and the surveys used
 are available in career education widely.
- In a thorough process the studies been approved by the NSWDET, the university and the school as they
 have shown they have educational merit in that they may improve the way schools teach careers.
- The school and the participants will receive educational feedback from these studies that may be beneficial to individuals and the school. No individual can be identified or identifiable in any regard, however, the feedback could be informative for students and the school.
- None of the information gathered in these studies can be used without both the student and parent permission and you may withdraw your permission at any time.

While I have given this study approval to run at Muswellbrook High School and I am pleased that one of our own teachers is running these as part of a PhD, no data from any student can be used without your permission and the relevant forms are attached for your consideration.

Completed consent forms can be returned to Mr Borg in room C20.

areth Erskine

Ca

Principal

 Deputy Principal Curriculum
 Mr Brian Drewe B. Sc., Dip. Ed.
 Deputy Principal Organisation
 Mr Scott Copland B. Ed Art

 Telephone
 (02) 6543 1033
 Fax
 (02) 6543 3927
 Email
 muswellbro-h.school@det.nsw.edu.au

 P.O. Box 198 Muswellbrook
 NSW 2333
 State
 State
 State

"Striving for excellence in a school that cares"

Appendix C-2: Information letter to participants from School for Study Four

Principal Mr Gareth Erskine B. Ed. P.E.



Dear Parents/Guardians,

MUSWELLBROOK HIGH SCHOOL

P.O. Box 198 MUSWELLBROOK 2333

approval to run several university studies in Career Education.

TELEPHONE: (02) 65431033 FAX NUMBER (02) 65433927

As schools are being asked to encourage teachers to continue their training and professional development, I am pleased to confirm that our Careers teacher, Mr Tony Borg has received full

Please find **attached the parent permission consent forms** which can be returned to Mr Borg in room C20.

These studies have had to go through a thorough approval processes with the University, the NSWDET and the school to show they have educational merit and that **no student can be identified in any way in their reporting**. The main points are:

- No student from the school can be identified or identifiable in any report on these studies, meaning that no names or information in which a reader could guess someone's name can be reported.
- What are they? The studies for Year 11 students will investigate whether students receiving career's lesson that include both planning and adapting to change are beneficial compared to traditional career planning. This is relevant as schools are being asked to prepare students to adapt to a changing future and be resilient.
- These are fairly everyday careers topics. They are the sort of topics normally covered in careers
 lessons, the main difference is that you are giving permission for information to be collected so that
 some comparisons of each approach can be made so that future career education can be better
 informed.
- The university approval process categorises this as a 'no risk' study as the topics of careers planning and adapting careers to change could normally be covered in any careers lessons and the surveys used are already available in career education and schools.
- In a thorough process the studies have been approved by the NSWDET, the university and the school as they have shown they have educational merit in that they may in some way improve the way schools teach careers.
- The school and the participants will receive educational feedback from these studies that may be beneficial to individuals and the school. No individual can be identified or identifiable in any regard however the feedback could be informative for students and the school.
- None of the information gathered in these studies can be used without both the student and parent permission and you may withdraw your permission at any time.

While I have given this study approval to run at Muswellbrook High School and I am pleased that one of our own teachers is running these as part of a PhD, no data from any student can be used without your permission and the relevant forms are attached for your consideration. Completed consent forms can be returned to Mr Borg in room C20.

Gareth Erskine Principal

Tony Borg Careers Teacher

"Striving for excellence in a school that cares"

Appendix C-3: Information letter from school to participants 2013-Study Five



MUSWELLBROOK HIGH SCHOOL

Principal Mr Gareth Erskine B. Ed., P.E.

King Street, Muswellbrook NSW 2333

Dear Parents/Guardians,

As schools are being asked to encourage teachers to continue their training and professional development, I am pleased to confirm that our Careers teacher, Mr Tony Borg has received full approval to run several university studies in Career Education.

Please find attached the parent permission consent forms which can be returned to Mr Borg in room C20.

These studies have been extended for 2013 and have had to go through a thorough approval processes with the University, the NSWDET and the school to show they have educational merit and that **no student can be identified in any way in their reporting**. The main points are:

- No student from the school can be identified or identifiable in any report on these studies, meaning that no names or information in which a reader could guess someone's name can be reported.
- What are they? The studies for Year 10 students will investigate whether students receiving career's lesson that
 include both planning and adapting to change are beneficial compared to traditional career planning. This is relevant
 as schools are being asked to prepare students to adapt to a changing future and be resilient.
- These are fairly everyday careers topics. They are the sort of topics normally covered in careers lessons, the main
 difference is that you are giving permission for information to be collected so that some comparisons of each
 approach can be made so that future career education can be better informed.
- The university approval process categorises this as a 'no risk' study as the topics of careers planning and adapting
 careers to change could normally be covered in any careers lessons and the surveys used are already available in
 career education and schools.
- In a thorough process the studies have been approved by the NSWDET, the university and the school as they have shown they have educational merit in that they may in some way improve the way schools teach careers.
- The school and the participants will receive educational feedback from these studies that may be beneficial to
 individuals and the school. No individual can be identified or identifiable in any regard however the feedback could
 be informative for students and the school.
- None of the information gathered in these studies can be used without both the student and parent permission and you may withdraw your permission at any time.

While I have given this study approval to run at Muswellbrook High School and I am pleased that one of our own teachers is running these as part of a PhD, no data from any student can be used without your permission and the relevant forms are attached for your consideration and signature.

Completed consent forms can be returned to Mr Borg in room C20, thank you.

Gareth Erskine

Principal

Careers Teacher

 Deputy Principal Curriculum
 Mr Brian Drewe B. Sc., Dip. Ed.
 Deputy Principal
 Organisation
 Mr Scott
 Copland B. Ed Art

 Telephone
 (02)
 6543
 1033
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 (02)
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 3927
 Email
 muswellbro-h. school@det.nsw.edu.au

 P.O. Box
 198
 Muswellbrook
 NSW
 2333

"Striving for excellence in a school that cares"

Appendix C-4 Information letter from University to participants for Study Three, Four, Five and Six



Strathfield Campus (Mount St Mary) 25A Barker Road Strathfield NSW 2135 Locked Bag 2002 Strathfield 2135 Phone 1300275 228 Fax 02 9701 4284

Information Letter to Participants (Year 10 Students)

Title of Project: A Study of Planning and Chance in the Career Education of High School Students.

Name of Researcher: Mr Tony Borg.

Name of Programme: Doctor of Philosophy

This Study: Comparison of traditional career planning lessons to career lessons that include adjusting to unexpected change in career paths. These will run in Year 10 Career lessons.

Dear Participant,

You are invited to participate in this research project being undertaken by Mr Borg towards a PhD, which aims to investigate the value of teaching students about both planning and chance in their career paths.

What participants will be asked to do?

Participants will be in one of two class groups, one receiving traditional career planning, the other career education that includes adjusting to unexpected change in career paths. Students will complete questionnaires to find out whether these lessons were beneficial before, immediately after and then 30 days after these lessons. Please note that after the initial study period these groups will swap so that all students receive the same career education opportunities. This will take place in scheduled career lesson time and in the same class groups so that there is no disruption to student lesson time. This will involve two career lessons/periods total.

Confidentiality

No students will be identified or identifiable by name in this study or any future reporting of this study as only aggregated data will be reported on.

Participation

As an invited participant you are free to refuse to take part in this research. You are also able to withdraw from the study at any time. Withdrawal from this study will not affect student's studies or report comments. 'Careers' is not an assessed or reported subject at Muswellbrook High.

Consent and time commitment

Appendix C-2: Information to participants in Study three, four, five and six (continued)

In signing this form you are giving consent for the information gained in these lessons to be used for research being undertaken by Mr Borg towards a PhD, where no student will be identified or identifiable in any reports on this research. This will run in the timetabled Year Ten Career lessons for two periods and involve no extra time commitment from students.

Benefits

Participants may gain benefits in career planning or a career outlook that is more versatile and adaptable to possible future career change. The results of this study may also be beneficial to a wide range of schools in preparing students to adapt to changes within their future career path.

Risks

There are no foreseen risks in this study. Participants may feel that they are receiving different career counselling to students in another class, however after the initial study period these groups will swap so that all students receive the same career education.

Questions

Any questions regarding this project should be directed to the following people:

- a. Student Researcher: Tony Borg, Muswellbrook High by phone on 6543 2275, or
- Principal Supervisor, Professor Jim Bright, School of Education, ACU Strathfield Campus Phone 1300275 228.

Feedback

All participants will receive feedback about their responses to career planning and adjusting to changes in career planning in career lessons from the careers teacher. The teacher will also be available for individual feedback outside timetabled lessons.

University Approval

This study has been approved by the Human Research Ethics Committee at the Australian Catholic University.

NSW Department of Education and Training Approval

This study has been approved by the State Education Research Approval Process.

School Principal Approval

This study has been approved by Muswellbrook High School Principal, Mr Gareth Erskine.

In the event you have any complaint or concern about the way you have been treated during the study, or even if you have a query that the supervisor of the Student Researcher have not been able to satisfy, you may write to the Chair of the Human Research Ethics Committee. The NSW address is:

Chair, HREC C/-Research Services Australian Catholic University Strathfield Campus Locked Bag 2002 Strathfield NSW 2135 Tel.02 9701 4093 Fax.02 9701 4350 Appendix C-2: Information to participants in Study Three, Four, Five and Six (continued)

Any complaint or concern will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you agree to participate in this project, you should sign both copies of the Consent Form, retain one copy for your records and return the other copy to the Student researcher, Tony Borg.

Professor Jim Bright (Supervisor)

Tony Borg (Student Researcher)

Appendix C-3: Information Letter to Participants in Study One and Study Two



Brisbane Sydney Canberra Ballarat Melbourne

Strathfield Campus (Mount St Mary) 25A Barker Road Strathfield NSW 2135 Locked Bag 2002 Strathfield 2135 Phone 1300275 228 Fax 02 9701 4284

Information Letter to Participants

Title of Project: A Study of Planning and Chance in the Career Education of High School Students.

Name of Researcher: Mr Tony Borg.

Name of Programme: Doctor of Philosophy

Participants: High School graduates

Study: Phone survey of ex students comparing their current career path to what they had planned to do in school.

Dear Participant,

You are invited to participate in this research project which aims to investigate the value of teaching students about both planning and chance in career paths. The study is part of the requirements for a PhD for the researcher, Mr Tony Borg.

As a participant you are being asked to complete a fifteen to twenty minute phone interview with the researcher, Mr Borg, about the extent to which your career path has gone to plan.

Confidentiality

No students or ex students will be identified or identifiable by name in this study or in any reporting of this study. All data will be stored securely and shredded after this study.

Participation

As an invited participant you are free to refuse to take part in this research. You are also able to withdraw from the study at any time. Withdrawal will not affect student's studies/reports.

Consent and time commitment

In signing this form you are giving your consent to be part of this study and to complete a fifteen to twenty minute phone interview with the researcher, Mr Borg, where no participant will be identified or identifiable to anyone reading any aspect of this study.

Benefits

This study could be beneficial to participants as the researcher will offer the opportunity for recent school graduates to gain additional career information or career advice after the phone survey. This research could be beneficial to a wide range of schools in reviewing the ways

Appendix C-3: Information Letter to Participants in Study One and Study Two (continued)

career education and careers counselling prepares students for their career path and changes to their planned career path.

Risks there are no foreseen risks in this study.

Questions

Any questions regarding this project should be directed to the following people:

- a. Student Researcher: Tony Borg, Muswellbrook High by phone on 6543 2275, or
 - Principal Supervisor, Professor Jim Bright, School of Education, ACU Strathfield Campus Phone 1300 275 228.

Feedback

All participants will have the opportunity to receive feedback in the form of a report on the percentages of post secondary destinations of students and students changing career path post secondary school. This will be based on aggregate data, no individuals will be identified or identifiable.

University Approval

This study has been approved by the Human Research Ethics Committee at the Australian Catholic University.

NSW Department of Education and Training Approval

This study has been approved by the State Education Research Approval Process.

School Principal Approval

This study has been approved by Muswellbrook High School Principal, Mr Gareth Erskine.

In the event you have any complaint or concern about the way you have been treated during the study, or even if you have a query that the supervisor of the Student Researcher has not been able to satisfy, you may write to the Chair of the Human Research Ethics Committee. The NSW address is:

Chair, HREC C/-Research Services Australian Catholic University Strathfield Campus Locked Bag 2002 Strathfield NSW 2135 Tel.02 9701 4093 Fax.02 9701 4350

Any complaint or concern will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you agree to participate in this project, you should sign both copies of the Consent Form, retain one copy for your records and return the other copy to the Student researcher, Tony

Borg

Professor Jim Bright (Supervisor)

Tony Borg (Student/Researcher)

APPENDIX D

Appendix D-1Consent Forms-Study Three, Four, Fiv and Six



Strathfield Campus (Mount St Mary) 25A Barker Road Strathfield NSW 2135 Locked Bag 2002 Strathfield 2135 Phone 1300275 228 Fax 02 9701 4284

CONSENT FORM

(Return one copy to the researcher, Tony Borg, participant to retain one copy)

Title of Project: A Study of Planning and Chance in the Career Education of High School Students.

Name of Researcher: Mr Tony Borg.

Name of Supervisor: Professor Jim Bright.

What participants will be asked to do?

Participants will be in one of two class groups, one receiving traditional career planning, the other career education that includes adjusting to unexpected change in career paths. Students will complete questionnaires to find out whether these lessons were beneficial before, immediately after and then 30 days after these lessons. Please note that after the initial study period these groups will swap so that all students receive the same career education opportunities. This will take place in scheduled career lesson time and in the same class groups so that there is no disruption to student lesson time. This will involve two career lessons/periods total.

I (the participant) have read (or, where appropriate, have had read to me) and understood the information provided in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree to participate in this study realising that I can withdraw my consent at any time. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way.

NAME OF PARTICIPANT:	
SIGNATURE DATE	
SIGNATURE OF SUPERVISOR, Professor Jim Bright:	DATE: 4/8///
0 7	

Appendix D-1 Consent Forms-Study Three Four, Five and Six (Page 2)

ASSENT OF PARTICIPANTS AGED UNDER 18 YEARS (student to sign)

I (*the participant aged under 18 years*) understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to take part in this study, realising that I can withdraw at any time without having to give a reason for my decision.

IGNATURE: DATE:	AHPA
IGNATURE OF PRINCIPAL INVE	STIGATOR (or SUPERVISOR):
IGNATURE OF STUDENT RESEA	ARCHER (if applicable)]:
	DATE:

Appendix D-1 continued (Parent Consent)-Study Three, Four, Five and Six



Strathfield Campus (Mount St Mary) 25A Barker Road Strathfield NSW 2135 Locked Bag 2002 Strathfield 2135 Phone 1300275 228 Fax 02 9701 4284

PARENT/GUARDIAN CONSENT FORM (Year 10 parent to sign)

(Return one copy to the researcher, Tony Borg, participant to retain one copy)

Title of Project: A Study of Planning and Chance in the Career Education of High School Students.

Name of Researcher: Mr Tony Borg.

Name of Supervisor: Professor Jim Bright.

What participants will be asked to do?

Participants will be in one of two class groups, one receiving traditional career planning, the other career education that includes adjusting to unexpected change in career paths. Students will complete questionnaires to find out whether these lessons were beneficial before, immediately after and then 30 days after these lessons. Please note that after the initial study period these groups will swap so that all students receive the same career education opportunities. This will take place in scheduled career lesson time and in the same class groups so that there is no disruption to student lesson time. This will involve two career lessons/periods total.

NAME OF PARENT/GUARDIAN:	
SIGNATURE	DATE:
NAME OF CHILD	1.1.
SIGNATURE OF SUPERVISOR, Professor Jim Bright:	AWEI DATE: 18/11
SIGNATURE OF STUDENT RESEARCHER, Tony Borg:	Conflogy DATE:

Appendix D-2: Consent Participants-Study One and Study Two



Strathfield Campus (Mount St Mary) 25A Barker Road Strathfield NSW 2135 Locked Bag 2002 Strathfield 2135 Phone 1300275 228 Fax 02 9701 4284

CONSENT FORM (for High School Graduates participating in a Phone Interview) (Return one copy to the researcher, Tony Borg, participant to retain one copy)

Title of Project: A Study of Planning and Chance in the Career Education of High School Students.

Name of Researcher: Mr Tony Borg.

Name of Supervisor: Professor Jim Bright.

As a participant you are being asked to complete a fifteen to twenty minute phone interview with the researcher, Mr Borg, about the extent to which your career path has gone to plan.

Consent

In signing this form you are giving your consent to be part of this study and to complete a fifteen to twenty minute phone interview with the researcher, Mr Borg, where no participant will be identified or identifiable in that report.

NAME OF PARTICIPANT:		
SIGNATURE DATE		
SIGNATURE OF SUPERVISOR, Professor Jim Bright:	Janet	
SIGNATURE OF STUDENT RESEARCHER, Tony Borg:	Toy Bay	DATE: <u>4 /8/11.</u>
	U	

APPENDIX E

Appendix E: Tables for Study One-Chapter 5

Appendix E-1: Table from Study One- Responses reporting the "Major" levels of unexpected change

Responses reporting major level of unexpected change			
Ratir	ng Responses	Occupation	
5	major the big changes were having a baby after finishing school, becoming a dad and still working out my career path	working	
5	major when first job that had had since school had cutbacks, back to McDonalds then Real Estate Office to current job	working	
5	major given moves to retail job in regional uni town four hours away, then back home and then interstate to Brisbane, my father dying, and career change music to modelling or cabin crew.	working	
5	Major, from Coffee shop to Brisbane and back, engaged, parent, and different work/job	working	
5	leaving course and moving to a different uni 8 hours away	Uni ft	
5	starting a Business degree in Sydney instead of regional NSW then changing degree totally to nursing for following year	Uni ft	
5	major, breaking up with boyfriend, not pursuing apprenticeship, returning to it 12 months later but as first year, family fall out and moving out	apprentice	
* refers to occupation at 18 months post school. Uni ft refers to university full time			

Appendix E-2: Table from Study One- Respondents reporting "large" levels of unexpected change

Respondents reporting "large" levels of unexpected change			
Rating	Responses	Occupation	
4	large Deciding to stay in in my rural home town then one day moving interstate to Melbourne gaining totally new type of work and new accommodation	working	
4	large, moving about 7 times and getting job as "dish pig" that lead to discovery I love cooking.	working	
4	large, not getting in to course, the time it took to find work. Moving from part time to permanent and the joy of SES volunteering	working	
4	large by gaining work mid-course and, I didn't think I would be engaged by now.	working	
4	Large in terms of moving away from home and establishing good quality employment and the costs	working	

4	large, my parents were moving, I completed a childcare course but didn't like prac and now I work nights so I am seeing less friends	working
4	large change from nursing in my hometown and not enough work to moving 9 hours south to chicken farming plenty of work and I may save to travel to England.	working
4	big changes in changing Bed. Vis art to B Arts.	Uni ft
4	Large, moving to Sydney, adding double degree, working a range of casual jobs	Uni ft
4	4. Large change as I have changed degree totally from the one planned	Uni ft
4	Large changing uni course and the time it took to secure employment	Uni ft
4	large in changing uni course on last day possible in January and gaining uni accomm in first week of uni and possible Centrelink funding. Things steady now.	Uni ft
4	large because I changed degree to a double degree adding law and I worked two jobs at the same time for deferred year	deferrers
4	Large, changing both uni and degree during deferred year and changing work in deferred year. Relocating for sport and uni.	deferrers
4	deferred uni as planned but took 10 months and 4 jobs to get a decent 5 day a week job and now I might change to uni PT Bus not Media	traineeships
4	Large, becoming an apprentice instead of uni or TAFE student and moving out and becoming my younger sister's guardian	apprentices
4	I have made change from TAFE captive animals to massage. I thought if pracs hard to find employment would also be hard and now plan to pursue massage	Tafe/rto
4	I hadn't enrolled in any courses or gained work but the move to my grandparents in 30kms away has led to both external study and some casual work	Tafe rto
*Occupation refers to occupation at 18months post school: working =employment, Uni ft=university full time, deferrers=resumed university study after 12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent of one day per week in vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training, TAFE/RTO= vocational train training colleges		

Appendix E-3: Table from Study One- Respondents reporting "significant" unexpected change

Respondents reporting "significant" unexpected change			
Ratin	g Responses Occupati	on	
3	significant	working	
3	Significant, moving to Sydney for sporting contract, getting injured, my casual work moved to permanent, as well as shifting regional to city accommodation	working	
3	I would say significant, I did not do TAFE but worked full time for one year then moved to Wollongong as planned but work here hard to find	working	
3	significant, changing one of my double majors from Maths to Science, moving closer to uni, and moving out each summer for industry work via scholarship	Uni ft	
3	significant, first in family to ATAR, enter UNI, move to Armidale and changing to double degree with law.	Uni ft	
3	significant, going to uni rather than NIDA, adjusting to living away from home and changing my course stream.	Uni ft	
3	significant , the uni course had gone very well, but the accommodation changes have been bigger than I thoug	Uni ft	
3	Overall I would describe my time since Yr 12 planning as significant, I have decided on nursing, worked three jobs, travelled overseas and relocated	Uni ft	
3	significant change, I am still studying nursing but 3 hours away from my preferred university and boyfriends work, all working out now thought	Uni ft	
3	Significant, moving so far from home and changing degree after first year	Uni ft	
3	significant as I didn't expect the work in deferred year and will apply to add law to degree on campus, looking forward to it.	deferrers	
3	significant as volunteer work in deferred year helped decide on primary teaching, changed jobs to Coles and parent purchased uni. rental accommodation.	deferrers	
3	significant as I need to move out and intend to totally change job/career	trainees	
3	Significant, deferring , traineeship in childcare deciding against childcare then switching back to a primary ed. Degree for next year	trainees	
3	significant, not getting policing or golf traineeship then moving from Big W, dominoes to McDonalds, now using McDonalds training towards Policing start.	trainees	
3	not moving to Hornsby as planned then studying DE and working part time, have done one year of it so things settling now.	Tafe	
3	significant, changing from years of planning a science career to media in the last days of Year 12 was big at the time, accommodation change this year a bit.	Tafe	
*Occupation refers to occupation at 18months post school: working =employment, Uni ft=university full time, deferrers=resumed university study after 12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent of one day per week in vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training. TAFE/RTO= vocational trade and			
training colleges

Table 12 E-4: Study One, Section Eight, Responses reporting "minor" overall levels of unexpected change

Ratir	ig Response Oc	cupation
2	I have experienced minor change as job came up on last day of HSC term, moved out of home and found the job a little less challenging so I may look at other jobs	working
2	I have experienced minor change. I have changed jobs 3 times but first job was a 12 month traineeship	working
2	2. minor as I am at the uni and degree planned, had to wait for last minute accommodation, finding work hard and might change engineering industry	Uni ft
2	2. minor as I am basically at uni and course and accommodation planned, short of casual work funds but have holiday work at home	Uni ft
2	2. Slight or Minor, picking up a second job through a uni assignment and my uni course having less prac	Uni ft
2	2. small as I am in degree and accomm. as planned but have added a major and found casual work needed in hometown and same city as uni for money	Uni ft
2	2, slight or minor, deferring and returning to course as planned, change of accommodation and two casual work changes	deferrer
2	2 slight or minor as job is as planned, stressful 3 months when parents looked like moving as live at home and unexpected travel has me now interested	traineeship
2	2, other than moving out of home to share housing closer to work and not enjoying the Tafe campus and travel 100kms each way much of my career path has gone to plan so far	apprentice
2	2. slight or minor as most things have gone to plan, I have added diploma of electrical engineering studies to apprenticeship	apprentice
2	2. overall I have experienced minor changed I am in the same course and college as planned but at the time not being happy with on campus accommodation issues	TAFE/RTO

training which usually includes the equivalent of one day per week in vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training, TAFE/RTO= vocational trade and training colleges

Appendix E-5: Table from Study One- Respondents reporting "insignificant" overall levels of unexpected change

"ins	ignificant" overall levels of change		
Rat	ing Response O	ccupat	ion
1	most of what I had planned late in Yr 12 has occurred with some adjustment in part tim work and a few surprises on costs	le	Uni ft
1	almost nil as I am in intended course and accomm. I did pick up an extra scholarship fr UNE since Yr 12 which has helped	om	Uni ft
1	almost nil, same uni course and accomm. I did get some scholarships after hsc and an fitting in to uni better than expected.	ו	Uni ft
1	my levels of change from what I intended in Yr 12 have been almost nil, work been difficult to get and I moved off campus, but things working out	has	Uni ft
1	changes slight almost nil, training job, accomm all as expected, course better far.	SO	apprentice
*Occupation refers to occupation at 18 months post school: Uni ft=university full time, apprenticeships= a four year contract of work with on average one day per week in vocational training			s= a four

Appendix E-6: Study One- Table comparing the respondents who said "Yes" to "changed career interest" with their response to the question of "changed job or career path"

Table 5-19:: Study 1, Comparing the 50% who said "Yes" to changed career interest with			
"changed job or career path"			
Current	Changed job or career	'changed career interest' comment	
occupation	path		
working	yes	Yes from office admin to I am not sure what yet	
working	yes	yes thinking about more study	
working	yes	yes, now thinking about fitness trainer	
working	yes	yes, from animal care to cooking	
working	yes	yes music to modelling or cabin crew	

working	yes	yes
working	no	considering change
working	no	thinking about it as office limited
working	yes	from mining to aged care
working	yes	Yes from Childcare to I am not sure
working	yes	yes interested in beauty
Uni ft	no	yes thinking about changing from mine engineer
Uni ft	no	moved from media journo to creative writing
Uni ft	no	From Med sci to physio after hsc marks out
Uni ft	yes	yes info tech instead of business
Uni ft	yes	yes business to nursing
Uni ft	yes	Yes , music management to general mgt
Uni ft	yes	yes away from B Arts teach
Uni ft	yes	will start in nursing
Uni def	yes	confirmed primary
Uni def	yes	Yes, sport science to PE Teaching
Tafe/rto	no	Yes science to screen media camera to music vid
Tafe/rto	yes	Yes from animals to massage
apprentice	yes	thinking about becoming a trainer
apprentice	yes	Yes, but missed chef so returned
trainee	no	yes looking at trades
trainee	yes	Yes , Chilcare to Soc Work back to primary
trainee	yes	YES, media to business
trainee	yes	Yes, still policing interest but not golf trainee
*Occupations	at 18 months: uni ft=univer	sity full time, uni def=university after 12 months deferment,
working=working in paid employment, apprentice =apprenticeship, trainee=traineeship and		
TAFE/RTO=TAFE or Registered Training Organisation		

Appendix E-7: Study One- Unexpected change within family "Yes" responses

Study One, Unexpected change within family "Yes" responses

Comments from respondents saying Yes to unexpected change within family

My brother moving to grandparents in Scone meant I tried too

Dad and sister were in Victoria already. One day I decided to leave (regional northern) NSW and 24 hours later I was in victoria

as previous (my family looked like moving which would have been a big effect)

partner no work in qld, relocated to home town, had baby and got engaged

as stated (Yes my father passed away and he used to live in qld, big impact)

Father offered Newcastle job

becoming a dad (myself)

family moving closer to their farm

sister unable to live at home

Appendix E-8: Study One- Comments from respondents reporting an "unexpected change within circle of friends"

Comment	occupation
Yes, lost contact with (home town) friends	udef
found living with friends in share housing can lead to disagreements	W
friends moved to Wollongong	W
lost contact due to distance made new friends in act	u
Yes fewer friends but better friends	trnee
Yes I see fewer of my school friends now that I am working	apprt
Yes I see them less because I work at nights	W
yes lost contact with past friends	u
Yes not knowing anyone when moving took time	W
yes smaller group of friends	W
yes some friends moved away to uni lost touch	W
Yes, breaking up with high school boyfriend had big impact on my end of Yr12 career plans	apprt
Yes, friends attending colleges have convinced me to apply on campus	udef
yes, I don't see them much having moved	W
Yes, one month later boyfriend moved down.	W
yes, part of the move was to be closer to friends	u

Yes, saw less of them due to distance	u
Yes, see less of school friends but have made new friends	u
*Occupations at 18 months:u=university_udef=university of 12 months deferment_w=working in paid	l

employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation

Appendix E-9: Study One- Responses reporting "work life balance" not as planned or expected"

Comment	Occupation	
NO, cut back to 3 units to manage time sem2	u	
NO, difficult to balance work uni and pracs	u	
No, first year accomm. involved too much driving	u	
NO, part time job impacts on social life	u	
NO, busier uni and part time jobs	u	
NO less time than high school	uni	
NO, worked 2 jobs in deferred year but uni better balance so far	U def	
NO, working in Muswellbrook sport in Maitland	U def	
NO, much less free time	wk	
NO, work has been hard to find in Wollongong	wk	
NO, as I work nights and (my)friends work days	wk	
NO, joined ses when friend suggested it and it has been great	wk	
NO, long hours and 2 hour commute	wk	
NO, Night fill impacted but checkout op better	wk	
NO, but I like the big hours of being a chef	арр	
NO, I miss music studied at school, may look to pick up dj work	trnee	
NO, I feel I have no spare time	trnee	
*Occupations at 18 months: u=university, u def=university of 12 months deferment, wk=working in		
paid employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training		
Organisation		

Appendix E10: Table from Study One- "The sport and hobby time I had intended or planned?"

"The sport and hobby time I had intended or planned?"		
'Yes' as planned	No	
39	19	

Appendix E-11: Table from Study One- Comments of "Sport and Hobby time" not as planned

optional comment	Occupation	
I am doing more at uni I think because the year of 2 jobs makes me appreciate time	Uni def	
No	u	
less free time	W	
No, as above	trne	
по	W	
different hours make it hard	W	
no time	uni	
no spare time	trnee	
less time given work and pracs	uni	
No,	uni	
No, Joined gym but at uni or work most of time	uni	
по	U def	
по	T/RTO	
по	T/RTO	
по	uni	
No, as planned	trn	
по	W	
less time	Uni def	
*Occupations at 18 months: u=university, U def=university of 12 months deferment, w=working in paid employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation		

Table 5-26: Study 1, 'financial resources as planned or intended'		
Yes	No	
28	30	

Appendix E-13: Table from Study One- Comments from "Yes" responses to "financial resources as planned"

Comments from "Yes" responses to "financial resources as planned"			
financial resources as intended or planned. Yes/No any comment	Yes/No	Occupation	
noted			
yes travelling (100kms) back to (home) each weekend to work, had 3	yes	u	
jobs to go overseas last year			
Yes, it has been surprising the money needed week to week for	yes	u	
college activities			
as expected but part time job helps and accommodation with aunt	yes	u	
Gained some scholarships after HSC	yes	u	
as expected	yes	u	
Yes, feels like I am the poorest I have ever been	yes	u	
a little more costly but not a major issue, part time work took a while to	yes	u	
gain			
better, due to scholarships since Yr 12	yes	u	
okay so far, two jobs helps and living at home	yes	u	
yes, fortunate to gain scholarships and recent news of possible	yes	u	
Centrelink			
yes about 7/10 impact work was harder to find in (regional uni town)	yes	u	
No, as planned	yes	U def	
yes trying to meet govt rules for Centrelink independence meant 30hrs/week of work for 18 mths	yes	U def	
okay so far, two jobs helps and living at home	yes	w	
Yes as planned	yes	w	
yes	yes	w	
yes	yes	w	
as planned	yes	w	
as planned	yes	w	
Yes as planned	yes	w	

Yes	yes	w				
Yes have been fortunate to get work so far	yes	w				
Yes, it can be a lot hours with low pay but pay reviewed to 3rd year rates for next year	yes	арр				
as planned	yes	арр				
Yes better pay than expected in mining industry	yes	арр				
yes	yes	арр				
as planned	yes	арр				
as expected	yes	trne				
as planned	yes	trne				
as planned thanks to school job still on weekends travel back (100kms to home)	yes	T/RTO				
*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid						
employment, app=apprenticeship, trne=traineeship and T/RTO=TAFE or Registered Training Organisation						

Appendix E-14: Table from Study One- Coded responses to "Unexpected change that turned out to be quite positive"

Coded responses to "Unexpected change that turned out to be quite positive"							
Coded response categories	occupation						
	TOTAL	uni	u def	W	арр	trnee	T/RTO
1. unexpected job opening/advertisement	2			2			
2. unexpected job opening from	1			1			
course/prac							
3. unexpected job opening from job	5		1	3		1	
4. unexpected enjoyment of intended job	1					1	
5. unexpected enjoyment of intended	9	5	1		1		2
course							
6.Changing employer	2			1		1	
7 changing course of study or provider	7	5	1				1
8 relocating including on campus/share	19	9	1	4	2	1	2
housing							
9 new friendships	1					1	
10 new hobbies/recreation activities	1			1			
11 no unexpected changes to report	4	1		2	1		
12 other	6	2	1	2	1		
*Occupations at 18 months: uni=university, u def=university of 12 months deferment, w=working in paid employment, app=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation							

Appendix E-15: Table Study One-Coded responses to "any unexpected changes that seemed negative at the time?"

Coded responses to "any unexpected changes that seemed negative at the time?"							
Coded response categories	occupation						
	total	uni	u def	W	арр	trnee	T/rto
1. not getting intended job or course after hsc	7	1	1	2	1	1	1
2.employment changes/cutbacks/type of work	4		2	2			
3. lack of employment/hours/money from working	6		1	4		1	
4. the course structure/course	6	4	1				1
5. changing circle of friends/loss of contact with	3	2		1			
friends							
6.health/death of parent or family member	2			1	1		
7. personal health	1			1			
8. relocating/finding	17	9		3		2	3
accommodation/homesick/living on campus/share							
9.not much/no unexpected negative changes to	12	6		2	3	1	
report							
10. other							
*Occupations at 18 months: u=university, u def=ur	iversity o	f 12 mor	nths defer	ment, w	working=	in paid	
employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation							

Appendix E-16: Study One, Coded responses "any unexpected changes that still seem negative?"

Table 5-30: Study 1, Coded responses "any unexpected changes that still seem negative?"							
Coded response categories	ories occupation						
	total	uni	u def	W	арр	tr	tfe
1. not getting intended job or course after hsc							
2.employment changes/cutbacks/type of work	3			2		1	
3. lack of employment/hours/money from working	6	4	1	1			

4. the course structure/course	1				1			
5. changing circle of friends/loss of contact with								
friends								
6.health/death of parent or family member								
7. personal health	1			1				
8. relocating/finding accommodation/homesick/living	4	3					1	
on campus/share								
9.not much/no unexpected negative changes to report	41	14	3	12	4	4	4	
10. other	2	1	1					
*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid								
employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training Organisation								

Appendix E-17: Study One- "Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change"

"Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change"

Occupation		response						
	1 Strongly	2	3 neither agree nor	4 agree	5 strongly			
	disagree	disagree	disagree		agree			
u		4	8	7	3			
u. def		1	1	2	1			
W	1	2	3	8	2			
арр		1	2	2				
trne		1	4					
tfe/rto		2	1	2				
TOTALS	1	11	19	21	6			
*Occupations at 18 months: u=university, u. def=university of 12 months deferment, w=working in paid								
employment, apprt=apprenticeship, tr=traineeship and T/RTO=TAFE or Registered Training Organisation								

Appendix E-18: Study One-... "Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change"

"Seeing other students manage unexpected changes to their occupational plans assisted me							
in managing unexpected change"							
Occupation	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly		
	disagree		disagree		agree		
U		6	6	10	1		
U def		1	1	2			
W	1	6	6	3			
Арр		1	2	2			
Trne		1	2	2			
tfe/rto		2	3				
TOTALS	1	17	20	19	1		
*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid employment, apprt=apprenticeship, tr=traineeship and T/RTO=TAFE or Registered Training Organisation							
employment, apprt=apprenticeship, tr=traineeship and T/RTO=TAFE or Registered Training Organisation							

Appendix E-19: Table from Study One-"The range of career and training options shown to us at school assisted me in managing unexpected change"

"The range of career and training options shown to us at school assisted me in							
managing unexpected change"							
occupation	1 Strongly	2	3 neither agree	4 agree	5 strongly		
	disagree	disagree	nor disagree		agree		
u		4	7	8	3		
udef		1	2	1	1		
W		5	3	8			
арр				5			
trne			3	1	1		
tfe/rto		3		2			
totals		13	15	25	5		

*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid employment, apprt=apprenticeship, tr=traineeship and T/RTO=TAFE or Registered Training Organisation

Appendix E-20: Table from Study One- "School prepared me to expect the possibility of changes to my occupational/future plans"

"School prepared me to expect the possibility of changes to my occupational/future						
plans"						
Occupation	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly	
	disagree		disagree		agree	
u		3	4	13	2	
U def			1	3	1	
W		5	1	10		
арр		1	3	1		
trne			2	3		
tfe/rto		2		3		
TOTALS		11	11	33	3	
*Occupations at 18 months: u=university, U def=university of 12 months deferment, w=working in paid						
employment, apprt=apprenticeship, tr=traineeship and T/RTO=TAFE or Registered Training						
Organisation						

Appendix E-21: Table from Study One- "School prepared me to believe that my career plans would go exactly to plan"

"School prepared me to believe that my career plans would go exactly to plan"							
occupation	1 Strongly	2 disagree	3 neither agree	4 agree	5 strongly		
	disagree		nor disagree		agree		
u	1	12	4	5			
U def	1	3		1			
W		11	2	3			
арр		3	2				

*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid								
employment, apprt=apprenticeship, trne=traineeship and T/RTO=TAFE or Registered Training								
-								

Appendix E-22: Table from Study One- Comparison of those responding agree "school prepared to believe my career plans would go exactly to plan" compared to "overall level of change" reported.

Comparison of those responding agree "school prepared to believe my career plans would go							
exactly to plar	exactly to plan" compared to "overall level of change" reported.						
(agrees=9)	Compared to final question of overall level of change	Occupation					
4	4 large, not getting in to course, the time it took to find work. Moving from part time to permanent and the joy of ses	W					
4	3, significant , the uni course had gone very well, but the accommodation changes have been bigger than I thought	u					
4	2. I have experienced minor change. I have changed jobs 3 times but first job was a 12 month traineeship	W					
4	3. Significant, moving so far from home and changing degree after first year	u					
4	5 major when first job that had had since school had cutbacks, back to McDonalds then Real Estate Office to current job	W					
4	4, Large, moving to Sydney, adding double degree, working a range of casual jobs	u					
4	 significant chance, I am still studying nursing but 3 hours away from my preferred university and boyfriends work, all working out now though 	u					
4	 signicant as I didn't expect the work in deferred year and will apply to add law to degree on campus, looking forward to it. 	d					
4	1. my levels of change from what I intended in Yr 12 have been almost nil, work has been difficult to get and I moved off campus, but things working out	u					
Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid employment, apprt=apprenticeship, trne=traineeship and T/RTO=TAFE or Registered Training Organisation							

Appendix E-23: Table from Study One- "School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path"

"School	"School gave me skills, resources, strategies or ways to cope with unexpected					
changes	changes in my career path"					
	1 Strongly	2	3 neither agree nor	4 agree	5 strongly	
	disagree	disagree	disagree		agree	
u		4	9	8	1	
U def			2	3		
W	1	5	3	7		
арр		2	2	1		
trnee		1	1	2	1	
T/RTO		3	1	1		
TOTALS	1	15	18	22	2	
*Occupations at 18 months: u=university, u def=university of 12 months deferment, w=working in paid						
employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training						
Organisation						

Table E-24: Table from Study One- ... "schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans"

"schools and career counselling needs to do more to prepare students for unexpected							
changes affecting their plans"							
Occupation response							
	1 Strongly	2	3 neither agree nor	4 agree	5 strongly		
	disagree	disagree	disagree		agree		
u		3	13	5	1		
udef		3	2				
W		3	3	9	1		
арр		1	2	1	1		
trnee		1	2	2			
T/RTO			2	2	1		

TOTALS		11	24	19	4		
*Occupations at 1	*Occupations at 18 months:u=university, udef=university of 12 months deferment, w=working in paid						
employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered Training							
Organisation							

Appendix E-25: Table from Study One- To assist preparing students for the possibility of change in their career path schools should..."

Coded responses occupation							
0000010300000		, c	Jooupun				
	total	uni	uni def	wrk	арр	trne	T/RTO
1 costs/including costs of uni	1	1					
2 moving out of home/rental property	1			1			
3 banking/money/finances/loans	1				1		
4 look beyond atar/uni/apprenticeships	3	2				1	
5 changing uni courses	1	1					
6 support available outside school e.g.uni services							
7 not getting first choice job or uni							
8 unsure/not sure	12	4		4	2	1	1
9 more options/various pathways/other pathways to uni/ways to	2	1	1				
change							
10 more industry speakers							
11 okay to change/change normal/change can be good	3	1		1	1		
12 listened/did more with school opportunity/school info enough	1	1					
13 where courses lead	1	1					
14 my career direction							
15 not much /not much really	1			1			
16 how to do uni work/aligning school subjects to uni	1	1					
17 not sure how this could be taught/very individual	11	2	1	5		1	2
18 back up plans	6	1	1			2	2
19 more one to one time with teachers	2		1	1			
20 information from real life examples/ex students	9	5	1	2		1	
21more uni visits/more uni courses	2	1		1			
22 other							
*Occupations at 18 months: uni =university, uni def=ur	niversity of	of 12 mo	nths defer	ment, v	vrk=work	ing in pa	id
omployment app-appropriationship trans-trainonship and T/DTO-TAEE or Dedictored Training Organization							

Appendix E-26: Table from Study One, "Things I wish I knew in relation to managing unexpected change and career plans"

Coded responses							
Coded responses					ULLU	μαιιοπ	
	total	uni	U	wrk	арр	trne	T/RTO
			def				
1 costs	5	1	2	2			
2 moving out of home/rental property	4	2		2			
3 banking/money/finances	3				3		
4 look beyond atar/uni/apprenticeships	3	1		1		1	
5 changing uni courses	2	2					
6 support available outside school e.g. uni	2	1	1				
services							
7 not getting first choice job or uni	2			1		1	
8 unsure	19	7	1	6	1	1	3
9 more options/various pathways	3	2			1		
10 not much/not really	2			1			1
11 okay to change/change normal/change	5	3		1		1	
can be good							
12 listened/did more with school	2			1		1	
opportunity							
13 where courses lead	2	1				1	
14my career direction							
15 other	4	2	1	1			
*Occupations at 18 months:u=university, u def=univ	versity of	12 mont	ths defer	ment, w=	working	in paid	I

APPENDIX F

Appendix F Tables for Study Two

Appendix F-1: Table from Study Two-Responses identifying "Major" overall levels of unexpected change.

Study	Two: "Major Levels of Unexpected Change"	
Rating	Response	Occupation
5	major as heart condition meant not finishing apprenticeship, went back to my old	W
	school job, pizza, became manager, then casual metals now plan uni	
5	major because I didn't get accommodation at first, will change degree and moved	to uni
	a city after country living and finances are totally different.	
5	Major, I moved from Wollongong Uni, travelled 6 months overseas, tried UNSW	W
	then UTS, lived in Sydney then Newcastle, Muswellbrook and soon Perth and som	e
	personal health issues so I might do distance ed.uni	
5	major not so much in changing course but my entire outlook due to learning about	uni
	Jesus halfway through first year of uni, will finish course then not sure after that.	
5	Major, because it is quite different to what I had planned in Yr 12.	uni
5	Major, leaving the childcare college to study by distance and drive 100kms each	W
	way for a year to work at Woolies, then opening my own day care business this year	ar
5	major because I have been through a lot of ups and downs, switching music to	W
	graphic design, breaking up with gf, no work or money, leaving TAFE, returning	
	home	
5	Major by deciding late in summer after hsc not to go to uni in country but fashion	W
	institute in Sydney and live in flat by myself in Surry Hills without family around	
*Occup	ation refers to occupation at 18months post school: w = working in paid employ, Uni =univers	ity full time,

Appendix F-2: Table from Study Two –Responses identifying "Large" levels of unexpected change

Stu	dy Two, "Large" levels of unexpected change	
Ra	ing Response Occupati	on
4	Large as I did not get straight in to green keeping, worked casual at pizza until Sept 2012 when previous manager of local race course moved to ACT and offered apprenticeship.	арр
4	Large because my father's health meant staying to work family farm not going to sports course, it helped my outlook and gave time to get license.	w
4	Large deciding to defer university 10 weeks in to second year, moving back home without job, not sure what course I will pursue, working casual in old school job.	w
4	<i>Large moving from TAFE music production to uni music teaching and the hours of work I need on t0p.</i>	u
4	Large, not gaining uni entry, withdrawing after 6 months of uni de course, changing retail employer after 6 months and changing to cash office work	tfe
4	large , unemployed 3 months, retail here, then moving to Sydney after an invite from older sister, then returning home and working in post offic	w
4	Large because of moving from TAFE to uni, from music to computer science, deciding music might be more a hobby versus employment and career, living in new place	w
4	Large by not getting in to uni, leaving bridging course, waitressing, office admin traineeship commuting to Sydney, now moving to QLD.	sk
4	Large due to the challenges my family faced at the time, gaining entry to a different uni then changing campus at the last minute and changing course.	u
4	Large taking a gap year instead of un, studying at TAFE then getting in to law de at UNE, then changing back to business, going overseas and plan to buy house	w
4	large, because the pre policing course, the lands council job and the pre metals trade course were all different to what I planned at school.	w

4	Large, because of the total change in direction from local office admin job to childcare which meant relocating to Newcastle, pay cut and travel back each weekend.	w
4	Large, have started a course that was not my first choice, deferring during second year of university and moving homework or travel.	u
4	Large by leaving university, returning scholarships and coming home, it was major at the time but has settled this year.	u
Curre deferr	nt Occupation: w =employment, U=university full time, deferrers=resumed university study after 12 mc nent, app= apprenticeship, tfe=TAFE/RTO, sk=seeking employment	onths

Appendix F-3: Table from Study Two, "significant" levels of unexpected change

Table	6-7: Study Two, "significant" overall levels of unexpected change	
Rating	Response Occup	ation
3	significant as even though in the degree I wanted, I had to move 8 hours from home, share housing, missing family, finding work	u
3	significant as my career interests have not changed from media but I have done a lot, moving in Sydney by myself, working in sales, gay bar and now media"	tfe
3	Significant because I changed interest from electrician to construction and started maintenance job in aged care was let go and then started with council"	W
3	Significant, not pursuing uni or gaining employment for almost a year after my HSC in my old job at Coles, seeing an ad for something I had not previously considered."	W
3	significant working the year then moving on campus and changing to nursing instead of ag science and time spent in the real world"	udef
3	significant, not going to QUT at first, the financial adjustments, moving away from home, then assisting my parents move, meeting new people at uni."	u
3	I changed to geology just before uni started, did a year then changed back to construction management and I have moved off campus and been fortunate to have casual work."	u

3	I got in to the course but deferred to get more part time work, Good news was the number of new friends at uni and social life"	tfe
3	Significant as I did not go to childcare as planned, but Maccas traineeship and still here."	W
3	finishing childcare course, working in pharmacy, relocating and doing uni bridging course I will now study law and social work"	u
3	significant because I did finish real estate course, but made total change to bar work, now one day would like to own bar."	W
3	significant because I did not think I would continue to second stage of traineeship and the interest that developed in midwifery, pre hsc I wanted to be undertaker"	W
3	Significant, because of a knee injury end of first year meaning degree change. I am determined to get back in to policing degree. Living on has been campus good."	U
3	Significant, because of the change from real estate to office admin after casual waitressing and the level to which I enjoy it."	trne
3	. Significant due to not gaining an apprenticeship after declining one to finish HSC, my mum's health and TAFE course discontinued."	skg
3	<i>"significant especially first 6 months unemployed, not getting in to landscaping, working casual in hardware, then TA (trade assistant) then permanent, most things settled now."</i>	W
3	<i>"significant moving so far away from home, going to a different uni, getting used to on campus and different people."</i>	u
3	" significant, as late in term three I switched to apprenticeship instead of uni, have enjoyed it and have moved out of home."	арр
3	". Significant, I have had a few health issues, found my job well paid but not stimulating, moved out of home and thinking about a different career path."	арр
3	"Significant to large because of not going to TAFE for photography, then the change of job, courses study and my outlook to life"	W
3	"Significant, GAP year, missing ADFA due to colour blindness, enjoying uni that was not my first choice, joined army res, should not have dropped	udef

maths"

Current Occupation: w =employment, U=university full time, deferrers=resumed university study after 12 months deferment, app= apprenticeship, tfe=TAFE/RTO, sk=seeking employment

Appendix F-4: Study Two, Responses reporting "Minor" levels of change reported

Tab	le 6-8: Study 2, Minor levels of change reported	
Ratir	ng response oc	cupation
2	"minor as I have ended up working with horses instead of childcare but I am probably wiser for it. I have changed employer and lost contact with most friends."	W
2	" minor in that I have remained at home and switched to distance education, I have also changed from graphic design to interior design."	Tfe/rto
2	" Slight or minor as I was able to get in my second choice provider in the same field of study. It was a long way, 9 hours from home and I work two jobs outside uni."	u ?
2	"minor as I got in to the course I wanted and uni life has been good. The course a little boring. The biggest change is a delay on the police academy intake."	e u
2	" Minor as I missed my first choice uni but got course I want at Newc Uni and happy with course. A last minute call for on campus helped, moved to share house 2013."	u
2	" slight or minor as I was able to gain an apprenticeship, my biggest changes have been meeting someone and moving out of home."	арр
Curr 12 m of or day	ent Occupation: working =employment, Uni ft=university full time, deferrers=resumed university s nonths deferment, traineeships=12 month contract of work and training which usually includes the ne day per week in vocational training, apprenticeships= a four year contract of work with on aver per week in vocational training, Tfe/rto= vocational trade and training colleges	tudy after e equivalent age one

Appendix F-5: Table from Study Two- Responses reported "Insignificant levels of unexpected change

Insignificant levels of unexpected change

Ratir	ng Responses Occ	upation			
1	" Almost nil, as after missing out on quite a few applications I gained	арр			
	apprenticeship and it has worked out for me as a I gain more training for future."				
1	"almost nil, as I was able to do course locally and got 3 days a week work from	W			
	prac, but I still need full time and work at a Chinese restaurant."				
Curr	ent Occupation: working =employment, Uni ft=university full time, deferrers=resumed university st	udy after			
12 m	nonths deferment, traineeships=12 month contract of work and training which usually includes the	equivalent			
of one day per week in vocational training, apprenticeships= a four year contract of work with on average on					
day per week in vocational training, TAFE/RTO= vocational trade and training colleges					

Appendix F-6: Table from Study Two Factors influence change of career interest, coded after content analysis

Study two Factors influence change of career		Uni	U def	Wrk	Apprt	Trnee	T/RTO	
interest, coded after content analysis								
1. negative employment experience	3	0	0	1	1	1	0	
2.positive employment experience	5	0	0	3	0	1	1	
3. course prac experience	3	1	1	1	0	0	0	
4. course structure/course content	12	6	3	1	0	0	2	
5.returning to a previous or past interest	7	2	0	5	0	0	0	
6. lack of career path/employment opportunity	2	0	0	1	0	1	0	
7.personal health	0							
8. family health	0							
9 no change in career interest	23	11	1	4	3	2	2	
10 other	3	1			1	1		
*Occupations at 18 months: uni=university student full time, u def=university student after 12 months deferment,								
wrk=working in paid employment, apprt=apprenticeship, trnee=traineeship and T/RTO=TAFE or Registered								
Training Organisation,								

Appendix F-7: Table from Study Two- Coded responses- What assisted you to make progress from unexpected change to your intended pathway?

What assisted you to make progress from unexpected change to your intended pathway?								
Coded response	Coded response occupation							
	total	uni	u def	W	арр	tr	tfe	skg
1. parental support/mum/dad/both	30	10	1	11	4		2	2
2. sibling/bro/sister	1							
3. relative other than parent/sibling	1			1				
4 boyfriend/girlfriend	2			1			1	
5. friends school/uni	1			1				
6. self	7	2		4			1	
7. work place/employer/agencies	4	1	1		1	1		
8. university/training provider	3	2		1				
9. I have not had much change to need	1			1				
support/report								
10. other	2	2			_			
Current Occupation: working =employm	ient, Uni	ft=univers	sity full tim	ne, deferre	ers=resum	ned unive	rsity study	/ after
12 months deferment, tr=12 month contract of work and training which usually includes the equivalent of one day								
per week in vocational training, app= a four year contract of work with on average one day per week in								
vocational training, tfe= vocational trade	e and train	ning colle	ges, skg=	seeking e	employme	nt		

Appendix F-8: Table from Study Two- Unexpected change within family "Yes" responses

Unexpected change within family "Yes" responses						
response	comment	Occ.				
yes	yes, there were some family accidents during yr 12	u				
yes	yes my dad influenced me to start in psych	u				
yes	yes some moving to Perth	W				
yes	yes family moved to same region as uni, I helped	u				
yes	yes	W				
yes	yes, family members moving	W				
yes	Yes, dad sick I stayed to help farm	W				
yes	yes,	W				

Appendix F-9: Table from Study Two-Unexpected changes within circle of friends

Table 6-13: Study 2, "Unexpected changes within circle of friends"					
yes no					
31.37% 68.63%					

Appendix F-10: Table from Study 2, "unexpected change within circle of friends"

"unexpected change within circle of friends"						
Re	sponse O	ccupation				
yes	it is hard to see everyone when working and they move elsewhere	арр				
yes	rarely see school friends	арр				
yes	It was hard at the time, moving out, broke up with girlfriend	W				
yes	lost contact with most, made new friends uni	u				
yes	don't see as many	u				
yes	lost contact wth many	W				
yes	I almost moved to Wagga to be with a friend studying there	tafe/rto				
yes	lost contact with most	W				
yes	most moved after Yr 12, I miss uni friends which will help when I go back	tafe/rto				
yes	lost contact with many	W				
yes	lost some contact	W				
yes	lost contact with many but made new friends	u				
yes	new friends at uni, going out every night in Sydney distracting	W				
yes	lost contact but made new friends	u				
yes	death of some friends I knew through sport	W				
yes	lost contact with most school friends	W				

Current Occupation: working =employment, Uni ft=university full time, deferrers=resumed university study after 12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent of one day per week in vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking employment

Appendix F-11: Table from Study Two- "Unexpected changes that turned out to be quite positive"

"Unexpected changes that turned out to be quite positive"								
Coded response occupation								
	TOTAL	uni	u def	W	арр	tr	tfe	skg
1. unexpected job opening/advertisement	6	1		2	1	1		1
2. unexpected job opening from	1			1				
course/prac								
3. unexpected job opening from job								
4. unexpected enjoyment of intended job	6	1	1	1	3			
5. unexpected enjoyment of intended	3			2				1
course								
6.Changing employer	6			6				
7 changing course of study or provider	6	4					2	
8 relocating including on campus/share	13	7	1	3	1		1	
housing								
9 new friendships	5	3		1			1	
10 new hobbies/recreation activities								
11 no unexpected changes to report	1			1				
12 other	4	1		3				
Current Occupation: working =employment	t, Uni ft=uni	versity fu	III time, de	eferrers=	resumed	universi	ty study a	after 12
months deferment, traineeships=12 month contract of work and training which usually includes the equivalent of								
one day per week in vocational training, apprenticeships= a four year contract of work with on average one day								
per week in vocational training, TAFE/RTO	= vocationa	I trade a	nd trainin	ig college	es			

Appendix F-12: Table from Study Two- "Unexpected changes that seemed negative at the time"

"Unexpected changes that seemed negati	ive at t	he time	<u></u> "					
Coded responses		OCCU	pation	S				
	total	uni	u def	W	арр	tr	tfe	skg
1. not getting intended job or course after HSC	12	2		5	1	1	1	2
2.employment changes/cutbacks/type of work	5			3	2			
3. lack of employment/hours/money from working	3		1	1			1	
4. the course structure/course	10	6		3			1	
5. changing circle of friends/loss of contact with	1	1						
friends								
6.health/death of parent or family member	1			1				
7. personal health	3	2		1				
8. relocating/finding	9	5	1	2			1	
accommodation/homesick/living on campus/share								
9.not much/no unexpected negative changes to	5			4	1			
report								
10. other	2	1			1			
Current Occupation: working =employment, Uni ft=	univers	ity full ti	me, defe	errers=re	esumed	universi	y study	after
12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent								
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one								
day per week in vocational training, TAFE/RTO= v	ocation	al trade a	and trair	ning colle	eges, sk	g=seeki	ng	
employment								

Appendix F-13: Table from Study Two- "Unexpected changes that still seem negative"

"Unexpected changes that still seem negative"								
Coded response	oded response occupation							
	total	uni	u def	W	арр	tr	tfe	skg
1. not getting intended job or course after HSC	2					1		1
2. employment changes/cutbacks/type of work	2			1	1			
3. lack of employment/hours/money from working	4	1		1			1	1

4. the course structure/course	3	1	1	1				
5. changing circle of friends/loss of contact with								
friends								
6.health/death of parent or family member	1			1				
7. personal health	1	1						
8. relocating/finding	3		1	2				
accommodation/homesick/living on campus/share								
9.not much/no unexpected negative changes to	30	10		13	4	1	2	
report								
10. other	4	3		1				
Current Occupation: working =employment, Uni ft	univers	sity full ti	me, defe	errers=re	sumed	universit	y study	after
12 months deferment, traineeships=12 month con	tract of	work and	d training	g which	usually i	ncludes	the equi	valent
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one								
day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking								
employment								

Appendix F-14: Table from Study Two- "Seeing parents or family members manage unexpected changes to their occupational plans assisted me in managing unexpected change"

"Seeing parents or family members manage unexpected changes to their occupational plans										
assisted me in managing unexpected change"										
Occupations Responses										
	1 Strongly	2 disagree	3 neither agree	4 agree	5 strongly					
	disagree		nor disagree		agree					
totals		20	7	21	3					
u		4	3	9	1					
udef		1	1							
W		13	2	4	1					
арр		1		4						
trne	trne 1									
tfe/rto		1	1	1	1					

Skg				2				
*totals	1	11	19	21	6			
study one								
Current Occupation: working =employment, Uni ft=university full time, deferrers=resumed university study after								
12 months deferm	ent, traineeships=1	2 month contract	of work and training whi	ich usually inclu	ides the equivalent			
of one day per we	ek in vocational trai	ning, apprenticesl	hips= a four year contra	ct of work with	on average one			
day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking								
employment								

Appendix F-15: Table from Study Two-"Seeing other students manage unexpected changes to their occupational plans assisted me in managing unexpected change."

"Seeing other students manage unexpected changes to their occupational plans assisted me								
in managing unexpected change."								
Occupation	Responses							
	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly			
	disagree		disagree		agree			
totals		21	8	20	2			
u		5	1	10	1			
udef		1		1				
W		12	4	4				
арр			2	3				
trne		1						
tfe/rto		1	1	2				
Skg		1			1			
*Totals	1	17	20	19	1			
study one								
Current Occupa	ation: working = ϵ	employment, Uni ft=	university full time, deferrers=	resumed unive	ersity study after			
12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent								
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one								
day per week i	n vocational train	ning, TAFE/RTO= v	ocational trade and training co	lleges, skg=se	eking			
employment								

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Appendix F-16: Table form Study Two-"The range of career and training options shown to us at school assisted me in managing unexpected change."

"The range of career and training options shown to us at school assisted me in managing								
unexpected change."								
	1 Strongly	2	3 neither agree nor	4	5 strongly agree			
	disagree	disagree	disagree	agree				
totals		16	10	24	1			
u		6	2	8	1			
udef		1		1				
W		8	5	7				
арр			2	3				
trne				1				
tfe/rto		1		3				
Skg			1	1				
*totals		13	15	25	5			
study 1								
Current Occ	upation: working =emp	oloyment, Uni ft	=university full time, deferrers=	resumed u	niversity study after			
12 months d	12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent							
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one								
day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking								
employment								

Appendix F-17: Table from Study Two-"School prepared me to expect the possibility of changes to my occupational/future plans"

"School prepared me to expect the possibility of changes to my occupational/future plans"								
Occupations		Responses						
	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly			
	disagree		disagree		agree			
totals		11	8	32				

u		3	4	10			
udef			1	1			
W		7	3	10			
арр				5			
trne				1			
tfe/rto		1		3			
Skg				2			
*totals		11/58	11	33	3		
study one							
Current Occupation	on: working =emp	loyment, Uni ft=	university full time, deferrers=	resumed unive	ersity study after		
12 months deferm	ient, traineeships	=12 month contr	act of work and training which	n usually includ	les the equivalent		
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one							
day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking							
employment							

Appendix F-18: Table from Study Two-"Schools and career counselling needs to do more to prepare students for unexpected changes affecting their plans"

"Schools and career counselling needs to do more to prepare students for unexpected										
changes affecting their plans"										
Occupations		responses								
	1 Strongly	I Strongly 2 disagree 3 neither agree nor 4 agree 5 strongly								
	disagree		disagree		agree					
totals		10	8	27	6					
u		5	1	9	2					
udef				1	1					
W		4	5	8	3					
арр			2	3						
trne				1						
tfe/rto		1		3						
Skg				2						

*totals		11	24	19	4		
Study One							
Current Occupa	ation: working =em	nployment, Uni ft=ur	niversity full time, deferrers=	resumed unive	rsity study after 12		
months deferme	ent, traineeships=	12 month contract c	f work and training which u	sually includes t	the equivalent of		
one day per week in vocational training, apprenticeships= a four year contract of work with on average one day							
per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking employment							

Appendix F-19: Study Two- "School prepared me to believe that my career plans would go exactly to plan"

"School Prepared me to believe that my career plans would go exactly to plan"								
Occupation	IS		responses					
	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly			
	disagree		disagree		agree			
totals		23	14	14				
u		8	4	5				
udef		1	1					
W		10	6	4				
арр		2		3				
trne			1					
tfe/rto		2	1	1				
Skg			1	1				
*totals	2	37	10	9				
Study 1								
Current Occ	supation: working = ϵ	employment, Uni	i ft=university full time, deferrer	s=resumed univ	ersity study after			
12 months o	12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent							
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one								
day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking								
employmen	t							

Appendix F-20: Table from Study Two- "School gave me skills, resources, strategies or ways to cope with unexpected changes in my career path"

"School gav	ve me skills, res	ources, strategie	es or ways to cope with	unexpected	changes in my		
career path'	,						
Occupations responses							
	1 Strongly	2 disagree	3 neither agree nor	4 agree	5 strongly		
	disagree		disagree		agree		
totals	1	13	7	30			
u		4	2	11			
udef				2			
W	1	5	3	11			
арр		1		4			
trne				1			
tfe/rto		2	1	1			
Skg		1	1				
*Totals	1	15	18	22	2		
study one							
Current Occu	upation: working = ϵ	employment, Uni ft=	university full time, deferrers	=resumed univ	versity study after		
12 months de	eferment, traineest	nips=12 month contr	act of work and training whic	h usually inclu	ides the equivalent		
of one day pe	er week in vocatior	nal training, apprenti	ceships= a four year contrac	t of work with	on average one		
day per weel	k in vocational trair	ning, TAFE/RTO= vo	ocational trade and training c	olleges, skg=s	eeking		
employment							

Appendix F-21: Table from Study Two-"- To assist in preparing students for unexpected change to career plans schools should:"

To assist in preparing students for unexpected change to career plans schools should:								
Coded Responses	Occupations							
	total	uni	uni	wrk	арр	trne	tafe/rto	skg
			def					
1 costs/including costs of uni	3	2	1					

2 moving out of home/rental property	3			1			2	
3 banking/money/finances/loans	8	3		3	1		1	
4 look beyond atar/uni/apprenticeships	3			2				1
5 changing uni courses	1	1						
6 support available outside school								
e.g.uni services								
7 not getting first choice job or uni								
8 unsure/not sure	4	2		2				
9 more options/various pathways/other	8	3	1	2		1	1	
pathways to uni/ways to change								
10 more industry speakers	1				1			
11 okay to change/change	7	1		5	1			
normal/change can be good								
12 listened/did more with school								
opportunity/school info enough								
13 where courses lead								
14 my career direction								
15 not much /not much really	4	1		2	1			
16 how to do uni work/aligning school	3			2	1			
subjects to uni								
17 not sure how this could be	1	1						
taught/very individual								
18 back up plans	1							1
19 more one to one time with teachers								
20 information from real life	1			1				
examples/ex students								
21 more uni visits/more uni courses	1			1				
22 other	2	1			1			
Current Occupation: working =employment, Uni ft=university full time, deferrers=resumed university study after								
12 months deferment, traineeships=12 month contract of work and training which usually includes the equivalent								
of one day per week in vocational training, apprenticeships= a four year contract of work with on average one ,								

day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking employment

Appendix F-22: Table from Study Two- "Things I wish I knew when I was in school in relation to managing unexpected change and career plans"

Things I wish I knew when I was in sch	ool in re	lation	to mai	naging	unexp	ected o	change an	ıd
career plans								
Coded responses	total	uni	uni	wrk	арр	trne	tafe/rto	skg
			def					
1 costs	2		1	1				
2 moving out of home/rental property	3	1		1			1	
3 banking/money/finances	7	3		2	1		1	
4 look beyond atar/uni/apprenticeships	4	2		2				
5 changing uni courses	1	1						
6 support available outside school	1	1						
e.g.uni services								
7 not getting first choice job or uni	3	1						2
8 unsure	11	4		6			1	
9 more options/various pathways								
10 not much/not really	5	2		2	1			
11 okay to change/change	9	1		5	2	1		
normal/change can be good								
12 listened/did more with school	2		1		1			
opportunity								
13 where courses lead								
14my career direction	1			1				
15 other	2	1					1	
Current Occupation: working =employment, Uni ft=university full time, deferrers=resumed university study after								
12 months deferment, traineeships=12 month of	contract of	fwork	and traii	ning whi	ch usual	lly includ	les the equi	valent

of one day per week in vocational training, apprenticeships= a four year contract of work with on average one day per week in vocational training, TAFE/RTO= vocational trade and training colleges, skg=seeking employment

Appendix G

Lesson Plans for Study Three, Four, Five and Six Appendix G Figure G-1: Lesson Plan Chaos incorporating the Chaos Theory of Careers

Lesson Plan Chaos incorporating the Chaos Theory of Careers:

Lesson Introduction

Addressing the entire class the researcher, who is also the timetabled careers teacher of this class explained that, "... today's lesson will introduce a careers topic that will be part of the research for which you have signed the study consent forms". The Lesson that incorporated unexpected change began by showing students the first half of the "Youtube" slide presentation "Where Will You Be" Jim Bright, (2009), retrieved from

https://www.youtube.com/watch?v=vrpC0pZHUe4 .This presentation introduces the changing nature of the world and careers with famous examples of the careers of celebrities who began in occupations quite different to the ones they became famous for. This took approximately five minutes. The class was then shown a power point presentation developed by the researcher for this study that followed similar themes to "Where will you be?" (Jim Bright 2009). The slides in the power point presentation demonstrated changes in the technology students often use, phones, laptops, televisions, "Playstation", to demonstrate that change is continual. The later slides in the presentation highlighted some real life real life career paths of unidentified former students of their school who had experienced substantial change in their career path. The researcher who is also the teacher of this class group introduced most of the slides in this power point presentation, whereas the "Where will you be?" slide show advances automatically and has music in the background so less commentary was made by the teacher/researcher. This took a further ten minutes.

Lesson Activity

The researcher, introduced the concept of change and Chaos Theory in careers highlighting key terms on the whiteboard and the Butterfly Theory of Careers Model (Borg, Bright and Pryor 2006). This teacher-centred component took five to ten minutes. To focus and guide discussion, students completed a work sheet that asked them to consider aspects of their education and career pathway to date with an emphasis on the complexity of contextual influences on their career thinking such as family members. Unexpected change was also
highlighted in discussion of student responses to these questions. Examples of work sheet questions discussed include:

- whether the student's day so far had gone to plan
- where were you in grade 6,
- was this school the one you think your family had planned for you back in grade six?
- where were you living in primary school?
- Do you think your family intended to live here when you were in primary school?
- What occupations were held within your family the compared to now?
- did the occupations held within your family go to a plan?
- Do you have sport/hobby or part time job?
- Did these sports or hobbies come about through planning or some unplanned events?
- What level of planning was involved compared to chance events for each of these points?

The worksheet included discussion questions on whether shorter term plans such as the degree to which student plans and intentions for their day to that point had gone to plan. Other questions for discussion from the worksheet involved examples from movies such as "in what ways does the movie "Jurassic Park" (Kennedy and Moel, 1993) introduce Chaos Theory and open systems versus closed systems?" The teacher reminded students that there are no "right" or "wrong" responses in terms of whether their experiences had gone to plan or experienced unexpected change. Students were then asked to discuss their responses in pairs with the student seated next to them. As this task was completed the teacher walked around the class discussing some of the responses with students. This took 10 minutes to complete. The teacher/researcher read through each question aloud in front of the whole class asking whether students would like to provide any examples of their responses to each question on the discussion sheet. The teacher reiterated that there are no right or wrong answers and that it is perfectly fine if aspects have gone entirely to plan or experienced little or no change or a small or great deal of change from what was expected. Students were reminded that the responses were for the purpose of discussion only.

Lesson Conclusion

The lesson concluded with the teacher reiterating the concept of change being a normal part of

many career paths revising the examples from the celebrity career paths in the first presentation, the "Youtube" slide presentation "Where Will You Be" (Jim Bright 2009), retrieved from https://www.youtube.com/watch?v=vrpC0pZHUe4 and the former students of the school in the second presentation and the positive outcomes with such changes. Students were given a short break before re testing with complete the CDSE-SF, the CEPI and CES.

Appendix G, Table G-2: Intervention Studies-Lesson Plan: Incorporating Trait and factor approach

Lesson Introduction

The lesson incorporating Trait Matching involved the students completing the Occupational Search Inventory Form -3 (Pryor 2001). The researcher, who as mentioned is also the teacher of this careers class, announced to the class that this lesson would introduce a careers topic to be used in this study. The research introduced the Occupational Search Inventory (OSI) explaining that various inventories were used by high schools throughout the world and that various educational theorists reported occupational inventories to be a highly valued part of career counselling.

Lesson Activity

The researcher explained the OSI instructions as listed at the top of each page and students completed the OSI which took twenty minutes. Students matched the codes from the OSI to careers from the suggested list in the OSI book which lists a number of careers to match each OSI code. Student selected careers that matched their OSI codes which they had some interest in for up to three combinations of their highest scoring OSI codes. This took another ten minutes. For discussion purposes students completed a work sheet that asked them to list one of the careers from the OSI list matching their codes that had caught their interest, including questions on what pathway they would take if they were to pursue this occupation, for the remainder of Year 10, Year 11 and 12 and or post school. For example, after selecting a career from that matched OSI code such as nursing, the student may plan to complete work experience in Year 10, select and study elective science and health courses in Year 11 and 12,

visit university open days and apply for university nursing courses.

As a resource to find further information on these occupations the 'Job Guide', a text produced by the national government that describes the duties, skills, training and further information sources for thousands of occupations, was made available as was the assistance of the careers teacher roaming the classroom. Addressing the entire class again the researcher read through the work sheet and the discussion questions. The researcher asked students for examples from their own responses to the occupations that matched their OSI codes and the suggested pathways to enter those occupations.

Conclusion

The teacher concluded the lesson reminding students of real life unnamed examples of past students who had identified a career interest in Year 10 and identified a pathway and followed it over several years to gain entry in to their chosen occupation. This lesson took a similar amount of time to the lesson that incorporated unexpected change in career pathways, approximately 60 -70 minutes. Following the intervention lesson the students were given a break of five minutes and then completed the CDSE-SR, the CEPI and the CES as post intervention measures.

Appendix H: Intervention Lesson Materials Lesson Materials

Appendix H-1: Activity sheet for discussion in Lesson incorporating the Chas Theory of Careers

Careers and Change	Name		10/
1. How did we wind up here?	SCONE HORSE CAPITAL		
Where do you think your parents w	ere planning for	you to be now, w	hen you were in Year
6?			
Where were you in Yr 6?		_	
Where was the person either side o	f you?	&	
How did you come to be living in Sc side?	one?		_The person either
	&		

2. Jobs and Chance events, even for part time jobs?Did classmates get part time jobs based on a plan from year 8 or the year before? What are some of the ways students gain jobs? What part did unexpected events play?

Have there been unplanned **job changes within your family** or have they all gone to plan? E.g. what were your parents/other family member's first jobs? Have there been any changes?

Even today, did things go to plan?
 Have things gone to plan even in a short term such as up to this lesson for YOU today

Pre 7 am,	7 am to 730am,	730am to 8am_	8am to
830am	_830am to 9am	, 9am to 930am	, 930am to 10 am

Even this lesson, Is every student here?_____, was every student here on time?_____ Does every student have their laptop?_____ Have any disruptions come to the door?



Closed systems Versus Open system
 Jurassic Park
 How did the movie try to create a closed system?

Explain how we live in an open system?

5. You can't stop change...Change is constant...www.myfuture.edu.au



What were TVs like in homes in just last ten years?, computers?, mobile phones?, pay tv? e. ipads

6. Each small change can lead to other changes

There are changes in the news every day. E.g. this week SMH announced the need to reduce 1900 jobs....(discuss)______



7. With change comes opportunity...Sliding Doors concept?

Does this mean we sit back and let luck take over? Discuss

Appendix H-2 Activity Sheet for discussion Trait and factor Lesson						
Planning	Name					
OSI Results						
Five careers from OSI I would hav	e some interest. My Interest out of 10 Comment					
e.g. Archítect	9/10 I have always thought about this					
Name one of the occupations you	u would be most interested in					
If planning to pursue this career:						
Where would you train and for ho	ow long? E.g. Newcastle Uni, B Architecture, 4 years					
Where would you work? Denmar	r, I would like to build new exciting designs there					
Where would you live? e.a. I would	ld líve on campus while I went to Newc uni then my nan's					
at Denman, perhaps design my a	own place 3 years or so later					
Short term . What action would ve	ou plan towards this this term/semester? E a improve mu					
maths report, investigate hsc sub	jects and talk to some actual architects my family					
knows. Onlíne research too						
Mid Term, What would you plan	to do by next year, Year 11 and 12? E.g. begin a HSC with					
Art, Maths, Design and Tech and 90	d Construction in it and work towards a HSC /ATAR of					

Longer Term, What would you plan to do from Year 12 or the first year or two post leaving

school? E.g. Begin university at Newcastle, hopefully have gained some scholarships, live on campus

.....

Appendix I Letters from observers of classroom lessons

Appendix I-1 Letter from Teacher who observed Year 10 Intervention Lessons in 2013 confirming consistent delivery.

Joel Faunt 7 Fitzgerald Ave Muswellbrook 2333 NSW Mobile: 0411490714

To whom it may concern,

In 2013, in my role as a Technology coordinator at Muswellbrook High, I was present during Mr Anthony Borg's Year 10 Career's classes that involved a series of research lessons and I can vouch for his utmost diligence and professionalism in the consistency of delivery in these lessons.

I have been involved in postgraduate research studies myself and can confirm that I was witness to lessons which were offered in an unbiased fashion with multiple performances, which were presented in a manner where his methodology portrayed the best standards of practice as an educator.

Please feel free to call me if further clarification is needed.

Sincerely

Joel Faunt BFA, Grad.DipEd, MDM.

Appendices I-2: Letter from the teacher who observed Year 10 Intervention Lessons in 2013 at a different school to the researcher's, confirming consistency of lesson delivery.





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Appendix J-1:Power point presentation incorporating a Chaos Theory of Careers (continued)











I moved back home

- Took my old part time job in a shop
- People were surprised



- One day one of my ex teachers came in to the shop...
- she asked if I was still interested in the subject area I had gone to university to study?
- Next time she came in she said that her husband's company had some temporary work in my subject area.



- Another shop customer encouraged me to look at University again via..
- Distance education



I got the job and... started the relevant external university course. Both are going together very well.





- I decided I wanted to get a trade at the end of school and began planning towards this...
- selecting subjects, doing work experience and filling in applications.



- I was not able to get a job in the exact trade I
- wanted, but...was able to take an apprenticeship with a good company in a related trade.

I planned to work well and complete this trade, then look at opportunity to fast track the other but... I was not enjoying the apprenticeship course.



- My ideas of fast tracking looked to be gone...
- and just when I began to consider plans to leave either this course or apprenticeship...
- unexpectedly,
- the course teacher changed and...
- I began to enjoy the course...
- and my apprenticeship.



Part time job planning

- I was planning to get a part time job
- Handing out my resume and completing applications

- I bumped into a friend who said, ...
- why don't you take two bottles of coke to this takeaway restaurant and...

Part time Job

chance

- talk to the owner?
- The owner and I had a chat and drank two cokes and I...
- had a part time job through four years of high school.



- I gained entry into a very high ranking university course...
- My plans changed though when I didn't get any accommodation...
- I ended up deferring university for a year and working in two casual jobs.
- The bright side is that now I am back at
- university, enjoying living on campus and ...
 I have become eligible for government financial assistance by working last year.



- I planned to go to our nearest university, but...
- When the hsc results came out...
- I only gained offers to my last choice university.
- I reluctantly went to university with plans to transfer...



- I accepted my last choice university and...
- was lucky to get a late offer of accommodation on campus.
- At the end o first year I was offered my transfer...
- The surprise was that I had got so involved in university through living on campus...
- that I did not change universities.



- I was pretty disappointed when I didn't get in to university
- I was not keen but I began a course at TAFE after my parents saw an ad in the paper...
- 18 months and two TAFE courses later ...
- I am happy to say, I gained university entry and one year's credit.



- I had dreamed of being in the defence force
- Passed all of the first round of testing during my last year of school, but...
- was surprised to find I was colour blind...
- I was very disappointed, my interest in most of my hsc subjects dropped off...
- and I was unsure of what to do the next year...



- A casual chat with one of my teachers about my report ...
- pointed out that my interest and results were still high in one particular hcs subject area.
- I applied to university in this subject area...
 and this has turned out to be an excellent choice...
- It has lead to study overseas and
- bigger employment opportunities than I had imagined.





Appendix K

K-1: The Career Decision Self-Efficacy Scale-Short Form (Betz and Taylor, 1996)

CDSE Short Form ______ class __/___ Instructions: For each statement below, please read carefully and indicate how much confidence you have that you could accomplish each of these tasks by marking your answer according to the key. Mark your answer on the answer sheet.

1 = No confidence at all

2= Very little confidence

3= Moderate confidence

4= Much confidence

5= Complete Confidence

How much confidence do you have that you could:

1.	Use the internet to find information about occupations that interest you.	1	2	3	4	5
2.	Select subjects for the HSC, TAFE or further study.	1	2	3	4	5
3.	Make a plan of your goals for the next five years.	1	2	3	4	5
4.	Determine the steps to take if you are having academic trouble with one of your subjects.	1	2	3	4	5
5.	Accurately assess your abilities.	1	2	3	4	5
6.	Select an occupation from a list of potential occupations you are considering.	1	2	3	4	5
7.	Determine the steps you need to take to complete your chosen education path.	1	2	3	4	5
8.	Persistently work at your education or career goal even when you get frustrated.	1	2	3	4	5
9.	Determine what your ideal job would be.	1	2	3	4	5
10.	Find out the employment trends for an occupation over the next ten years.	1	2	3	4	5
11.	Choose a career that will fit your preferred lifestyle.	1	2	3	4	5
12.	Prepare a good resume.	1	2	3	4	5
13.	Change education pathways if you did not like your first choice	1	2	3	4	5
14.	Decide what you most value in an education.	1	2	3	4	5
15.	Find out about the average earnings of people in an occupation.	1	2	3	4	5
16.	Make a career decision and then not worry about whether it was right or wrong.	1	2	3	4	5
17.	Change occupations if you are not satisfied with the one you enter.	1	2	3	4	5
18.	Figure out what you are and what you are not ready to sacrifice to achieve your career goals.	1	2	3	4	5
19.	Talk with a person already employed in a field you are interested in.	1	2	3	4	5
20.	Choose an education pathway or career that will fit your interest.	1	2	3	4	5
21.	Identify employers, firms, and training providers relevant to your career possibilities.	1	2	3	4	5
22.	Define the type of lifestyle you would like to live.	1	2	3	4	5
23.	Find information about education providers like Tafe and Universities.	1	2	3	4	5
24.	Successfully manage the job interview process.	1	2	3	4	5
25.	Identify some reasonable courses or career alternatives if you are unable to get your first choice.	1	2	3	4	5

Appendix K-2: The Career Exploratory Plans or Intentions Scale (Betz and Voyten, 1997)

	s questionnaire is aimed at a	issessing your		on intentions.		
Usi	ing the scale below, please in cling the corresponding num	ndicate the deg erical value.	gree to which yc	ou agree or dis	agree with ea	ch statement by
	Strongly disagree	Disagree Somewhat	Neutral	Agree Somewh	Stron nat agr	ngly ee
	1	2	3	4	5	5
Γŗ	y to avoid using "Neutral" ur	iless you really	have to. Be as	definite as yo	u can.	
		Strongly disagree	Disagree Somewhat	Neutral	Agree Somewhat	Strongly agree
1	I intend to spend more time learning about careers than I have been	1	2	3	4	5
2	I plan to talk to lots of people about careers	1	2	3	4	5
3	I am committed to learning more about my abilities and interests	1	2	3	4	5
4	I intend to get all the education I need for my career choice	1	2	3	4	5
5	I plan to talk to advisers or counsellors about career opportunities for different study plans	1	2	3	4	5

Appendix K-3: The Career Exploration Survey (Stumpf, Colarelli and Hartman, 1983)

Questionnaire – CES Class/ Name	
This questionnaire is aimed at assessing various aspects of career exploration.	

Using the scale below, indicate to what extent you have behaved in the following ways over the last 3 months by circling the appropriate number corresponding to your response.

	Little	Somewhat	A moderate	A substantial	A great	
			amount	amount	deal	
	1	2	3	4	5	
		Littl	e Somewh	A at moderat amount	A substantial e amount	A great deal
1	Investigated career possibilities	1	2	3	4	5
2	Went to various career orientation programs	1	2	3	4	5
3	Obtained information on specific jobs or organisation	1 ons	2	3	4	5
4	Initiated conversations wi knowledgeable individual my anticipated career are	th 1 s in a	2	3	4	5
5	Obtained information on a labour market and genera job opportunities in my anticipated career area	the 1 I	2	3	4	5
6	Sought information on specific areas of career interest	1	2	3	4	5

Appendix K-3 continued

		Little	Somewhat	A moderate amount	A substantial amount	A great deal
7	Reflected on how my past integrates with my future career	1	2	3	4	5
8	Focused my thoughts on me as a person	1	2	3	4	5
9	Contemplated my past	1	2	3	4	5
10	Been retrospective in thinking about my career	1	2	3	4	5
11	Understood a new relevance of past behaviour for my future career	1	2	3	4	5

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