

**A COMPARISON OF VOCATIONAL  
INTEREST TYPES AND JOB SATISFACTION  
IN ADULT CAREER DEVELOPMENT**

**A Study of Unskilled Workers in Australia**

by

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**B.B.S.**

**A thesis submitted in partial fulfilment  
of the requirements for the degree of**

**Master of Education**

**in the University of Technology, Sydney  
School of Adult Education**

**February, 1996**

I certify that this thesis has not already been submitted for any degree and is not being submitted as part of candidature for any other degree.

I also certify that the thesis has been written by me and that any help I have received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

.....

Karin F. Hosking

## **Acknowledgments**

In the course of this research, many wonderful people generously gave their time, in interviews and surveys, to share their experiences with me. I am very grateful to these people, and to their supervisors who kindly allowed my visits.

I am deeply indebted to my supervisor, Dr J.A.Athanasou, for his encouragement, patience, and reassurance throughout the project. His advice and guidance over the past three years have been invaluable, and greatly appreciated.

Dr R.T.Pithers also assisted with the data collection for Sample 3, and oversaw my work when Dr Athanasou was absent from the university.

A number of people, including Joseph Moore of the NSW Chamber of Manufactures, Bernice Melville of UTS, and various colleagues in the Department of Employment, Education and Training, suggested possible workplaces for me to visit, and their suggestions were appreciated.

I also want to thank Andrew Davidson, who has provided technical assistance (and rescued me from numerous computer crises) with good humour and good coffee; and Trudi Deane, for her support and encouragement over the years.

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## **Abstract**

The career development theory of Holland (1985) maintains that people whose vocational interests have congruence (or “fit”) with their work environments will be more satisfied than those whose interests are incongruent. This study investigated whether this theory held for a group of 120 unskilled workers, and for 54 teachers. The key issues were whether interest-job congruence correlated with job satisfaction, and whether the congruence-satisfaction relationship was a function of the congruence measure used. While previous studies showed positive correlations between person-job congruence and satisfaction, most of these used professionally-employed subjects, and some used students; few researchers investigated the experiences of unskilled workers. A meta-analysis of previous research, carried out in this study revealed an overall mean correlation between congruence and satisfaction of .16, which was very low.

Structured interviews in workplaces were used to gather data from the unskilled subjects, and a questionnaire was devised for use with the skilled subject group. The interviews and questionnaires used a card-sort procedure to ascertain subjects’ vocational interests, asked questions about subjects’ jobs, collected details on education levels and job tenure, and concluded with a job satisfaction measure. The data gathered were analysed in various ways. Two different interest coding systems, and four congruence measures were applied, to see whether different measures gave differing results. Congruence levels were significantly higher in the skilled subjects than the unskilled subjects when one set of interest codings were used, but were low for both groups when the other codings were applied. Average job satisfaction levels were similar in each group of subjects. When congruence and job satisfaction were correlated, no significant correlations were found, using either subject group, either interest coding method, or any congruence measure. Similarly, when certain factors (tenure, education levels and gender) were statistically controlled, there were still no significant

correlations between congruence and total job satisfaction scores. Certain individual items on the job satisfaction questionnaires showed significant correlation with congruence levels, however, indicating that congruent people were happier than incongruent people with certain aspects of their jobs. On the whole, the results did not support Holland's (1985) theory of vocational choice. The current study suggests that interest may not be a strong predictor of satisfaction, at least in the group of Australian workers sampled. There are implications for career guidance with less academically-inclined people; careers advisers must address other needs as well as interests, in assisting clients to make work and study decisions.

# Chapter 1

## Introduction

*Scenario: A man has spent twelve years operating machines in a biscuit factory. His interests seem to be unrelated to his work tasks. His job satisfaction level, however, is obviously above average ...*

*Scenario: A woman has worked as an office assistant in a bicycle warehouse for over two years. Despite interests clearly matched with her work role, she has a very low level of job satisfaction.*

*Scenario: A man describes himself as "chief slave" in a plastic injection moulding plant, having worked there nine years. Although his interests seem to suit his duties, he indicates that he doesn't like his job.*

*Scenario: A woman does factory and process work for thirty years, currently operating a cheese-cutting machine in a dairy factory. While her interests display a total lack of "fit" with her job, her job satisfaction level proves to be very high. She says "I love the work and I love the people".*

Careers advisers try to assist people to maximise their potential, and achieve a satisfying life, by helping them to identify and choose suitable career options. A common tool used in giving careers advice is interest testing, where the client's vocational interests are measured, and a range of career options considered to match their interests is generated. Prominent career theorists, such as Holland (1985) and Dawis and Lofquist (1984) have stated that people whose vocational interests have congruence or "fit" with their work environments, will be more satisfied with their jobs. For example, a person interested in working with machines and working in a factory might be regarded as congruent; a person interested in artistic pursuits and performing process work would not. According to Holland's (1985) theory, the first person described would be more satisfied with his or her work, than the second. It is possible, however, that worker

satisfaction is influenced by many different factors, both intrinsic and extrinsic to the individual.

One group of workers which is often overlooked by researchers is people performing repetitive tasks in settings such as factories, nursing homes and warehouses. This thesis describes a study of these workers - they were visited in their workplaces, and invited to share their views. The aim of the study was to test a prevalent theory of career choice (Holland, 1985), and to gain more information about the people performing unskilled work.

The term "unskilled work" may be something of a misnomer. As pointed out by the industrial relations manager in one of the factories visited for this study (a large tobacco plant), "nobody on Earth has no skills". The target group for the research was people working in occupations where few (or no) particular skills were required to obtain the job, and where any skills required to perform in the position could be learned on-the-job, in a short time. While this definition corresponded well to two structural groups in the *Australian Standard Classification of Occupations* (Plant and Machine Operators, and Drivers; and Labourers and Related Workers), it could also be applied to certain other occupational groups, such as some clerks, salespersons and personal service workers. Most of the people interviewed for this study (over 70%) were employed in the two structural groups described above. Their tasks were generally repetitive, and often physically demanding.

### *Vocational choice theories*

Many researchers have wondered how people's work performance can be enhanced, and have investigated aspects of workers' personal and working lives which appear to affect their attainment. In many cases, employees' interests (and how similar these are to their work tasks) have been shown to be linked with their aptitude for and performance in a job, and the enjoyment or satisfaction they gain from their work. Vocational choice theories suggest that if people choose types of work which match their interests or other needs, they will be both satisfied and successful in their jobs. Prominent vocational choice theorists include Holland

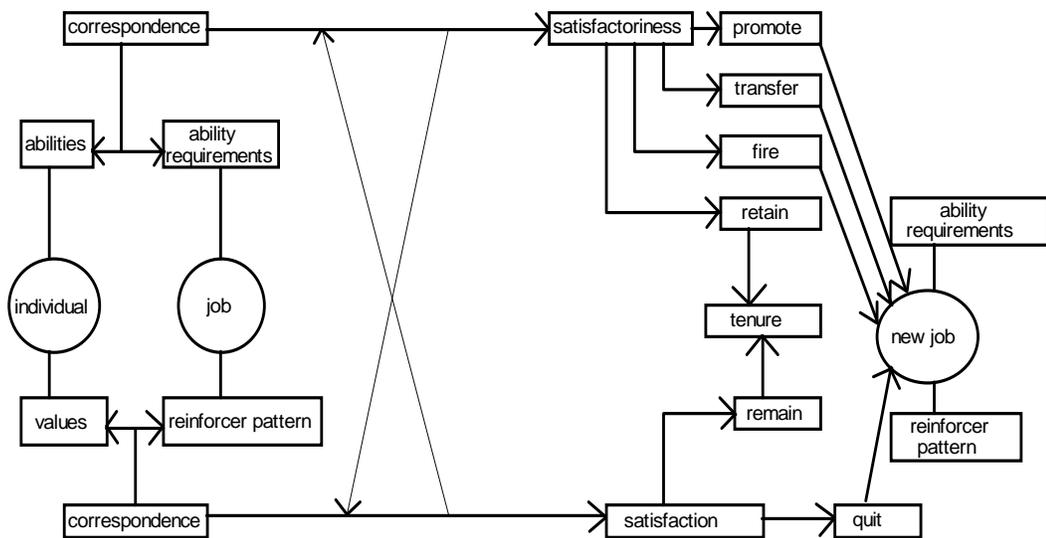
(1985), Dawis and Lofquist (1984), and Gottfredson (1981). The following section introduces their viewpoints.

Holland's (1985) theory of vocational choice is well-known, widely utilised, and has been evolving for several decades. His vocational typology is used to sort people and work environments into six "types" - Realistic, Investigative, Artistic, Social, Enterprising and Conventional - with the assumption that each of the six different kinds of work environments is dominated by a given personality type. He thought that individuals sought environments which allowed them to express their attitudes and values, and that behaviour could be understood through analysis of individual's interaction with their environment (Holland, 1985). Holland's theory saw vocational interests (which he equated with personality) as relatively stable. The concept of "congruence" (person-environment fit) was central to Holland's theories and he thought people were most likely to find vocational satisfaction and achievement in work environments which suited their personalities. Many researchers have tested Holland's theories of interest congruence, with varying results. Werner (1974, cited in Holland, 1985), looked at students in occupational training centres. He found that, although students in congruent environments had higher achievement levels than those in incongruent environments, congruence appeared to be related to satisfaction for males but not for females. Conversely, Peiser and Meir (1978) conducted a longitudinal study over seven years, and found that satisfaction with current occupation was positively correlated with interest congruence in both females and males. Holland's theory has also been applied to interpersonal situations (such as client-counsellor, and marital relationships) by various researchers.

Another theory of person-environment fit is that of Dawis and Lofquist (1984). The researchers looked at individuals' personalities and work environments, and how these interacted to lead to "work adjustment". Their Theory of Work Adjustment (depicted in Figure 1.1, below) stated that "the mutual responsiveness of the individual and the work environment to each other's requirements is a continuing process called work adjustment" (Dawis & Lofquist, 1984, p.56), and that the indicators of work adjustment were satisfaction (of the individual with the work environment), and satisfactoriness (the individual's work performance). They saw individuals' work personality as being made up of skills (also called

abilities) and needs (values), and they theorised that work adjustment could be predicted from the correspondence between the work personality and the work environment. Their theories have a range of potential applications, for example, in recruitment and selection procedures, vocational counselling, job design (or re-design), the development of training packages and the improvement of employee morale (Dawis & Lofquist, 1984, p.135). Dawis and Lofquist also developed a number of research instruments, such as the *Minnesota Importance Questionnaire*, the *Minnesota Job Description Questionnaire* and the *Minnesota Satisfactoriness Scales*, for use in position analysis and career counselling.

**Figure 1.1 Dawis & Lofquist model for prediction of work adjustment**



(from Dawis & Lofquist, 1984, p.62)

An alternative viewpoint to those of Holland (1985) and Dawis and Lofquist (1984), was taken by Gottfredson (1981), who studied the ways in which occupational aspirations develop. She saw vocational development as dependent on self-concept, and therefore as beginning to occur in the very earliest years of life. Gottfredson thought that occupations could be shown on a "cognitive map", according to sex type and perceived prestige, and noted that fewer jobs were typed as female than as male. The researcher detailed four stages which children may go through in developing self-concept and occupational preferences, and

noted particularly that during Stage Three (about ages 9-13) "Boys' occupational preferences rise ... in prestige level ... they shift away from blue-collar work toward major professional and executive jobs ... in contrast, girls' preferences move toward lower level jobs - from jobs as lesser professionals (e.g., teacher and nurse) and toward semi-professional and clerical work" (Gottfredson, 1981, p.562). Gottfredson suggested that, by this stage in their development, children begin to place "ceilings" and "floors" on their preferences, and she estimated that by age thirteen they would have identified the (prestige) level and sex-type of work they would prefer. The author called this process "circumscription", and saw the next step as "compromise", that is, "changing one's goals to accommodate to uncontrollable circumstances ... [because] the jobs people want may sometimes be very different from the jobs available to them" (Gottfredson, 1981, p.569). The theory presented saw occupational aspirations as more closely related to sex, social class and intelligence than to interests, and for this reason, did not show interest-job congruence as leading to job satisfaction. Contrary to Gottfredson's theory, Hesketh, Elmslie and Kaldor (1990) found that interests were more important than sex type and prestige in career decisions. Their studies included both men and women of varied social class, and the authors concluded that their results offer "a less pessimistic outlook for attempts to increase non-traditional career choices" (Hesketh, Elmslie & Kaldor, 1990, p.55). Another recent Australian study was carried out by Lokan and Fleming (1994), who used a longitudinal survey of occupational choice in high school students, finding that Gottfredson's (1981) "important barriers" (ie., gender and social status of occupations), had little influence in changing career aspirations. Males appeared more likely to compromise within gender-stereotyped boundaries than females, perhaps indicating that young women are becoming more receptive to non-traditional career options. The work of both Hesketh et al. (1990) and Lokan and Fleming (1994), when compared with Gottfredson's (1981) theory, may reflect attitudinal change over time, and differing social mores between the United States and Australia.

In reviewing the literature on vocational interests and job satisfaction, it appears that there are definite links between job satisfaction and performance (e.g., Dawis & Lofquist, 1984; Gati, 1990; and Holland, 1985). It may therefore be in the interests of employing organisations, to consider ways workers may gain

satisfaction from their day-to-day tasks. Many studies have been carried out, investigating relationships between vocational interests and satisfaction, gender influences, career compromise, differences between professional, skilled and unskilled workers, and the measurement of person-environment "congruence". As noted by Quarstein, McAfee and Glassman (1992), the consequences of job satisfaction are important to organisations, in terms of efficiency, productivity, absenteeism and staff turnover. Zeffane (1994) suggested that " ... if employees can be kept happy in their jobs, they will be more likely to develop those desirable attitudes which will eventually ... enhance productivity and have positive effects on broader organizational outcomes" (p.63).

The current study aimed to see whether Holland's (1985) theory of vocational choice could be applied to unskilled workers. While this theory has been evolving for nearly four decades, and has been tested by numerous researchers, the testing has tended to focus only on certain groups of the population. Past researchers have used accountants (Aranya, Barak, & Amernic, 1981), nurses (Hener & Meir, 1981), teachers (Wiggins, 1976; Wiggins, Lederer, Salkowe, & Rys, 1983), engineers (Meir & Erez, 1981), managers (Doty & Betz, 1979), bankers (Gottfredson & Holland, 1990; Meir & Navon, 1992) and other professionals, as well as many students (for example, Kane, Healy, & Henson, 1992; Nafziger, Holland, & Gottfredson, 1975; and Smart, Elton & McLaughlin, 1986) in establishing links. There appears to be a scarcity of research using lesser-skilled employees, particularly Australian ones, in this field. The concept of person-job congruence, central to the theory, may or may not have relevance for unskilled workers. Whereas people entering professions, and perhaps to a lesser extent trades, may have chosen their occupations through considering their interests and aptitudes, this may not be the case for many unskilled workers. They may have "chosen" their jobs (or otherwise assumed them) because they were close to their homes, or they were following in a family member's footsteps, or because a job was available at a time when they needed a job. It would thus be likely that unskilled workers would have (on average) less "fit" between their interests and their jobs than skilled workers. Given, then, that they may have taken jobs for reasons other than a match with their vocational interests, would they feel unsatisfied with the work ... or would they find other aspects of the job to enjoy?

The issues under investigation in this research project were the degree to which workers' reported interests matched their work tasks (known as congruence, or "fit"), and the level of job satisfaction reported by the workers. Are job satisfaction levels affected by congruence levels, as prominent theories suggested they should have been? Would it be possible to test links between congruence and satisfaction in unskilled workers, or do they have different motivations to other workers? In order to assess "congruence" levels, subjects' vocational interests had to be measured. Vocational interests have been described as "an expression of personality" (Holland, 1985, p.8) and are central to the prominent vocational choice theories of Holland (1985), and Dawis and Lofquist (1984). In the current study, subjects' self-estimated interests were compared with their daily job tasks, to produce a congruence "score". Holland theorised that people with a particular "interest type" would seek work environments matching that interest type (for example, social people working in social situations), and that they would be more comfortable and satisfied in these "congruent" environments. The study used job satisfaction as the dependent variable. Job satisfaction has been defined as "the individual worker's subjective evaluation of the degree to which his or her requirements are met by the work environment" (Bretz & Judge, 1994); and has been associated with outcomes such as productivity, turnover and health (O'Brien, Dowling & Kabanoff, 1978), making it important to both workers (Emery & Phillips, 1976; O'Brien, Dowling & Kabanoff, 1978) and to employers (Koeske, Kirk, Koeske, & Rauktis, 1994; Zeffane, 1994).

### *Vocational choice issues*

One motivation for this research was to seek better vocational guidance methods for young people destined for non-professional careers. School careers teachers, vocational guidance counsellors and careers librarians tend to be well-stocked with information on how to become accountants, psychologists, engineers and marine biologists, but seem less likely to possess much material on lesser-skilled, less prestigious occupations. The annual publication *Job Guide* (Department of Employment, Education and Training - DEET), which is distributed widely through schools and careers services, lists details of training requirements and job descriptions for several hundred different jobs, yet barely touches on some of the

more common, and lesser-skilled, occupations. Recent studies have shown that 56% of young people aspire to work in professional occupations, however only 13% of the Australian working population are actually employed in such occupations (DEET, 1995). Given these figures, we may well wonder which (if any) school-leavers are assuming positions with factories and other traditional employers of "unskilled" workers? And, do they feel they've failed in some way, if forced to "resort" to factory or labouring work?

While the proportion of workers employed in the manufacturing industry is decreasing (14% in November 1994, compared with 18% in November 1984 - DEET, 1995), changes are also taking place within the industry. Greater emphasis is being placed on the development of skills and competencies, and ongoing training, in many manufacturing environments. This was evident in a number of the facilities visited for this study. While school retention rates are increasing (72% of New South Wales school leavers had completed secondary schooling in 1994, compared with 42% in 1984/5 - DEET, 1995), many traditionally low-skilled jobs are being enriched, and career paths defined. There is still, however, a body of young people leaving school without receiving adequate career guidance. An Australian researcher (Bryce, 1994) looked at the career development of school-leavers, and mentioned the importance of finding career goals in early adolescence and following that goal. She also emphasised that students need to obtain knowledge and experience of a broad range of work options, so they do not limit their choices.

The present study investigated adult vocational development. It focused on whether adults (a) worked in occupational fields "congruent" with their Holland (1985) personality types; and (b) whether they reported job satisfaction in positions matching their interests. It was hypothesised that certain individuals in "blue collar" (or unskilled) occupations, would find job satisfaction in fields congruent with their vocational interests. To explore this hypothesis, a group of people in unskilled or semi-skilled occupations were interviewed, to ascertain their person-environment congruence levels and their job satisfaction levels, and the data received were analysed. Another group of people, employed as adult education teachers, were also surveyed for the purposes of comparison. As pointed out by Tranberg, Slane and Ekeberg (1993), "[t]he idea that vocational

satisfaction is related to the degree of fit or congruence between the attributes of an individual and the work environment is central to the field of vocational counseling". It is, therefore, important to learn whether this assumption can be applied to unskilled workers, so that they can be given appropriate assistance in making decisions about their career directions.

The next few chapters describe the current study of unskilled workers, and previous research in congruence and job satisfaction which has influenced it. Chapter 2 examines some prevalent interest theories and reviews relevant literature on congruence, while Chapter 3 outlines the research methods employed in the current study. Chapters 4 and 5 detail and discuss the quantitative and qualitative results obtained, while Chapter 6 offers some conclusions.

## Chapter 2

### Literature Review

#### *Introduction*

This chapter reviews past writings on interest congruence, job satisfaction and vocational choice. It is divided into several sections, firstly looking at the concept of person-job congruence (and recent research into this topic), congruence measures, then other research into interests and/or satisfaction and it concludes with an overview of the current research project.

#### *Person-environment congruence*

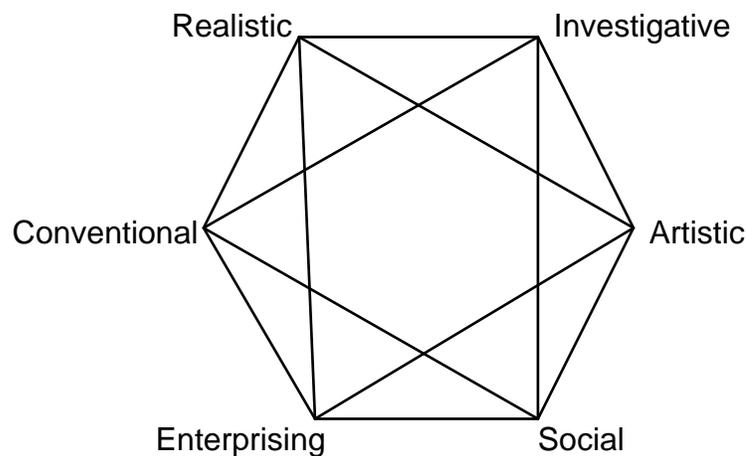
“Congruence” refers to the level of similarity between a person’s interests, and their occupational choice. For example, a person with “social” interests working as a social worker could be regarded as congruent; a person with “artistic” interests working as a machine operator would not. The concept of congruence is central to the theoretical propositions of Holland (1985), who believed that job satisfaction was enhanced when “the personality of the worker is congruent with his or her work environment” (Elton & Smart, 1988). It has also been referred to as occupational correspondence (Breen, 1993), and as person-environment fit. The concept of person-environment congruence has gained prominence in recent decades; it is an area commonly explored in assisting people to make vocational choices. As pointed out by Holland (1985), people working in environments “congruent” with their personalities have the opportunity to engage in activities fitting their personalities, and to be rewarded for these, and can avoid activities which do not match their interests and competencies. The following sections look at methods of quantifying congruence, and at the wide range of research which has been carried out in this field.

### *Measures of congruence*

A variety of congruence indices, used to measure similarity between interest inventory scores and occupations, have been developed. These have tended to be designed for use with the personality types suggested by Holland's (1985) theory.

Holland's (1973, 1985) theory of vocational choice is often used in career counselling. The theory suggests that individuals and environments can be classified into one of six personality types, namely Realistic, Investigative, Artistic, Social, Enterprising or Conventional, and the system can be used to quantify individuals' congruence with their work environments. Holland theorised that individuals sought work environments which matched their personalities, and that person-environment "congruence" led to job satisfaction. He also devised a hexagonal model (see Figure 2.1) to show relationships between the six personality types, with adjacent personality types being more similar to one another than types which are not adjacent to each other in the hexagon.

**Figure 2.1** A hexagonal model for defining the psychological resemblance among types and environments and their interactions



(from Holland, 1985)

Holland devised two instruments with which to measure person-environment congruence, the *Self-Directed Search* (SDS; Holland, 1979), and the *Vocational Preference Inventory* (VPI; Holland, 1977). Both of the measures could be used to derive a code, usually comprised of three letters, to show the interest profile of a person or occupation. For example, if a subject completed the SDS (a paper-and-pencil interest inventory) and received a "score" of say RIE, this would indicate that they had realistic, investigative and enterprising interests. The SDS manual (1979) would suggest that occupations such as automotive engineer, diesel mechanic or garage supervisor may appeal to this subject, as these occupations were also coded RIE. This posed a question, however. Having obtained these three-letter codes, how could the level of fit (known as congruence) between any two codes be quantified?

In the past two decades there has been a proliferation of research into person-environment congruence, and several statistical indices have been devised to assist with the assessment of congruence. This section examines four such indices (those of Wiggins & Moody, 1981; Zener & Schnuelle, 1976; Kwak & Pulvino, 1982; and Iachan, 1984), and describes their use in comparing pairs of three-letter Holland codes.

One of the earlier indices for calculating the degree of agreement between two three-letter Holland codes was devised by Zener and Schnuelle (1976). They assigned scores to the relationships between three-letter codes, as shown in Table 2.1.

**Table 2.1 Zener-Schnuelle Index of Agreement between current occupational choice and SDS code**

<b>Zener-Schnuelle method for determining level of Agreement</b>	<b>Index of Agreement</b>
Are codes exactly alike?	6
Are the first two letters in the same order?	5
If the letters are the same but out of order?	4
Is the first letter in each code the same?	3
Do the first letters of one code match any two letters in the other code?	1
If the first letter of one code is not included in the other code	0

( Zener & Schnuelle, 1976, cited in Iachan, 1984)

While the index provided a useful and straightforward way to calculate congruence, it appeared unlikely to discriminate precisely. Later researchers (such as Iachan, 1984) commented on the inadequacies of the Zener-Schnuelle index, demonstrating that it could give widely differing scores for very similar codes, or alternately, similar scores for quite different codes. For example, a comparison of the codes RIE and REI would "score" 4 on the Zener-Schnuelle index, yet a comparison of the codes REI and SEI would score 0, despite the similarities between the codes.

Another tool for the calculation of personality-environment congruence is the Compatibility Index (CI) designed by Wiggins and Moody (1981). While similar to the Zener-Schnuelle (1976) index, the CI uses different weightings for each of the letters in the Holland codes being compared. The Compatibility Index is obtained using the rules in Table 2.2.

**Table 2.2 Derivation of the Wiggins and Moody (1981) Compatibility Index (CI)**

<b>Condition</b>	<b>Rating</b>
Letters and order of both codes match exactly	8
Primary letters match, with secondary and tertiary letters of one code reversed in the other code, or only primary and secondary letters of both codes match in order	7
All letters of both codes match but primary letters are not the same	6
Primary letters match, with secondary or tertiary letters of one code matching tertiary letter of the other code, or primary and secondary letters of one code reversed in other code	5
Primary and secondary or tertiary letters of one code match any two letters of other code in any order, or primary letter of one code matches primary letter of the other code	4
Secondary and tertiary letters of one code found in the other code in any order, or primary letter of one code matches secondary letter of the other code	3
Primary letter of one code matches tertiary letter of the other, or secondary letter of one code matches secondary or tertiary letter of other code	2
Tertiary letters of both codes match	1
No letters match in either code	0

(adapted from Wiggins et al., 1983)

The CI appears useful, as it is more precise than the Zener-Schnuelle (1976) index. The authors suggested that the Compatibility Index could be used to study disparate groups, and that it "provides a quick measure of congruence and may be used for counseling purposes" (Wiggins, Lederer, Salkowe & Rys, 1983).

Kwak and Pulvino (1982) found the Zener-Schnuelle (1976) method of measuring congruence to lack precision, as it failed to weight letters differently based on where they were placed in a three-letter code. They designed a mathematical model which could be used to compare three-letter codes, and stated that the "model could be used to compare personality types over time or to determine the relationship between personality types and person-environment interactions" (Kwak & Pulvino, 1982, p.233). Their model used a weighting system, and weights of 4, 2, and 1 respectively were assigned to the first (dominant), second (secondary) and third (tertiary) letters of the three-letter

summary codes, in accordance with Holland's theory that "secondary and tertiary characteristics are less influential" (Kwak & Pulvino, 1982, p.234). The researchers used the following formula to calculate the relationship between two three-letter codes:

$$X=(W_1+W_2+W_3)-1(W_1AD+W_2BE+W_3CF)$$

- where:
- X = the weighted relationship between codes;
  - $W_1$  = the weight assigned to the dominant code letter;
  - $W_2$  = the weight assigned to the secondary code letter;
  - $W_3$  = the weight assigned to the tertiary code letter;
  - A represented the first position in the three-letter personality (i.e., subjects' inventoried interest) code;
  - B represented the second position in the three letter personality code;
  - C represented the third position in the three-letter personality code;
  - D represented the first position in the three-letter environmental (i.e., occupation) code;
  - E represented the second position in the three-letter environmental code;
  - F represented the third position in the three-letter environmental code;
  - AD represented the relationship between the first letter of the three-letter personality code and the first letter of the three letter environmental code;
  - BE represented the relationship between the second letter of the three-letter personality code and the second letter of the three-letter environmental code;
  - CF represented the relationship between the third letter of the three-letter personality code and the third letter of the three-letter environmental code;

and where the values of the relationships for AD, BE, and CF are given in the correlations associated with Holland's hexagonal model. (These correlations were detailed in Holland (1973) - in essence, Holland assigned scores of between

0 and 1 to each possible pair of codes, based on how close the two codes were to each other in his circumplex). By using this formula, values of X ranging from .1514 (low congruence) to 1.0000 (high congruence) can be obtained. The Kwak and Pulvino (1982) model differs from the Zener-Schnuelle (1976) congruence index, in that it assigns different weightings to secondary and tertiary letters in three-letter codes, and is therefore more sensitive to the rank order of codes. The authors acknowledged that their formula was more complicated (and therefore likely to be more time-consuming) than the Zener-Schnuelle (1976) index, but pointed out that it offered a more precise measure of congruence and that their methodology was in accordance with Holland's theory.

A more recent congruence measure, and that preferred by Holland (1985), is the Iachan (1984) mathematical model. The model assigns "more relative importance to matches (or agreement) in the positions corresponding to higher rankings" (Iachan, 1984, p.134), as shown in the Table 2.3.

**Table 2.3 Illustrative weights for assessing agreement between two three-letter codes**

<b>Vocational Choice Code (judge 1)</b>	<b>SDS Summary Code (judge 2)</b>		
	<b>First Letter</b>	<b>Second Letter</b>	<b>Third Letter</b>
First letter	22	10	4
Second letter	10	5	2
Third letter	4	2	1

(from Wiggins et al., 1983)

Empirical tests conducted by Iachan showed that the model gave very similar results to the Zener-Schnuelle (1976) index, with only a few discrepancies caused by different weightings. Iachan's (1984) paper criticised the Kwak and Pulvino (1982) measure for being too complex, though commended it for its precision. As indicated by Iachan, an important issue in the design of congruence indices, is the choice of weights. Both the Kwak and Pulvino (1982) and Iachan (1984) indices favoured weighting primary letters in three-letter codes at least twice as

heavily as secondary letters, and secondary letters twice as heavily as tertiary ones. Iachan extended his 1984 congruence index in 1990, to allow for situations where letter codes are "tied", and where two-letter codes are used instead of three-letter ones. He also described a computer program for use in computing the Iachan Congruence Index. Table 2.4 (below) gives an indication of how the different measures would compare various pairs of codes.

To summarise, several measures have been devised with which to quantify congruence (or fit) between Holland codes. The Zener-Schnuelle (1976) index was a breakthrough, as researchers had previously been able to compare only the first letters of three-letter codes due to a lack of adequate measurement tools. It lacked precision, however, and the later Kwak and Pulvino (1982) mathematical model overcame this problem by using a weighting system, and the correlations associated with Holland's hexagonal model. The main drawback of the Kwak and Pulvino measure was its complexity. The two final indices discussed, the Wiggins and Moody (1981) and the Iachan (1984) models, appear to have the greatest utility for congruence studies, as they are both precise (weighting primary, secondary and tertiary letters in three-letter codes differently), and easy to calculate.

**Table 2.4 Different congruence indices applied to pairs of codes**

<b>Holland Codes being compared</b>	<b>Zener-Schnuelle (1976) index</b>	<b>Wiggins &amp; Moody (1981)</b>	<b>Kwak &amp; Pulvino (1982) model</b>	<b>Iachan (1984) model</b>
RIE/RIE	6	8	1.0000	28
RIE/RIA	5	7	.9071	27
RIE/REI	4	7	.6400	26
RIE/SIE	0	3	.5486	6
RIE/IRE	4	6	.5371	21
RIE/IER	4	6	.3514	11
RIE/ERI	4	6	.3257	16
RIE/ASE	0	1	.3186	1
SEA/AIR	0	2	.3086	4
IRE/SEA	0	2	.3043	2

Despite the existence of a range of congruence indices (as described above), many recent researchers have used more basic methods to calculate congruence. For example, Swaney and Prediger (1985), Smart, Elton and McLaughlin (1986), Meir, Keinan and Segal (1986) and Rounds (1990) all used first-letter agreement to judge whether their subjects' interests matched their jobs. The range of different measurement methods used, and the variation in the level of complexity of the measures, may make it difficult to compare and group different congruence studies.

### *Reviews of congruence studies*

A number of studies have looked at the issue of person-environment congruence in recent years, and reviews of research in this field have been carried out by Spokane (1985), Assouline and Meir (1987), and Tranberg, Slane and Ekeberg (1993). Spokane, and Assouline and Meir, concluded that there was evidence of a link between congruence and satisfaction, whereas Tranberg, Slane and Ekeberg were less convinced. Spokane noted that correlational studies frequently show positive relationships between congruence and performance, job satisfaction and personality and that more complex research designs using moderator variables were appearing. He looked at ways of measuring work environments to assign Holland types to them and at various methods developed to calculate person-environment congruence levels. Spokane summarised many studies of congruence, concluding that "congruence does seem to be related to general measures of adjustment and personality integration but not to measures of performance-related characteristics such as sociability or problem solving" (Spokane, 1985, p. 316). He looked at longitudinal studies, showing changes in congruence levels over time, and at studies (e.g., Elton, 1971, cited in Spokane, 1985) examining personality change in students, possibly induced by environmental conditions. Studies (e.g., L.Gottfredson, 1982; and Prediger, 1981, both cited in Spokane, 1985) examining gender differences in congruence were looked at, however no identifiable differences stood out. Spokane suggested some new directions for congruence research, for example, mechanisms for resolving incongruence, and whether congruence can be altered. Finally, he looked at the implications for career counselling, considering for

example whether a change in aspiration might be more useful than a job change for some counselling clients. He suggested early intervention for clients whose interests were incongruent with their jobs or tertiary majors.

Meta-analysis was used by Assouline and Meir (1987) and Tranberg, Slane and Ekeberg (1993) to analyse congruence studies. Assouline and Meir found that 16 different methods to measure interest-environment congruence had been used, in the 41 studies they analysed. Subjects in the studies ranged in age from 14 to 70, and included employees in a variety of occupations, university students, high school pupils and others (e.g., groups with similar leisure interests). Most of the studies had sought correlations between congruence and satisfaction, although some looked for correlations between stability or achievement levels and congruence. Low correlation levels were found in studies where the dependent variable was either stability or achievement, while the mean correlation between congruence and satisfaction was found to be about .29.

A more recent and more rigorous meta-analysis was conducted by Tranberg, Slane and Ekeberg (1993). The researchers analysed the results of 27 studies of interest congruence and satisfaction, and found that overall, there was no significant correlation. As recognised by Assouline and Meir (1987), the studies used a number of different approaches to assess congruence and satisfaction. The researchers noted that studies with the weakest methodologies yielded the highest correlations, and that better measures showed non-significant correlations between congruence and satisfaction. They inferred from these results, that "interest congruence alone does not predict satisfaction" (Tranberg, Slane & Ekeberg, 1993, p.261). These findings could have important implications for vocational counselling. The researchers were critical of many of the studies reviewed, finding them to be "overly simple" and not empirically sound. In conclusion, this more recent meta-analysis challenged the assumption that interest congruence and job satisfaction are necessarily linked, and suggested that future research should seek more complex relationships between congruence and satisfaction, and consider potential moderating variables such as gender, race and age.

A discussion on Holland's concept of congruence was carried out by Gati (1990). He indicated that while there had been much research on the relationship between congruence and occupational satisfaction, there was scope for further empirical investigation. In characterising people and environments, he pointed out that no arbitrary number of letters in a Holland (1985) code is appropriate for all people or situations, as different individuals show different degrees of differentiation. He suggested that the concept of congruence was necessarily a continuous one, but that for practical purposes it was often treated as dichotomous. He noted that there were many indices that could be used to quantify congruence levels, and that different results tended to be received depending on the measure used. Gati also examined the validity of using congruence as a predictor of occupational satisfaction and performance. He suggested that the non-significant results gained in previous congruence research showed that factors other than interests (including abilities, skills and values) affect occupational satisfaction and performance. He questioned whether people have a "minimal threshold" of congruence, below which they will not stay in an environment. Studies have also shown increased job satisfaction with age (e.g., Holland & Gottfredson, 1976, cited in Holland, 1985; Pond & Geyer, 1991), and there is evidence that this is due to a greater readiness to compromise in older people. In conclusion, Gati pointed out that many aspects of congruence required more empirical research.

Techniques used to measure work environments, and for quantifying person-environment fit, were also examined by Osipow (1987). He questioned which characteristics of people and environments needed to be assessed in order to give vocational advice, and pointed out that different theorists (e.g., Dawis & Lofquist, 1984; Holland, 1985) had identified different dimensions on which to assess people. Osipow also mentioned the importance of person-environment fit in workers' home or social environments, pointing out that "the degree of fit at work has implications for home and family, just as the home and family has person-environment implications for the workplace" (Osipow, 1987, p.335). Osipow's paper raised a number of questions about the direction of person-environment research, and suggested that there were many unresolved problems, and opportunities for further study.

### *Congruence studies*

A number of researchers have explored the issue of person-environment congruence, and whether it affects job satisfaction, over the past three decades. Their studies have sought to discover whether congruence-based theories of vocational choice are valid for different groups of people (such as males and females, unskilled, skilled and professional workers, and people from different cultures), and they have also used a wide variety of measures. An example of a “typical” congruence study, is that by Gottfredson and Holland (1990). The researchers administered an interest inventory to a group of workers, and used a congruence index to quantify individuals’ degree of “fit” with their environments. They also had the subjects complete a job satisfaction questionnaire, and examined the correlation between congruence levels and satisfaction scores, to see whether congruence was a predictor of satisfaction. While this provides a brief overview of congruence study methodology, the actual studies published have varied widely in the populations studied, the instruments used and the hypotheses posed. The following sections outline some of these studies, firstly examining studies which compared males and females, then studies using subjects of differing skill levels, studies of cross-cultural differences and congruence, and studies using particular populations.

### *Studies comparing males and females*

Most of the early tests of Holland’s theories (such as Holland, 1968; Morrow, 1971; Walsh & Lewis, 1972; and Nafziger, Holland & Gottfredson, 1975) studied male subjects only. More recently, however, several researchers have investigated whether there are gender differences in the impact of congruence on job satisfaction. Some researchers found significant differences in the ways person-job congruence impacted on job satisfaction, apparently related to the gender of the workers.

Interaction between workers' gender, gender concentration of jobs, and job-interest congruence in predicting job satisfaction was examined by Fricko and Beehr (1992). Much previous research has looked at correlations between

worker-job congruence and levels of job satisfaction (e.g., Holland, 1985; Spokane, 1985). Fricko and Beehr recognised this, and hypothesised that worker-job congruence was important to people in jobs dominated by the opposite sex, as cultural pressures often deter people from entering such jobs and they would be more able to withstand this pressure if they were particularly interested in the occupation. They studied job satisfaction in a group of college graduates over seven years, and found that while there was a three-way interaction between gender, gender concentration and worker-job congruence-job satisfaction, contrary to their hypothesis, relationships between congruence and satisfaction were more positive among females in female-concentrated jobs, and among males in male-concentrated jobs. College major-job congruence was closely related to job satisfaction, especially in female subjects, implying that congruence may be particularly important for females. Many other factors, such as pay, opportunities for advancement, sex discrimination and the relative youth of the subjects, were suggested by the researchers as possible explanations for the results received.

Levels of interest-job congruence were found to be important by Elton and Smart (1988), who sought to identify reasons for job dissatisfaction by gender of worker. The study was conducted over a nine-year period, and asked workers to rate their level of satisfaction with extrinsic factors: income, fringe benefits, and job security. The study revealed differing levels of dissatisfaction in differing Holland (1985) groupings, and found that people with high interest-job congruence tended to be less dissatisfied than those with low levels of interest-job congruence.

In an attempt to find out whether Holland's theory of vocational choice was applicable to women, as well as to men, Doty and Betz (1979) tested the theory on a group of 45 male and 43 female sales managers. Unlike some previous studies (such as Harvey & Whinfield, 1973; and Horton & Walsh, 1978; both cited in Doty & Betz, 1979), their research did find support for the use of the theory - both groups of subjects, all of whom were employed in the pharmaceutical industry, displayed high levels both of congruence, and of job satisfaction. Given the specific nature of the subjects' employment, the researchers suggested that further studies should be carried out, using groups of women working in other fields.

A seven-year longitudinal study of congruence and occupational satisfaction was carried out by Peiser and Meir (1978). Recognising a lack of studies of Holland's (1973) theory which used female subjects, the researchers investigated whether gender differences existed. They found that congruence predicted satisfaction in both males and females, and that the relation was stronger in females. This result was in accord with that of Fricko and Beehr (1992), who also found congruence to be particularly important for females.

A further study of the applicability of Holland's (1985) theory to males and females, was carried out by Smart, Elton and McLaughlin (1986). The researchers used a sample of over one thousand tertiary-educated individuals, and collected data on their occupational interests, whether their job was related to these, and satisfaction on various aspects of their jobs. While their findings, in general, supported Holland's theory, they noted that gender-specific differences were apparent, in that " ... person-environment congruence is uniquely related to the overall job satisfaction of only females and the extrinsic job satisfaction of only males" (Smart et al., 1986, p.223), implying that the relationships between congruence and satisfaction are not automatic or straightforward.

A longitudinal study into interest-occupation congruence and job satisfaction was conducted by Swaney and Prediger (1985). Their study assessed the interests of 1688 young adults, then measured their "intrinsic job satisfaction" (IJS) six years later. Three variables which the authors recognised as having the potential to "cloud" their results (interest differentiation, career salience and the value placed on interesting work) were also measured. The hypotheses were that individuals reporting IJS would show interest-occupation congruence, and that individuals with greater congruence would more often report IJS. The study results showed that the hypotheses were supported. The "screening" variables also appeared to be of value, in that they reduced "data noise". Although it was not relevant to their hypothesis, the authors noted an interesting result of the study: that overall congruence levels for males were significantly higher than those seen in females (due, apparently, to the narrower range of occupations pursued by females), but that the relationship between congruence and IJS was the same for both sexes.

To summarise, several researchers have demonstrated differences in the congruence-satisfaction relation, between subjects of different gender. Both Fricko and Beehr (1992) and Peiser and Meir (1978) found stronger relationships between congruence and satisfaction in females than in males, while Smart, Elton and McLaughlin (1986) found congruence to be related to different types of satisfaction, in males and females. These studies suggest that there may be differences in the ways males and females relate to their jobs, and that these should be taken into account when utilising Holland's (1985) theory of vocational choice. Next, congruence studies which used subjects of particular skill levels or occupations will be examined.

#### *Skill levels of subjects*

Most congruence studies appear to have used professional or skilled workers, or students. Following are accounts of several studies which used professional or skilled people, and of one study which looked at unskilled or "blue collar" workers.

Meir and Yaari (1988) studied job satisfaction and person-job congruence, looking at people in professional occupations. They hypothesised that "the relationship between congruent specialty choice within occupations ... and satisfaction ... exceeds the relationship between congruent occupational choice and satisfaction" (Meir & Yaari, 1988, p. 99). The researchers divided various professions (e.g., engineers, physicians, lawyers) into specialties (e.g., Engineering = Designing/Production/Maintenance/ Management/Control/ Training), assigned Holland (1985) codes to each specialty, and measured the vocational interests and job satisfaction levels of the 324 participants. There was a significant correlation (.41) between specialty congruence and job satisfaction. Meir and Yaari suggested that this was because people specialised in fields they received positive reinforcement in and which "fit" their needs, and therefore received more job satisfaction than they did in their more general occupation. This study appears to have incorporated Meir and Erez's (1981) examination of the duties, interests and job satisfaction of 109 male engineers.

Another study looking at job satisfaction in occupational specialisations was carried out by Hener and Meir (1981). Investigating ways to stem the high drop-out rate from nursing occupations, the researchers used interest inventories to assess similarity between nurses' specialisations and vocational interests. Overall, the subjects were shown to be better matched to the fields they had specialised in, than to general nursing or other specialist areas. They also found that higher levels of satisfaction could be predicted where vocational specialisation choices were made according to assessed vocational interests.

Further support for Holland's (1973, 1985) theories of vocational choice was demonstrated by Wiggins (1984), who investigated congruence and satisfaction in a group of school counsellors. The researcher used the Wiggins and Moody (1981) compatibility index to quantify level of person-environment congruence, and found that counsellors reporting high levels of satisfaction were highly congruent, while those reporting lower levels of satisfaction tended to be incongruent. He acknowledged, however, that there were " ... probably several factors not studied that affect levels of satisfaction ... such as local wages and working conditions" (Wiggins, 1984, p.175), and that it was important to look at these factors when considering job satisfaction or dissatisfaction. The same researcher (Wiggins, 1976) also tested Holland's theories with a group of teachers of students with disabilities, again finding significant correlations between interest congruence and job satisfaction.

The interests and attitudes of a population of accountants were examined by Aranya, Barak and Amernic (1981). They found that the most common interest patterns observed (in accordance with Holland's (1985) theory) were combinations of Conventional, Enterprising and Social, and therefore that congruence levels were high. The researchers indicated that " ... subjects having a pattern of CES (or another combination of these letters) are generally more vocationally satisfied and more committed to their profession and organization than are other subjects" (p.22).

Newly-appointed bank tellers were used by Meir and Navon (1992), to test four hypotheses about congruence. They used a longitudinal study measuring interests, satisfaction and supervisor ratings of performance over four to six

months, in bank branches which were classified as either "enterprising" or "social" environment types. Positive correlations between congruence and satisfaction, and between tellers' congruence levels (at the time of their entrance examinations) and supervisors' evaluation scores (4-6 months later) were found. A third hypothesis, predicting that pre-employment congruence scores of tellers who remained in their jobs would be higher than those of tellers who left, was not supported. The fourth hypothesis, that tellers' congruence levels would increase following their employment, was supported. Meir and Navon discussed possible reasons for these results, and pointed out that many factors, other than those they measured, could affect subjects' interest and satisfaction scores. They were concerned that tellers in the study may have faked results, both in the pre-employment tests and after several months of employment, and stated that "subjects who apply for a certain job ... respond to inventories in accord with the image they believe they should project in order to be judged suitable for the job. This faking might appear more ... when the workers are more familiar with the job requirements and can better assess the expectations of the organization" (Meir & Navon, 1992, p.44). The researchers noted that nearly half of the subjects in their study changed their first-letter code on the SDS in their first months of employment, and were very sceptical about whether the changes were genuine. They offered a number of possible reasons for the non-support of their "persistence" hypothesis, for example, that congruent individuals may have been promoted early, or have moved on to better bank jobs. Overall, the study lent support to congruence theories. Gottfredson and Holland (1990) also used bank tellers to test whether congruence was more closely linked to job satisfaction in workers sure of their interests than in workers with poorly defined interests and looked at consequences of person-environment incongruence. The researchers studied the tellers over a period of four months, looking at persistence (whether the tellers remained in the job), tolerance of unpleasant situations, job satisfaction, congruence and other issues. Their results implied that congruence can be a useful predictor of satisfaction. The hypothesis about well-defined versus poorly-defined interests was not supported. Gottfredson and Holland made the observation (p.396) that "the single most efficient predictor of job satisfaction was a measure of expected satisfaction in the bank-teller job", suggesting that satisfaction may be a worker trait itself.

Marcic, Aiuppa and Watson (1989) also looked at person-environment congruence. They studied which personality types were prevalent in different organisations, and whether members of "prevalent" groups showed greater job satisfaction and self-esteem, than did those in the minority. The researchers analysed the "personality type norm" of the organisations their subjects worked in, and measured each subject's congruency with the norm. They hypothesised that "managers whose personality types fit the organizational norm should show higher self-esteem, greater job satisfaction, and a lower turnover rate" (Marcic, Aiuppa & Watson, 1989, p.916). The hypothesis was supported in part, in that workers with higher personality congruence were shown to have higher self-esteem and longer job tenure than those with less congruence. It was noted, however, that no significant relationship was found between job satisfaction and congruence.

An investigation of congruence in unskilled female workers (clothing machinists) was carried out by Heesacker, Elliott and Howe (1988) to compare measured Holland codes with reported levels of work productivity, job satisfaction, absenteeism and insurance claims. Results showed that while the work environment was classified by Holland's (1985) methods to be conventional-realistic, most workers were "social" personality types, and that social subjects were the most satisfied, followed by conventional and realistic subjects. Conventional-Realistic and Social subjects did not differ significantly from each other in productivity levels, and were more productive than subjects of other types. The study had several hypotheses, based on Holland's (1985) theory of vocational choice, and most of these were not supported. The researchers stated that "we believe these data raise questions about the utility of Holland's theory for situations typified by blue-collar, or factory, work done by women in rural environments" (Heesacker, Elliott, & Howe, 1988, p.147). They suggested that more research needed to focus on blue-collar women in the future (a group rarely touched on in empirical studies) and that the degree of variation in work environments was important in determining which groups will find work satisfying.

There appears to be a dearth of research into person-job congruence and satisfaction, using lesser-skilled workers. The work of Heesacker, Elliott and Howe (1988) suggested that "blue collar" workers may derive their satisfaction

from extrinsic factors, rather than from any similarity between their interests and their tasks. This is of concern, as without data from all sectors of the workforce, it is inappropriate to generalise theories such as Holland's to these people. Next, previous research into the congruence-satisfaction relation in differing cultural groups will be examined.

### *Cross-cultural differences*

Some congruence researchers have looked at whether there were differences between the congruence-satisfaction relation in people from varying cultural groups. A study of interest-job congruence and job satisfaction in accountants was carried out by Aranya, Barak and Amernic (1981). Three groups of accountants were tested (Californian, English-speaking Canadian, and French-speaking Canadian). The researchers noted that differing results were obtained between the samples, and thus warned against cross-cultural generalisation of Holland's theory without further research. Most of the congruence studies described above are either North American or Israeli. While very little published Australian research has been found, Taylor (1986) described several Honours and Masters theses (Long, 1972a; Long, 1972b; Russell, 1973; Katz, 1974; Lowe, 1975; and Cole, 1975) testing Holland's theories. The six researchers involved were all studying at the University of Melbourne, and combined Holland's measurement instruments (the *Self-Directed Search* and/or the *Vocational Preference Inventory*) with other instruments (such as Brayfield and Rothe's (1951) Job Satisfaction Index). Despite the modification of the testing instruments to better suit Australian conditions, Holland's theory was not particularly supported. Taylor suggested that much more Australian investigation would be beneficial.

### *Studies using students*

Another population often used in research is students, possibly because they are easier to access in large numbers than people in employment. A number of researchers have carried out "congruence studies" using school pupils or

university students. In these cases, academic satisfaction, rather than occupational satisfaction, is the dependent variable. While this type of research may be easy to carry out, and subjects easy to find, the question is whether it has relevance to workers in jobs. It may be presumptuous to generalise the findings to work situations. Several well-known congruence studies (such as Meir & Erez, 1981, Swaney & Prediger, 1985, and Nafziger, Holland & Gottfredson, 1975) have not investigated workers at all, but have looked at students' congruence with their college majors, and their satisfaction with their studies. It was considered doubtful whether such research should be included in reviews alongside studies involving actual workplaces. The following two studies, while involving student subjects, did measure occupational rather than academic satisfaction.

College students, and their part-time jobs, were investigated by Kane, Healy and Henson (1992). The researchers surveyed over one thousand undergraduate students in a Californian university, comparing interest-job congruence and satisfaction levels. Several relationships were apparent. The students who held jobs congruent with their career interests were significantly more satisfied, than those whose jobs were incongruent with their interests. However, students tended to attribute their satisfaction to working conditions (e.g., flexible hours, good co-workers/supervisors), rather than to more intrinsic motives. Kane, Healy and Henson concluded that "most college jobs tend to be of poor quality" (p.144), and emphasised the importance of work experience (including part-time jobs) on students' future career development.

The Theory of Work Adjustment (Dawis & Lofquist, 1984) was tested by Bizot and Goldman (1993) in an eight-year longitudinal study. The researchers measured aptitudes and interests in a group of high school seniors, following up when they were established in occupations. They found that interest-job congruence did predict satisfactoriness, but only when the recent rather than the eight years previous, interest test results were used. They also found that satisfactoriness predicted satisfaction. Bizot and Goldman concluded that their findings supported Dawis and Lofquist's theory, but noted that their sample was biased toward office workers, and that further longitudinal studies (using workers in different occupations) would be valuable.

While students are generally a “captive population” for research projects, we must be cautious not to assume that the data gained from such projects can be automatically generalised to the population at large. Next, studies which have used subjects undergoing vocational counselling will be examined. These may have a little more relevance than studies using non-working populations.

### *Studies of vocational counselling clients*

With the knowledge that job and occupational change is becoming increasingly frequent in society, Breeden (1993) examined worker-job congruence and job satisfaction, in a longitudinal study of people considering changing occupations. Her hypotheses were that people changing occupations would have lower occupational correspondence (ie. person-job fit) and job satisfaction before a change, and higher correspondence and satisfaction after a change, than those who didn't change occupations. All subjects had voluntarily sought career counselling. Breeden found that occupational correspondence correlated highly with job satisfaction, and that both job satisfaction and income levels were significantly improved for individuals who changed occupations.

Kuder (1977) looked at why interests should be measured, as opposed to just asking vocational counselling clients what they want to do. He found a number of reasons, including that young people may be unaware of the specific tasks required in an occupation, and that expressed interests tend to be clouded by familial pressure, hopes and perceived prestige. He examined some of the pitfalls in vocational counselling and pointed out that the counsellee should be provided with a list of occupations which may suit them, as client resources and labour market factors may preclude the client entering the field appearing "most" suitable. Kuder suggested some guidelines for use in the development of interest inventories, including items that should (or should not) be included in an inventory, requirements as to reliability and stability, and suggested ways to report scores. He identified job satisfaction as the criterion sought in vocational counselling, and detailed much research which compared the characteristics of satisfied and dissatisfied workers. He made the point that "task-centered opportunities for self-actualization are of prime importance to white-collar workers only [whereas] the social environment is of paramount value to blue-collar workers" (Friedlander, 1965, cited in Kuder, 1977, p. 156.) This concurred with the findings of Heesacker, Elliott and Howe (1988), that job satisfaction in blue-collar workers could be related less to interests, than it is in white-collar workers.

### *Use of values in calculation of congruence*

Some researchers have included subjects' "work values" in their calculations of person-job congruence. Two such studies are described below.

Rounds (1990) performed a comparative analysis focusing on the prediction of job satisfaction. He noted that there had not been any studies that used both interests and work values to predict job satisfaction, and Rounds's research built on the theories of Holland (1973, 1985), and Dawis and Lofquist (1984). He assessed interests, work values and job satisfaction levels in adult vocational counselling clients in a one-year longitudinal study. Rounds found that after controlling for interest congruency, work values were significant in job satisfaction and that interest congruency predicted job satisfaction less in males than in females. His findings suggested that vocational counsellors should use work value inventories, as well as interest inventories, in assisting adult clients.

Another researcher interested in "Values Congruency", or person-organisation fit, was Posner (1992). He looked at how demographic factors such as age, gender, ethnic background and length of service impacted on work attitudes. Using the staff of a large multinational manufacturing company as subjects, the researcher conducted a survey, assessing congruence levels between individual values and the organisation's six "core principles". In accordance with Posner's hypothesis, person-organisation values congruency was directly related to positive work attitudes, and this relationship did not appear to be affected by demographic factors. The study left an important question unanswered: namely, whether people choose to work for organisations with similar values to their own ... or whether they align their values with those of the organisation employing them. Posner's study shows agreement with the theories of Dawis and Lofquist (1984), who thought that "work adjustment" could be predicted from the correspondence between a workers' abilities and values, and their work environment. Both of these studies indicated that workers' values were important in their attainment of job satisfaction. It could be valuable to further explore this issue.

### *Measurement tools used*

Having discussed the wide variety of research projects which have investigated person-job congruence, the measurement tools which have been used in these investigations will now be examined. A diverse range of methods have been used to assess and quantify person characteristics, satisfaction levels and congruence amongst the many congruence studies published. For the measurement of interests, the majority of researchers appear to have used one of Holland's inventories, such as the *Vocational Preference Inventory* (used by Melamed & Meir, 1981, Swaney & Prediger, 1985, Wiggins et al., 1983 and others), or the *Self-Directed Search* (used by Heesacker, Elliott & Howe, 1988, Meir & Navon, 1992, Meir, Keinan & Segal, 1986, and others). Some researchers, such as Doty and Betz (1979) combined the use of a Holland-developed instrument with the *Strong-Campbell Interest Inventory*, while some (e.g., Kane, Healy, & Henson, 1992) used only the first letter of Holland codes.

Of those researchers who did not employ Holland's interest-measurement methods, some used the *RAMAK* interest inventory, which asks subjects to rate the attractiveness of occupational titles (Barak & Meir, 1974), the *Strong Vocational Interest Blank* (Strong, 1943), or self-developed inventories (e.g., Meir & Yaari, 1988).

Choice of satisfaction measures was similarly varied. Some studies used established questionnaires, such as the *Hoppock Job Satisfaction Blank* (Hoppock, 1935, used by Doty & Betz, 1979, and Rounds, 1990) or the *Occupational Satisfaction Blank* (Harmon, 1966, used by Melamed & Meir, 1981, and Gati & Meir, 1982), while others used single questions or developed their own Likert scales. A review of the research would suggest that either there is a scarcity of recent job satisfaction measurement tools, or that congruence researchers found existing measures to be unsuitable for their purposes.

In calculating person-environment congruence levels, many researchers appear to have used the dichotomous "first-letter agreement" between codes, despite the development (in recent years) of a selection of congruence indices capable of quantifying similarity between three-letter codes. For example, Melamed and

Meir (1981), Meir, Keinan and Segal (1986) and Elton and Smart (1988) all used this system. While it may be easier to work with one-letter rather than three-letter codes, it is not ideal: it assumes that both people and environments can be reduced to a single interest type, which is overly simplistic. An investigation of thirteen different congruence measures was carried out by Camp and Chartrand (1992), who found dichotomous comparisons of first-letter codes to be unsatisfactory for use in testing Holland's theory (p.177). The researchers analysed correlations between the thirteen indices, and noted that the Iachan (1984) and Kwak and Pulvino (1982) had the highest correlations with the other scales. This is a cause for concern, as only one of the congruence studies reviewed (Gottfredson & Holland, 1990) used either of these indices (they used the Iachan, 1984, measure); implying that the vast majority of congruence researchers employed less than adequate methods of quantifying the construct. Gati (1990) also had misgivings, suggesting that problems in congruence indices were contributing to the variability of research findings in the field.

#### *A meta-analysis of congruence studies*

The field of vocational counselling has grown based on a central assumption, that job satisfaction is related to the degree of congruence (or "fit") between individuals and their work environments. For several decades, people have completed interest tests (such as the *Self-Directed Search*; and the *Strong Vocational Interest Blank*) and have been advised, because of their results on these tests, to enter particular occupations or fields of study. While it is probable that numerous issues (such as ability and working conditions) apart from congruence affect whether a person will enjoy a job, much research has focused specifically upon congruence. In addition, many published congruence studies have used high-school or college students (as opposed to people in employment), and the majority have looked at "white collar" workers rather than those in lesser-skilled positions. Several researchers have conducted meta-analyses of congruence studies (see earlier in this chapter), with varying results - some (e.g., Assouline & Meir, 1987) found more evidence of a relationship between congruence and satisfaction than others (e.g., Tranberg, Slane & Ekeberg, 1993). The latter suggested that the validity of the relationships found by individual

researchers was moderated by the diverse range of measurement tools used. Given that vocational counselling is largely premised on the relation between congruence and satisfaction, doubts over its existence (or its importance) are a cause for concern.

Here, another meta-analysis was performed, including new studies which had appeared since earlier meta-analyses, and segregating studies measuring academic satisfaction, which were felt to be likely to lack relevance in the exploration of vocational satisfaction.

### *Method*

The method used for the meta-analysis was that described by Hunter, Schmidt and Jackson (1982). Thirty-two studies were included, and a further six (Bates, Parker & McCoy, 1970; Elton & Smart, 1988; Heesacker, Elliott & Howe, 1988; Holland, 1968; Posthuma & Navran, 1970; and Rand, 1968) were considered but omitted, as their results contained insufficient information to quantify any correlations. The 32 studies had a median sample size of 262, and a total of 15340 subjects. Amongst the studies, a wide range of different methods had been used to measure interests, to quantify congruence, and to assess satisfaction. Subject types also differed, with most samples consisting of skilled workers, several using students, and a few where skilled and unskilled workers, or workers and students, were combined. The congruence-satisfaction correlations for the studies were analysed by type of subject, interest measure, congruence definition, and satisfaction measure used. Figure 2.2, below, shows the range of congruence-satisfaction correlations over the thirty-two included studies.

**Figure 2.2 Stem-and-leaf diagram showing the correlations in the 32 studies used in this meta-analysis**

```

-.3 : 6
-.2 :
-.1 : 0
 0 : 6 6 7 8 8 9
 .1 : 1 1 3 3 5 7 9
 .2 : 0 2 2 5 7 8
 .3 : 0 2 3 4 6
 .4 : 0 4 5 6
 .5 : 7
 .6 : 1

```

The diagram indicates that while almost all of the studies found a positive correlation between congruence and satisfaction, most of the correlations were fairly low.

### *Results*

The thirty-two studies were weighted by sample size, and variance among their correlation coefficients was calculated to see whether they were due to sampling errors. Table 2.5 (below) shows the results of the meta-analysis. The overall mean correlation between congruence and satisfaction was .16, with a 95% confidence interval from .0680 to .2432.

### *Discussion*

Using Hunter, Schmidt and Jackson's (1982) meta-analysis technique, the ratio of expected to observed variance (for the total number of studies) was .0673, indicating that only 6.73% of variation observed could not be explained by artefact or sampling error. In accordance with the findings of Tranberg, Slane and Ekeberg (1993), this meta-analysis revealed a lack of significant relationships between person-environment congruence and satisfaction, regardless of the sample group or measure used. This suggests that other aspects of work environments, or of workers, may be better predictors of satisfaction, than interests. As pointed out by both Camp and Chartrand (1992) and Tranberg et al.

(1993), however, the previous research in this field has often been too simplistic, and the multitude of measurement tools used makes it difficult to compare studies.

**Table 2.5 Meta-analysis on congruence-satisfaction correlations by subject type, interest measure, congruence measure, and satisfaction measure**

Type	Number of Correlations	Number of Subjects	Mean r	Variance of r's *	Confidence Interval (95%)
Subject Type					
Skilled Workers	22	9262	.1422	.0428	.0481 - .2363
Students	6	4070	.1275	-	-
Mixed groups	4	2008	.2747	-	-
Overall	32	15340	.1556	.0297	.0680 - .2432
Interest Measure					
VPI	10	2065	.2541	.0371	.1271 - .3811
SDS	7	5652	.1602	.0111	.0924 - .2280
Other	15	7623	.1256	.0379	.0401 - .2111
Congruence Measure					
1st letter agreement	16	10295	.1477	.0095	.0718 - .2236
Other	16	5045	.1719	.0704	.0645 - .2793
Satisfaction Measure					
Minnesota Questionnaire	2	551	.1232	-	-
Hoppock Job Sat. Blank	4	768	.2261	-	-
Job Descriptive Index	2	463	.3125	-	-
Other	24	13558	.1476	.0307	.0668 - .2284

\* variance and confidence intervals not calculated for very small samples ( $n < 7$ )

Table 2.6, below, lists the studies included, in alphabetical order.

**Table 2.6 Summary of Correlational Studies of Congruence and Satisfaction**

Study	Sample (n)	Person Measure	Satisfaction Measure	Congruence Measure	Overall r
Aranya, Barak & Amernic, 1981	1952 accountants	SDS	"How satisfied are you with your vocation?"	1st letter agreement - hexagon	.13**
Barak & Meir, 1974	223 females and 160 males in a variety of jobs	RAMAK	"How satisfied are you with your vocational choice?"	1st field agreement	.34
Bizot & Goldman, 1993	44 males and 71 females, in variety of jobs	VPI	Minnesota Satisfaction Questionnaire	distance on Holland hexagon from preferred occupation (scores 0-3)	.20
Breeden, 1993	436 employed vocational counselling clients	SCII	Minnesota Satisfaction Questionnaire & Hoppock Job Satisfaction Blank	expert ratings on 7-point scale	.19*
Bretz & Judge, 1994	873 university graduates	Attitude questionnaire	GM Faces Scale	comparison of two attitude questionnaires	-.36**
Doty & Betz, 1979	88 sales managers	SDS/SCII	Hoppock Job Satisfaction Blank	Comparison of mean scores of SDS and SCII	.22
Frantz & Walsh, 1972	118 graduate students	VPI	Student questionnaire	1st letter agreement	.17
Fricko & Beehr, 1992	253 employed college graduates	SCII-GOT	7-point, agree-to-disagree scale	subjects' own ratings on 7-point scale	.06
Gati & Meir, 1982	158 male and 205 female employees	RAMAK	Occupational Satisfaction Blank	1st letter agreement - hexagon	.32
Gottfredson & Holland, 1990	345 bank tellers	VPI	modified Hoppock's Job Satisfaction Blank	Iachan (1984)	.36
Hener & Meir, 1981	126 female nurses	List of courses in nursing	Satisfaction questionnaire	1st letter agreement	.44**
Kane, Healy & Henson, 1992	1438 college students with part-time jobs	first-letter Holland codes	5-point Likert scale	distance on Holland hexagon from preferred occupation (scores 0-3)	.22

**Table 2.6 Summary of Correlational Studies of Congruence and Satisfaction (continued)**

Marcic, Aiuppa & Watson, 1989	68 female and 34male supervisors in health-care	Myers-Briggs Type Indicator	"Do you like your job?"	regression analyses on MBTI dimensions	-.10
Meir, Keinan & Segal, 1986	1137 subjects representing six Holland types	SDS	"To what extent are you satisfied with your place of work?"	1st letter agreement	.30
Meir & Erez, 1981	109 male engineers	Activity inventory	"To what extent are you satisfied with your place of work?"	N/A	.45**
Meir & Navon, 1992	95 bank tellers	SDS	Meir & Yaari, 1988, measure (10 items plus global item)	distance on Holland hexagon from preferred occupation (scores 4-1)	.46
Meir & Yaari, 1988	321 subjects of various fields	Self-developed interest inventory	Individual scales developed for study	Score on Interest inventory compared to actual job	.40
Melamed & Meir, 1981	250 employed males	VPI	Occupational Satisfaction Blank (OSB)	1st letter agreement	.28*
Morrow, 1971	176 social science and 147 maths students	VPI	Satisfaction questionnaire	1st letter agreement	.13
Mount & Muchinsky, 1978	362 workers	SDS	Job Descriptive Index	1st letter agreement	.33
Nafziger, Holland & Gottfredson, 1975	1878 College students	SDS	Inventory of Educational Experience and Opinion	1st letter agreement - hexagon	.06
Peiser & Meir, 1978	158 male and 202 female workers	RAMAK	"How satisfied are you with your vocational choice?"	1st letter agreement - hexagon	.27

**Table 2.6 Summary of Correlational Studies of Congruence and Satisfaction (continued)**

Rounds, 1990	106 male & 119 female vocational counselling clients	SCII-GOT	Hoppock Job Satisfaction Blank	1st letter agreement	.08
Smart, Elton & McLaughlin, 1986	540 male and 474 female students	CIRP survey	CIRP survey	1st letter agreement	.09
Spokane & Derby, 1979	132 female undergraduates	VPI	Biodata Questionnaire	1st letter agreement	.15
Swaney & Prediger, 1985	1688 Adults	VIP-A	IDES survey	1st letter agreement - hexagon	.07
Walsh, Howard, O'Brien, Santa-Maria, & Edmundson, 1973	140 undergraduates	SDS	College Student Satisfaction Questionnaire	1st letter and 1st and 2nd letter agreement	.11
Walsh & Osipow, 1973	162 undergraduates	VPI	Career Questionnaire, Tennessee Self Concept Scale, and Vocational Inventory	1st letter agreement	.08
Wiener & Klein, 1978	101 employees	SVIB	Job Descriptive Index	1st letter agreement	.25
Wiggins, 1976	110 teachers	VPI	Hoppock Job Satisfaction Blank	N/A	.11
Wiggins, Lederer, Salkowe & Rys, 1983	247 teachers representing six Holland types	VPI	Job Satisfaction Blank	2 letter agreement	.57***
Wiggins, 1984	123 counsellors	VPI	Task-Hygiene Job Satisfaction Blank	2-letter agreement	.61***

\* p < .05      \*\*p < .01      \*\*\*p < .001

### *Job satisfaction research*

Some studies have indicated that factors other than congruence influence satisfaction. Satisfaction was defined as “a pleasant emotional state arising from work experiences ... [where] people find work a meaningful or worthwhile activity” by Boxall, Rudman and Taylor (1986). It has been associated with issues such as efficiency and productivity in organisations, decreased absenteeism and staff turnover (Quarstein, McAfee & Glassman, 1992). Job satisfaction may be affected by many different things, including working conditions, skill utilisation, gender, age, and worker expectations. While some prominent vocational choice theories (such as that of Holland, 1985) concentrate heavily on interest congruence as a source of satisfaction, some others have found interests to be less important. Prestige and sex-type outweighed interests in Gottfredson’s (1981) career choice theory, and in Dawis and Lofquist’s (1984) Theory of Work Adjustment, job satisfaction was seen to be tied to individuals’ abilities, values, and job performance. The possibility that white- and blue-collar workers may derive their satisfaction from different aspects of their jobs was recognised by Kuder (1977), who also saw the pitfalls of using interest testing to assist young people to make vocational choices. He felt that their decisions could be overshadowed by parental expectations and perceptions of occupational prestige, and that their choices would necessarily be constrained by labour market forces anyway. Next, we will describe several research projects which have sought to identify causes of satisfaction, other than interest congruence. Among the factors thought to affect satisfaction were variety and autonomy (investigated by Zeffane, 1994), age (Pond & Geyer, 1991), and skill-utilisation (O’Brien, Dowling & Kabanoff, 1978). All of these were found to be important in workers’ perceptions of their jobs.

A group of textile workers was studied by Pond and Geyer (1991), to learn how increasing age affects job satisfaction, and how perceived job alternatives affect this. The researchers surveyed 70 workers (the typical worker was female, Caucasian, high-school educated and had been employed at the textile mill three to five years), measuring job satisfaction, perceptions of work alternatives, and demographic data. The study showed that perceived work alternatives were negatively correlated with job satisfaction, that is, workers satisfied with their

jobs tended not to think they could get a better job. Age appeared to have a moderating effect, in that the relationship between perceived work alternatives and job satisfaction was weaker in older workers. The researchers suggest that this may be because older workers are in a better position to "mold their jobs so that they better suit their needs" (Pond & Geyer, 1991, p.260). They also pointed out that work may not be so central to the lives of blue-collar workers, as it is for white-collar workers. An Australian study by Connell, Ashenden, Kessler and Dowsett (1982) also threw some light on the relationships between working-class people and their jobs. The researchers noted that one woman surveyed said that her present job (as a low-paid packer) was a good one. When asked why, she stated "It's a job" (Connell et al., 1982, p.67). It is likely that, perceiving themselves to have few other options, some people will express job satisfaction at simply having a job.

Another more recent Australian study investigated job satisfaction amongst workers in the telecommunications industry. Zeffane (1994) surveyed 1300 employees in a large public sector organisation, measuring job satisfaction levels against various aspects of the respondents' lives, tasks and working conditions. He found that satisfaction increased when employees had variety in their work tasks, could participate in decision making, and had some certainty as to the future directions of their organisation. The researcher noted that significant attitudinal differences were apparent between managerial and non-managerial employees, and suggested that these differences should be taken into account in designing job enrichment strategies.

In searching the literature for this study, it became apparent that few Australian studies investigating workers' feelings about their jobs were available. Two research projects which, while now relatively old, shed some light on Australian attitudes, were those of O'Brien, Dowling and Kabanoff (1978), and Emery and Phillips (1976). O'Brien et al. surveyed 1383 employed people, from a range of age groups, education levels, industries, socio-economic groups and occupations. They found that most workers enjoyed their jobs, and that the "strongest predictor of job satisfaction [was] skill-utilization" (p.141). Reported job satisfaction levels were highest amongst people in professional occupations, and younger workers (over the range of occupations) were less satisfied with their work than

older workers. The researchers expressed concern that there were too many "low-level" jobs in the community, compared to the number of people wanting to do unskilled work. Interestingly, in the ensuing two decades the situation appears to have reversed, with repetitive and lesser-skilled jobs forming a decreasing proportion of the job market, and unskilled people becoming long-term unemployed (Department of Employment, Education and Training, 1995). Emery and Phillips' (1976) study surveyed 2000 non-managerial employees. They also investigated workers' attitudes to their jobs and working conditions, finding that, while most workers reported satisfaction with their jobs, a significant proportion (who tended to occupy unskilled or semi-skilled positions) were dissatisfied. The researchers found that job satisfaction levels correlated positively with educational levels and occupational status, and that job satisfaction and life satisfaction levels also correlated positively. Presumably due to the nature of the Australian labour force in the 1970's (ie., the tendency for women not to be in paid employment), both of these studies used mostly male subjects. Nevertheless, they are useful in gaining an idea of Australian attitudes to work, particularly over a range of occupational groups and levels.

The above studies support the idea that interest congruence alone may not be an adequate predictor of occupational satisfaction, particularly amongst lesser-skilled employees. Factors such as age, skill-utilisation, occupational status, educational levels and expectations might also have a bearing on whether workers report enjoyment from their jobs.

### *Conclusion*

The field of vocational choice is largely based on the assumption that if people work in jobs which match their interests, they will be satisfied. This concept has been tested by many researchers, using a wide range of occupations and industries. Studies by Holland (1985), Fricko and Beehr (1992), Elton and Smart (1988), Meir and Yaari (1988), Gottfredson and Holland (1990), Wiggins et al. (1983), and Hener and Meir (1981) all showed positive correlations between worker-job congruence and measured job satisfaction. However, other researchers such as Heesacker, Elliott and Howe (1988) have found interest

congruence to be less important in the prediction of occupational satisfaction. There are, undoubtedly, strong links between worker-job congruence and job satisfaction in many groups and situations, but some sectors of the community seem to defy this. In particular, unskilled or "blue collar" workers, as studied by Heesacker, Elliott and Howe (1988) and Pond and Geyer (1991), reported more job satisfaction (and were shown to be performing better) in jobs seemingly incongruent with their measured vocational interests. Unskilled people have rarely been used in empirical studies, and it is possible that some theories of vocational choice (e.g., Holland, 1985), and of job satisfaction (e.g., Herzberg, 1966), may not be applicable to this group.

The question of "congruence" is an enduring one. Some researchers (such as Holland, 1973, 1985) have devoted decades to its study, and many others have sought to further investigate how widely the theories can be utilised. A sizeable body of research has grown, and meta-analyses were performed by Assouline and Meir (1987) and Tranberg, Slane and Ekeberg (1993). While Assouline and Meir's review did find a correlation of .21 between interest congruence and satisfaction, Tranberg et al. were more reserved. They were concerned that many of the existing studies were not empirically sound, and they found that the studies with the strongest methodologies showed non-significant correlations. Indeed, the studies reviewed used a variety of interest, congruence and satisfaction measures, of differing quality. Despite a proliferation of available "congruence indices", many of the congruence studies discussed in this chapter (e.g., Elton & Smart, 1988; Heesacker, Elliott & Howe, 1988; Hener & Meir, 1981; Rounds, 1990; and Swaney & Prediger, 1985) used only 1st letter agreement on the Holland code, to assess congruence or lack thereof. This methodology has been criticised by Gati (1990) and Camp and Chartrand (1992) as inadequate and inappropriate for the effective measurement of person-environment congruence. In addition, some of the reviewed research used students rather than employed subjects, and measured academic rather than occupational satisfaction. It is doubtful whether this type of study has any utility in constructing theories of vocational choice. A new meta-analysis carried out for the current study also found a small relationship between interest congruence and job satisfaction.

It may be that interest congruence is of only minor importance in the prediction of vocational satisfaction, particularly in certain groups of workers. Some researchers have looked at other sources of satisfaction and found that issues such as age (Pond & Geyer, 1991), skill-utilisation (Emery and Phillips, 1976) and worker expectations (Connell et al., 1982) may all influence how workers feel about their jobs. In particular, there may be differences between the attributions of satisfaction in white- and blue-collar workers (Kuder, 1977; Heesacker, Elliott & Howe, 1988).

With this in mind, the current study investigated worker-job congruence and job satisfaction in "blue collar" workers. The initial hypothesis was:

*that people employed in unskilled occupations report more job satisfaction in fields congruent with their inventoried interests.*

The two main research questions were:

- (a) does interest-job congruence correlate with job satisfaction?
- (b) is the relationship between congruence and satisfaction a function of the congruence measure used?

Additionally:

- (c) does this correlation vary between skilled and unskilled workers in Australia?
- (d) does congruence relate to overall satisfaction, or to some specific aspects of job satisfaction?

The research questions address a key premise in vocational counselling - the assumption that interest congruence leads to satisfaction. The answers to the questions may have implications for career guidance, worker morale and human resource planning.

It was proposed to research interest congruence and job satisfaction levels in a sample of people employed in "unskilled" occupations. Included in the category "unskilled" are occupations requiring no special skills or training. This may include trades assistants and factory hands, cleaners, labourers and laundry workers (from Major Group 8, Australian Standard Classification of Occupations, 1987). For comparative purposes, a group of "skilled" workers would also need to be surveyed.

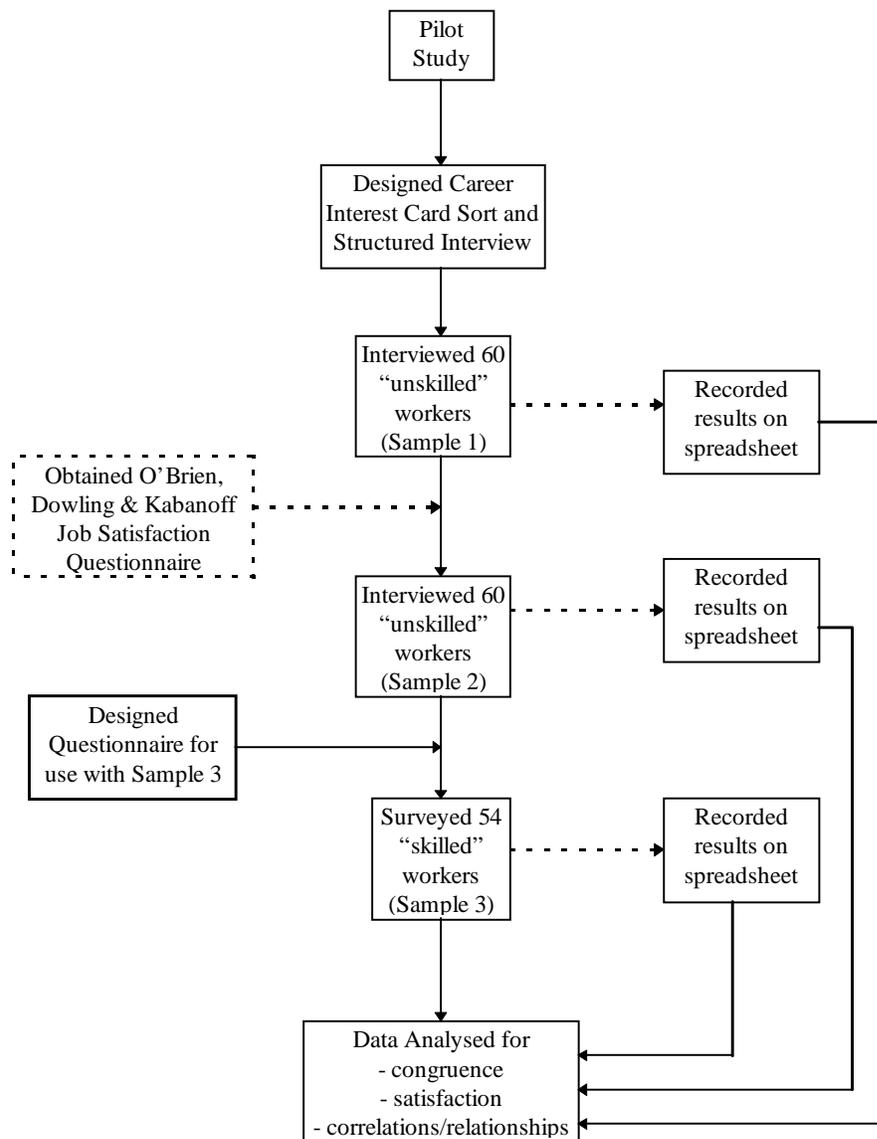
Various possible data collection methods needed to be considered. While much previous congruence research had utilised written interest inventories such as the *Self-Directed Search* (Holland, 1985), it was doubtful whether the target subject group would be receptive to this. It was felt that a personal approach, visiting workers in their workplaces and interviewing them, although time consuming, would yield a better response. It would then be necessary to design a structured interview which elicited the subjects' support, and to collect all the required information in a very brief time, so that there would be minimal disruption in the workplaces visited. Congruence levels and satisfaction levels for each subject could be compared, using various statistical techniques, to see whether the hypothesis was supported. A similar process would be followed (using questionnaires, however, rather than interviews) with the group of teachers, for the purpose of comparison with the unskilled workers. Chapter Three gives a detailed description of the method used in the current study, and Chapter Four records the results of the study.

## **Chapter 3**

### **Method**

This research project was comprised of a pilot study and three separate main studies. Figure 3.1 (below) illustrates the steps taken in carrying out these studies.

#### **Figure 3.1 Methodology of the current research**



### Overview

A brief overview of the nature of each study and the instruments used follows. These will then be explained in more detail.

- (a) Pilot Study: Prior to commencing the main research, a small pilot study was undertaken to consider the viability of using interest inventories and job satisfaction measures with subjects. For this study Holland's (1979) *Self-*

*Directed Search* (SDS) was used, together with an 18-question work satisfaction questionnaire (adapted from Brayfield & Rothe, 1951). Difficulties were found with using the SDS, as it was quite time-consuming, and required a level of literacy which could not be assumed in the target population.

(b) Sample 1: Having found that the Self-Directed Search was not appropriate for use with the intended subject group (unskilled and semi-skilled workers), a structured interview including a card sort procedure to measure vocational interests (described in more detail in this chapter), the Brayfield and Rothe (1951) job satisfaction measure, and several open-ended questions, was devised for use with the first sixty unskilled and semi-skilled subjects.

(c) Sample 2: With the second group of sixty unskilled/semi-skilled subjects, a structured interview process (as described for Sample 1) was used, but the O'Brien, Dowling and Kabanoff (1978) job satisfaction measure was used instead of the Brayfield and Rothe (1951) measure. The reason for the change of job satisfaction measures was that the O'Brien et al (1978) measure, which the researcher was unfamiliar with at the beginning of the data collection, was more recent, Australian, and allowed for a more specific analysis of possible causes of subjects job satisfaction or dissatisfaction.

(d) Sample 3: This study used the same tools as Sample 2, but was in a questionnaire format (rather than a structured interview), and the subjects were 54 Technical and Further Education teachers. The written questionnaire format was selected for this group due to the logistical difficulties of trying to interview these subjects. It is therefore important to remember that there are difficulties in comparing Samples 1 and 2 with Sample 3, due to this methodological change.

### *The subjects*

Subjects in Samples 1 and 2 were 120 individuals (53 males and 67 females), all of whom were employed in occupations which required little or no prior knowledge or experience to work in. Most worked in factories, and tenure in their jobs ranged from one month to several decades, with an average of about 76

months. Subjects in Samples 1 and 2 had similar characteristics and occupational groups - the only reason for differentiating between the two groups was that different job satisfaction measures were used with each sample (the Brayfield & Rothe, 1951, with the 60 people in Sample 1; and the O'Brien, Dowling & Kabanoff with the 60 people in Sample 2). Subjects in Sample 3 were a group of 54 technical college teachers. The response rate was lower for Sample 3 than for Samples 1 and 2, with nine teachers either choosing not to participate, or failing to follow instructions and thus rendering their questionnaires unusable. They had a mean tenure in their jobs of about 70 months. Due to an oversight in the questionnaire design, no data were collected on the gender balance of this group. Table 3.1, below, summarises the demographic characteristics of the people in the three main studies.

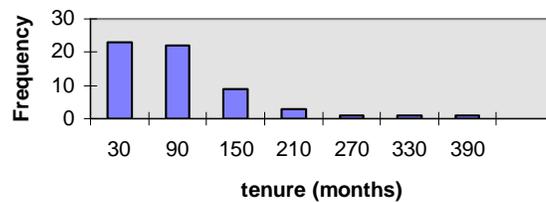
While both the unskilled and skilled workers had worked at their jobs anywhere from one month to thirty years, the skilled group was more likely to have been in the job only a short time. This was related to the fact that the entire group was enrolled in adult education courses at university - these courses were a mandatory component of their employment as full-time technical teachers, if they had not previously qualified in this field. As an illustration of this, the median tenure of the unskilled workers was 60 months, while it was only 46.5 months for the teacher group. Figures 3.2 to 3.4 (below) illustrate the distribution of tenure amongst the three subject groups.

**Table 3.1 Summary of characteristics of the subjects in each sample**

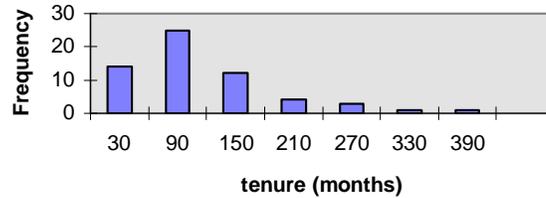
	<b>Sample 1: Un-skilled/semi-skilled workers (interviews)</b>	<b>Sample 2: Un-skilled/semi-skilled workers (interviews)</b>	<b>Sample 3: Technical and further education teachers (questionnaires)</b>
Number of subjects	60	60	54
- female	25	42	(unknown)
- male	35	18	(unknown)
Tenure in job (mean) (standard deviation)	65.4 months 70.21	86.7 months 75.01	69.7 months 75.38
Education level	20% below Yr 10 50% Yr 10-11 18% HSC 12% some tertiary	18% below Yr 10 39% Yr 10-11 18% HSC 25% some tertiary	100% tertiary
Workplace	73% factory 22% office 5% other	65% factory 8% office 12% warehouse 13% hospital 2% other	100% TAFE college
Occupation (ASCO major group) *	80% group 8 13% group 5 7% other	60% group 8 15% group 5 13% group 6 12% other	100% group 2

\* Australian Standard Classification of Occupations groupings include -  
 - Group 2 - Professionals  
 - Group 5 - Clerks  
 - Group 6 - Plant and Machine Operators, and Drivers  
 - Group 8 - Labourers and Related Workers

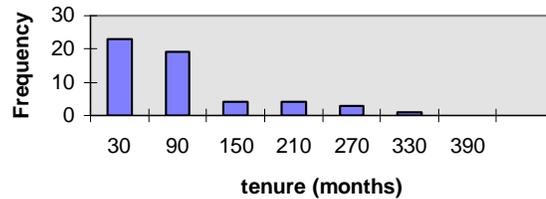
**Figure 3.2 Distribution of tenure of subjects in Sample 1**



**Figure 3.3** Distribution of tenure of subjects in Sample 2



**Figure 3.4** Distribution of tenure of subjects in Sample 3



Other statistical data collected from the subjects included education levels and job consistency (that is, whether they had held other jobs, or their current position was their sole experience of paid employment). While the majority of subjects in both unskilled groups, had not completed secondary school (Year 12), it was noted that in Sample 2 quite a large proportion (25%) of people had undertaken some tertiary education. With regard to consistency, it was found that while a majority (72% in Sample 1 and 85% in Sample 2) of unskilled subjects had done other jobs in the past, there were still some who had been in the same position since joining the work force. The question of consistency did not appear to have much relevance for the study, in hindsight. Neither the education level or consistency statistics differentiated Sample 3, as all subjects in this group were tertiary educated, and all had held other jobs.

## *Instruments*

The instruments used in this study were:

- (a) Holland's *Self-Directed Search*
- (b) the *Career Interest Card Sort* (Hosking & Athanasou, 1995)
- (c) the Brayfield and Rothe (1951) job satisfaction questionnaire
- (d) the O'Brien, Dowling and Kabanoff (1978) job satisfaction questionnaire
- (e) a questionnaire (incorporating interest measure and O'Brien et al. (1978) job satisfaction measure) used with the group of technical teachers.

Each of these tools will be described in turn.

Holland's *Self-Directed Search* (SDS, Holland, 1979) is a widely known and easily scored method of assessing vocational interest types. It can be completed in 20 to 30 minutes, can be administered in bulk, and even encourages subjects to work out their own "scores". To gain some familiarity with this inventory, the researcher used it in the small pilot study. The exercise took about 25 minutes per subject, and subjects were asked for their impressions of the measurement instruments. Comments from the subjects included: "terminology too 'American'", and "sometimes hard to choose [between items] ... need a 'neutral' or 'undecided' category", about the SDS. It was decided not to use the SDS *instrument* in the main studies, as it was too time-consuming and could be inappropriate for use with the target population - they might not have the time to fill it out, might be wary of researchers, or could have literacy difficulties. The SDS *categories*, however (Realistic, Investigative, Artistic, Social, Enterprising and Conventional) were used in the recording and analysis of subjects' responses.

In response to the need for a fast and straightforward interest measure, the *Career Interest Card Sort* was used. A card sort procedure allows subjects to rank their vocational interests, rather than completing a detailed inventory. The idea comes from other card sorts, such as those of Tyler (1961), Dolliver (1967) and Athanasou (1980) and the procedure simply involves asking subjects to put a set of cards in the order they feel best expresses their interests. As pointed out by Athanasou (1980), vocational interests tend to show stability after the age of 18,

and “there would appear to be little advantage in using an inventory as opposed to asking after their interests” (Hopson, 1968, cited in Athanasou, 1980, p.87). Two card types were tested out on a small group of volunteers (n = 5). One set consisted of six cards (one for each Holland type, i.e., Realistic, Investigative, Artistic, Social, Enterprising, Conventional), each of which listed fourteen occupations, taken directly from Holland's *Self-Directed Search*. The other set used short definitions of each of the six types (but omitted the type name, e.g., Conventional, Enterprising). Subjects were asked to rank each set of cards, going from the one best matching their interests, to the one least matching their interests. They were encouraged to offer feedback on the two sets of cards, and tended to criticise the first (lists of occupations) set, making comments such as "obscure [occupations]", and "what if I like some of the jobs [on a card] but not others?". The second set of cards was better received, and subjects seemed to find this set easier to rank. Instead of using either of the two sets of interest cards described above, it was decided to use the seven interest types and definitions derived from the *Career Interest Test* (Athanasou, 1988), as these types appeared easier to understand and could be equated to Holland categories for data analysis purposes. The main difference between the two sets of interest types and definitions was that the Career Interest Test had an extra category - Holland's type “realistic” was broken into two parts, “outdoor” and “practical” in the CIT, therefore giving seven categories instead of six. Subjects' responses could be analysed as CIT types, or by grouping “outdoor” and “practical” categories together, could be equated with Holland types. The use of the seven interest types could be valuable in cases where a subject liked practical activities but not outdoor ones, or vice versa.

The card-sort procedure used in these studies adapted existing measures of vocational interests, and therefore had no norms which could be referred to. It was of concern whether the method was reliable, or whether subjects would alter their preferences over time or according to mood changes. To gauge the degree to which subjects would retain or change their preferences, a small additional survey (n = 31) was carried out, whereby employed adults (not already included in the three main studies) completed two identical questionnaires asking them to rank their interests, with a one to five week delay between testing and retesting. For the great majority of these people, interest choices did not alter much

between the first and second questionnaires. The level of similarity between test and retest "scores" was quantified both by using rank correlations, and the Iachan (1984) congruence measure. The mean correlation found was 0.6390, while the mean level of congruence on the Iachan scale was 23.61 (on a scale of 0 to 28, with 28 being perfect congruence). This indicated that the interest measure used had an acceptable degree of test-retest reliability. The cards are shown in Appendix A.

The Brayfield and Rothe (1951) work satisfaction questionnaire was used in the pilot study, and with Sample 1. This measure consists of eighteen statements, which subjects were asked to put into five categories, ranging from "strongly agree" to "strongly disagree". Each item was scored from 1 to 5, giving a total potential score of between 18 (low) and 90 (high). The measure asked respondents for their emotional reactions to their jobs, rather than asking them about specific aspects of the jobs. Although an old measure, it would appear that the scale has been used up to recent times, references to it were found in both British Telecom (1984) and Robbins (1989). Reliability and validity statistics, and norms, as follows, were taken from British Telecom (1984). Using a sample of 231 female office workers, internal consistency reliability on the scale was .87 (British Telecom, 1984). The results of three studies supported the validity claims of the instrument. The first study concerned person-environment congruence, finding satisfaction levels of congruent individuals to be higher than those of non-congruent individuals; the second study correlated the test scores with the Hoppock Job Satisfaction Questionnaire from the 1930's, obtaining a correlation of .92; and the third study correlated scores with Job Descriptive Index (JDI) scores, obtaining a correlation of .66 (British Telecom, 1984). The Brayfield and Rothe questionnaire can be viewed in Appendix B.

The authors of the measure constructed three sets of norms:

- Group One - a general group of American female office workers (n = 231, mean = 63.8, sd = 9.4);
- Group Two - a group of people in a night school class in personnel, and who were also working in personnel, described as satisfied with their jobs (n = 51, mean = 76.9, sd = 8.6);

- Group Three - a group of people in a night school class in personnel, not working in personnel, and described as dissatisfied with their jobs (n = 51, mean = 65.4, sd = 14.0).

(from British Telecom, 1984)

A different work satisfaction measure, developed by Australian researchers O'Brien, Dowling and Kabanoff (1978), was used in Samples 2 and 3. Although this measure had, coincidentally, the same number of questions and scoring categories as the Brayfield and Rothe (1951) measure, it asked more specific questions about workers' jobs. For example, it probed whether subjects liked or disliked their work mates, managers, pay rate, tasks and opportunities. The O'Brien, Dowling and Kabanoff (1978) scale was chosen, as:

- it was relatively modern, and Australian;
- it asked about individual aspects of subjects' jobs, including co-workers, supervision, pay, variety and physical conditions; and
- it was easy to administer and score.

The scale was developed as part of a major study into work, health and leisure in Adelaide, South Australia. A reliability coefficient of .91 was given for the scale in O'Brien, Dowling and Kabanoff (1978), although details of the calculation of this were not provided. The scale has face validity, and correlated .54 with another measure of "job feelings" used in the study. The authors of the questionnaire used it with 1383 employed people, of whom 63.1% were male and 36.9% were female. Their ages ranged from 15 years to over 65 years, and their education levels from primary school only, to postgraduate degrees. Mean and standard deviation scores on the questionnaire for the sample are shown below, sorted by the occupational categories of the subjects:

- professional (n = 213, mean = 69.92, sd = 10.03)
- administrative (n = 94, mean = 70.14, sd = 8.90)
- clerical (n = 251, mean = 66.80, sd = 11.30)
- sales (n = 130, mean = 69.41, sd = 11.28)
- agriculture (n = 8, mean = 66.88, sd = 11.53)
- mining (n = 6, mean = 60.33, sd = 9.31)

- transport (n = 90, mean = 65.59, sd = 10.85)
- trades (n = 415, mean = 63.69, sd = 12.92)
- services (n = 143, mean = 66.79, sd = 11.68)

(from O'Brien, Dowling & Kabanoff, 1978)

While most people in the above study answered the majority of questions with "satisfied" or "very satisfied", the authors treated answers in any of the other three categories as representing a lack of satisfaction. The five most common sources of dissatisfaction noted were as follows:

- Promotion opportunities (47.1% expressed dissatisfaction)
- Ability to change disliked features of job (39.5% expressed dissatisfaction)
- Opportunities for challenging and interesting work (38.0% expressed dissatisfaction)
- Pressure or stress (36.9% expressed dissatisfaction)
- Chance of achieving something worthwhile (34.3% expressed dissatisfaction)

(from O'Brien, Dowling & Kabanoff, 1978)

whereas the five most satisfying features were as follows:

- Ability to do job without supervisor interfering (81.7% expressed satisfaction)
- Co-workers (80.2% expressed satisfaction)
- Chance to get to know people (76.5% expressed satisfaction)
- Having a say about way of doing job (75.6% expressed satisfaction)
- Chance to use abilities (74.1% expressed satisfaction)

(from O'Brien, Dowling & Kabanoff, 1978)

The O'Brien, Dowling and Kabanoff (1978) measure is shown in Appendix C.

While the two job satisfaction measures used were similarly structured (each had eighteen multiple-choice items, with five choices available for each item), the information they collected was quite different. The first (Brayfield & Rothe, 1951) measure explored subjects' emotional responses to their jobs in general, treating the jobs as global entities, rather than as collections of task- and condition-related factors. This questionnaire asked subjects to speculate about others' feelings

about their jobs (e.g., the item “I like my job better than the average worker does”), and to reflect on, for example, whether their jobs were interesting, enjoyable, or boring. The second measure (by O’Brien, Dowling & Kabanoff, 1978) asked far more specific questions. It explored components of subjects’ jobs, such as work mates, autonomy, pay, promotion opportunities, and noise levels. Use of the O’Brien et al. (1978) measure offered the researcher more scope for data analysis than the Brayfield and Rothe (1951) questionnaire, as responses the individual items could be examined. There were a range of possible implications for the subjects in the study, in changing the questionnaire used. While each subject completed only one of the instruments, items in the first questionnaire were less “tangible” than those in the second, and perhaps required deeper thought to answer. It was important to remember not to compare the Job Satisfaction scores of Samples 1 and 2 (or 1 and 3), because of these essential differences.

The internal-consistency (“split half”) reliability of the two job satisfaction questionnaires was also measured. To do this, a random number generator was used to select two groups of nine questions on each questionnaire, and subjects’ total scores on each group were correlated, to ascertain their similarity. According to Fitz-Gibbon and Morris (1987), a correlation of 0.6 or above would be required to indicate an adequate homogeneity amongst test items. The split-half reliability correlations obtained, corrected for test length using the Spearman-Brown formula, were:

- Sample 1 (Brayfield and Rothe measure): 0.82
- Sample 2 (Brayfield and Rothe measure): 0.92
- Sample 3 (O’Brien, Dowling and Kabanoff measure): 0.84

It would therefore appear that both questionnaires have adequate split-half reliability.

The final instrument used was like a written version of the structured interview used with the subjects in Samples 1 and 2. As it appeared that interviews would be impractical for use with the teacher group (Sample 3), a four-page questionnaire was designed to capture the same type of information as an

interview would have. The questionnaire asked the same questions, in the same order, as the interviews, the only difference being that instead of physically ordering a group of seven cards, subjects were asked to number boxes (1 to 7) alongside interest-type names and definitions. As in the interviews, subjects were assured that their answers would remain confidential, and were thanked for their time. The questionnaire can be viewed in Appendix D.

### *Procedure*

One-to-one interviews were the chosen method of data gathering for the pilot study, and for Samples 1 and 2. The interview, as a tool for gathering or exchanging information, is found in a wide range of settings. It may be used to sample opinions, evaluate or assess a person, to test hypotheses, or to effect therapeutic change (Cohen & Manion, 1989).

The current research project used, among other methods of data collection, a structured interview process. The conduct of the study was approved by the University of Technology, Sydney, Research Ethics Committee. In planning the interviews, a schedule was devised, detailing the questions to be asked (including wordings), the order the questions were to be asked in, and explanations to be made to the interviewee. While the wording and order of the questions was adhered to, some flexibility was required to clarify questions on occasion, where subjects queried meanings. The issues of informed consent, and the establishment of rapport, were paramount in the project, as if participants were not volunteers, or did not feel goodwill toward the researcher, they were unlikely to contribute anything useful to the project. Fortunately, most people who were invited to participate appeared willing to oblige; perhaps because they enjoyed the opportunity to talk about themselves? The interview methodology was chosen as the intended subject group were "unskilled" workers, who may have been uncomfortable with written questionnaires, or unwilling to participate, were it not for the personal contact with the researcher.

Furthermore, data collection methods involving personal contact may be regarded more positively by research participants than more impersonal ones, provided they use skilled and empathic interviewers. Goldman (1990) said that

[q]ualitative methods tend to foster an active role for the client in the process of collecting and teasing meaning out of data, rather than the role of a passive responder who is being measured, predicted, placed or diagnosed (p.205)

and looking back at the research interviews conducted for the current study, this seems apt. Some of the workers spoken to seemed nervous or suspicious at first, yet after chatting with the interviewer briefly (and having the purpose of the interviews explained) were happy to participate. Cohen and Manion (1989) suggested that a typical postal survey might have a forty percent return rate. Given the nature of the population being sampled (many of whom may have lacked literacy skills, confidence, or have been from a non-English speaking background), an even lower response rate could have been expected, had the researcher attempted to use written questionnaires. Admittedly, the method used was time-consuming, but this was offset to some extent by the high "response rate" - almost everyone approached agreed to participate. There can be interpersonal benefits for all, in interviewing: "[r]esearchers get more than data from their interviews. They speak of the exhilaration of conducting interviews, and of the rewards of meeting new people and of coming to understand some they thought they might not want to meet" (Glesne & Peshkin, 1992, p.91).

An interview methodology allows the researcher to "gear" the process to the population being sampled, by phrasing, ordering, and explaining questions to suit the respondent, and by requiring the development of rapport, therefore establishing trust and ground rules. Some populations may be reluctant to commit their thoughts or feelings to paper, or suspicious of "researchers", and it is these groups which may be better interviewed than surveyed.

Interviews can also capture large bodies of information which would be lost in "pen-and-paper" research methodologies, as the body language, vocal intonation and silences of respondents can convey much more than words alone. They also

offer opportunities to clarify what has been said, or to probe deeper, which would not exist with less personal methods of data collection. As with any research method, interviews may be subject to error, misunderstanding and bias. It is the responsibility of the researcher to take all steps necessary to anticipate and reduce these.

In summary, interview methodologies can be a useful way to gather information, if skilfully used. They do, however, have a number of drawbacks (such as the time and cost required to conduct them), and therefore in many cases are either not incorporated into a research project at all, or are only one, small, aspect of the inquiry.

The structured interview used in this project consisted of an introduction to the project, assurances of confidentiality, card sort of interest definitions, questions regarding current occupation and tenure, written (or verbally completed) Work Satisfaction questionnaire and the collection of non-identifying personal data. In addition to the more quantitative data collection methods used in the interviews and questionnaires, subjects were also asked two open-ended questions. These were:

What do you like most about your current position?; and  
What do you like least about your current position?

By asking these questions, at a late stage in the interview so that (hopefully) the subjects would feel relaxed, the researcher hoped to gain an idea of whether subjects' satisfaction was due to task-related or conditions-related factors, that is, whether the tasks performed in the job, or other aspects of employment (such as hours, location, work mates or supervisors) were uppermost in workers' minds when they considered their job satisfaction levels. The interviews were estimated to take 8 to 10 minutes to complete, and appeared more appropriate for use with subjects in unskilled occupations, than more complicated written procedures such as the *Self-Directed Search*. Data from the interviews would be recorded on individual sheets by subject number, and analysed for congruence levels (using a congruence index) and for correlation between congruence levels and job satisfaction. The template for the structured interview can be seen in Appendix

E. Once the format of the interviews had been planned, the data collection commenced. Subjects were found in several different ways. In the majority of cases, manufacturing concerns were selected from the telephone directory, the production manager contacted first by telephone and then by facsimile, and a visit to the site carried out if permission was granted. Three factories were suggested by the NSW Chamber of Manufactures (after the researcher made contact with that organisation), and the remaining subjects were known to the interviewer, and agreed to participate in the study themselves, so no contact was made with their supervisors. No more than six interviews were done at each location, to ensure variety in subjects and to avoid irritating employers. Examples of letters sent to employers, requesting permission to interview and thanking them for their assistance, can be viewed in Appendices F, G and H.

In total, twenty-eight workplaces were visited, and a further twenty-one employers contacted declined to participate in the study. (Most cited a lack of time as their reason for declining; some others gave no reasons but appeared apprehensive of the prospect of their staff being interviewed). All work sites visited were within a 100 kilometre radius of Sydney, New South Wales, and a full list of participating employers appears in Appendix I.

The interviews for Samples 1 and 2 were carried out over a period of fourteen months, and while most were completed during working hours (with the permission of management in the companies involved), some were done in workers' lunch or tea breaks. It was always emphasised to the workers that their participation was voluntary, yet very few chose not to be interviewed. One interview, early in the study, had to be discontinued as the worker involved had a limited command of English, and a small proportion (estimated at under 10%) asked the interviewer to read the job satisfaction measure out to them, rather than reading it themselves.

Different job satisfaction measures were used in the first two main studies - the Brayfield and Rothe (1951) questionnaire in Sample 1, and the O'Brien, Dowling and Kabanoff (1978) questionnaire in Sample 2. In all other respects, the two groups of interviews were similar. The reason for the change in job satisfaction measures was that the O'Brien et al. measure (which the researcher became aware

of during data collection for Sample 1) identified particular aspects of workers' jobs which gave them satisfaction or dissatisfaction. It was also more recent, and Australian. Comparisons between Samples 1 and 2 were therefore difficult, because of the differing job satisfaction questionnaires used.

Sample 3 surveyed a group of fifty-four technical education teachers, all of whom were completing professional qualifications in a university. The data collection instrument was a four-page questionnaire (as described above), which was handed out in university lectures. Participation was voluntary, and subjects were provided with plain envelopes for the return of the questionnaires. They were also provided with telephone numbers for the researcher and her research supervisor in case they had questions, although none made contact.

### *Analysis*

Throughout the data collection process results were recorded, by subject number, on computer spreadsheets. This involved devising a coding system (to record non-numerical data, such as education levels and workplace type), and this can be viewed in Appendix J. For each subject, four different congruence indices were applied (the Iachan (1984), the Kwak & Pulvino (1982), the Wiggins and Moody (1981) and the Zener-Schnuelle (1976) measures). The interest types of the subjects and their jobs were recorded in two formats, as *Self-Directed Search* (Holland, 1979) three-letter codes (as shown in the *Occupations Finder*, in Holland, 1985), and as *Career Interest Test* (Athanasou, 1988) three-letter codes. The reason for this differentiation was that the CIT broke Holland's category "realistic" into two components, "outdoor" and "practical", and thus may have given a more specific picture of subjects' vocational interests.

A number of statistical analyses were carried out on the data obtained. Firstly, congruence scores of the three groups of subjects were examined, with four different congruence indices and two different methods of coding workers' interests, being used for each subject. The distribution of subjects' congruence scores over the various measures was shown graphically. Next, unpaired t-tests were used to establish whether there was a significant difference in congruence

levels between the unskilled and skilled subject groups. Tests were also carried out to see whether males and females, people with differing educational attainment, and people with differing tenure in their jobs showed different levels of congruence.

Job satisfaction, as measured by the two different questionnaires, was investigated next. Average levels of job satisfaction for each subject group were calculated, and comparisons were also made between females and males, and people with differing levels of tenure, education and job consistency. Response frequencies to the questionnaires were compared. As the second questionnaire (the O'Brien, Dowling & Kabanoff, 1978) was used with both the second (unskilled) and third (skilled) subject groups, rank correlations were used to calculate whether the two groups had significantly different responses.

Thirdly, relationships between congruence and satisfaction were examined. Rank correlations were used to quantify the level of agreement. Partial correlations were also used, to control for other factors (such as gender, tenure, education and consistency), which may have affected the congruence-satisfaction relationships. The steps taken in the analysis are shown in Chapter 4.

## Chapter 4

### Results

#### *Introduction*

The information collected in the interviews, and from the teachers' questionnaires, was analysed firstly to ascertain the person-job congruence levels of the subjects, next job satisfaction levels were examined, then correlations between congruence and satisfaction were investigated. This chapter will be organised to reflect these three stages of analysis.

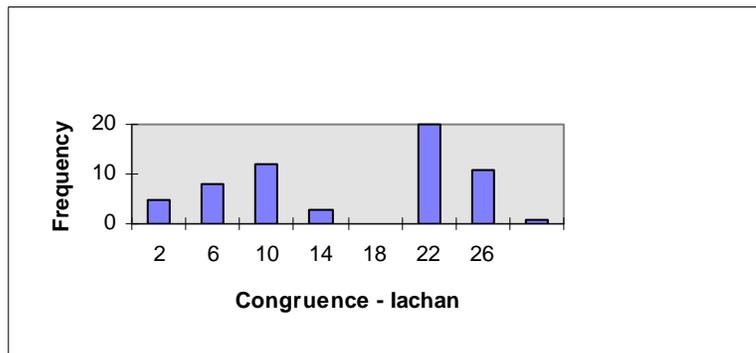
#### *Congruence levels*

For each subject, four different measures were used to calculate the level of person-job congruence - the Iachan (1984), Kwak and Pulvino (1982), Wiggins and Moody (1981) and Zener-Schnuelle (1976) congruence indices. In addition, there was a difference in congruence scores when the *Career Interest Test* (Athanasou, 1988) codings were used, instead of the *Self-Directed Search* (Holland, 1979) codes. This was because the CIT separated "outdoor" and "practical" vocations, whereas the SDS grouped the two together under the heading "realistic". A person who, say, worked in a factory hand position and claimed outdoor interests would be seen as congruent under the SDS system, but as incongruent using the CIT. The Kwak and Pulvino (1982) congruence measure could not be used with the CIT codings (as it was based on the distances associated with Holland's hexagonal model), therefore for each subject, seven congruence scores (4 using the SDS; 3 using the CIT) were computed. The same scoring method was used for both unskilled and skilled workers, thus every subject, in each part of the study, had seven different "congruence" scores, and one "job satisfaction" score.

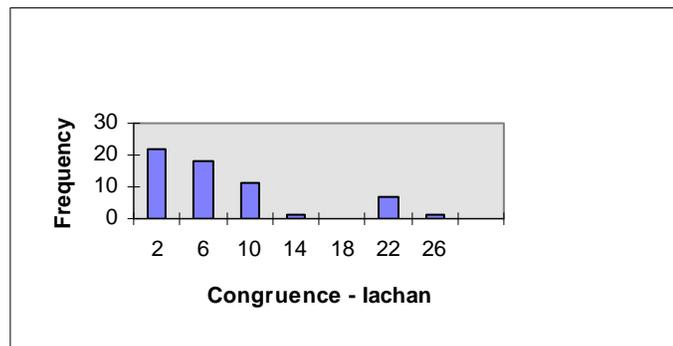
Results for each group of subjects are reported by congruence index. Using the Iachan (1984) index, which has a possible range of 0 to 28, the mean congruence level using SDS codes was 15.33 for Sample 1, 14.37 for Sample 2, 14.85 for

Samples 1 and 2 (the unskilled workers) combined, and 13.39 for Sample 3. Using the Iachan index and CIT codes, the mean congruence level was 6.53 for Sample 1, 10.40 for Sample 2, 8.47 for Samples 1 and 2 combined, and 12.63 for Sample 3. Figures 4.1 to 4.6 (below) illustrate the distribution of congruence scores obtained using the Iachan (1984) index. It was noted that under the Iachan (1984) index, a weighting system was employed, which resulted in subjects scoring either high or low (but rarely in the middle) on congruence levels, hence the “bimodal” appearance of the distributions.

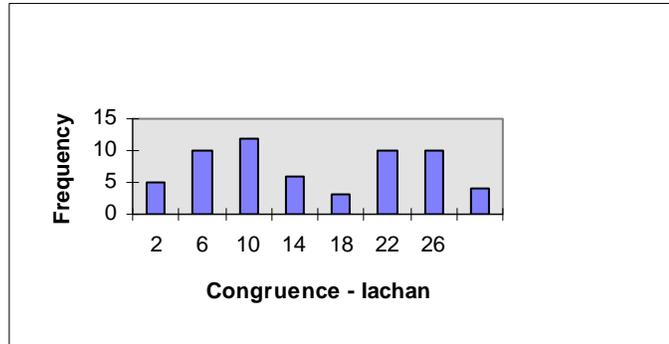
**Figure 4.1**                      **Distribution of congruence scores using Iachan (1984) index and SDS codes - Sample 1**



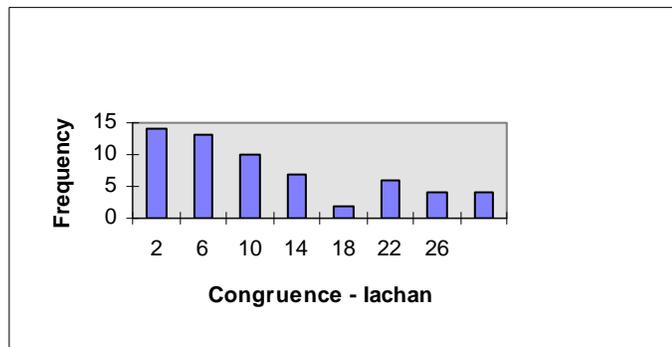
**Figure 4.2**                      **Distribution of congruence scores using Iachan (1984) index and CIT codes - Sample 1**



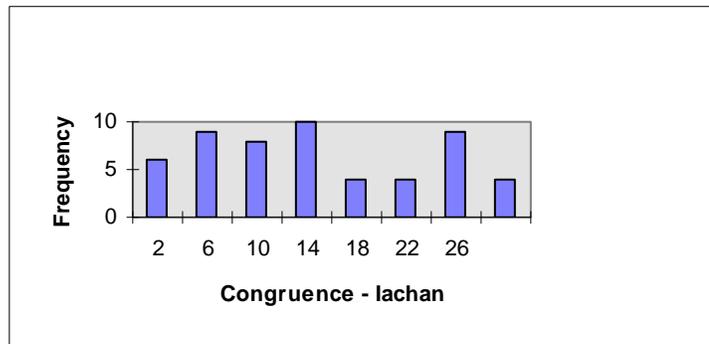
**Figure 4.3**                      **Distribution of congruence scores using Iachan (1984) index and SDS codes - Sample 2**



**Figure 4.4**                      **Distribution of congruence scores using Iachan (1984) index and CIT codes - Sample 2**



**Figure 4.5**                      **Distribution of congruence scores using Iachan (1984) index and SDS codes - Sample 3**



**Figure 4.6**                      **Distribution of congruence scores using Iachan (1984) index and CIT codes - Sample 3**

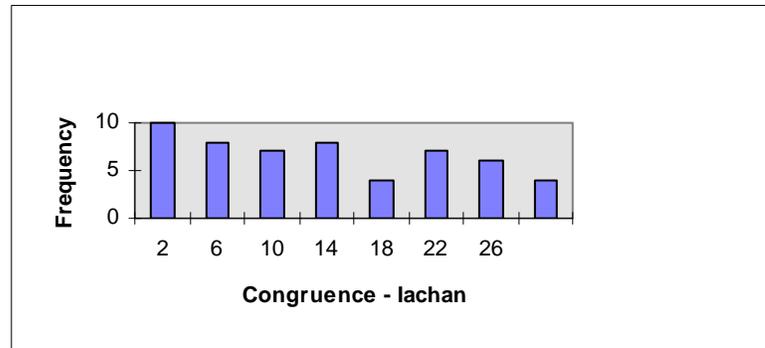


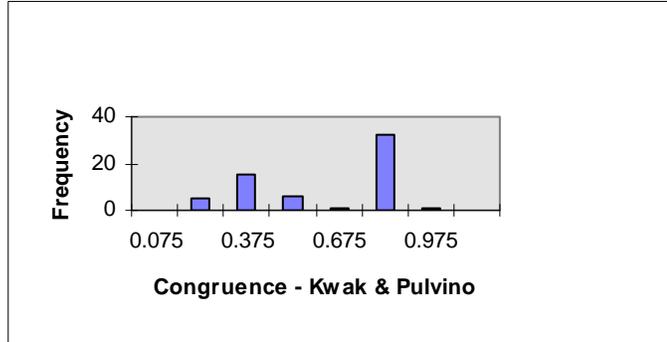
Table 4.1 (below) shows the means, standard deviations and ranges obtained using the Iachan index with the three subject groups' results.

**Table 4.1**                      **Distribution of congruence scores using Iachan (1984) index**

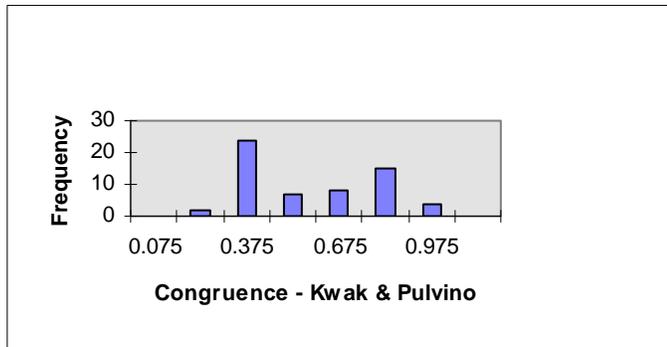
	<b>Sample 1</b>	<b>Sample 2</b>	<b>Sample 3</b>
SDS codes	mean = 15.33 s.d. = 8.27 range = 0 - 27	mean = 14.37 s.d. = 8.35 range = 1 - 27	mean = 13.39 s.d. = 8.37 range = 0 - 27
CIT codes	mean = 6.53 s.d. = 7.10 range = 0 - 23	mean = 10.40 s.d. = 8.70 range = 0 - 27	mean = 12.63 s.d. = 8.90 range = 0 - 27

The Kwak and Pulvino (1982) index has possible scores ranging from 0 to 1, and the mean congruence level using SDS codes was 0.55 for Sample 1, 0.50 for Sample 2, 0.53 for Samples 1 and 2 combined, and 0.52 for Sample 3. Due to the construction of the Kwak and Pulvino index it could not be used with the CIT codes. Figures 4.7 to 4.9 (below) illustrate the distribution of congruence scores obtained using the Kwak and Pulvino (1982) index. As with the Iachan (1984) index, subjects' congruence scores were weighted in such a way as to produce high or low scores, but few intermediate ones. This explains the apparent bimodality of the distributions.

**Figure 4.7**                      **Distribution of congruence scores using Kwak and Pulvino (1982) index and SDS codes - Sample 1**



**Figure 4.8**                      **Distribution of congruence scores using Kwak and Pulvino (1982) index and SDS codes - Sample 2**



**Figure 4.9**                      **Distribution of congruence scores using Kwak and Pulvino (1982) index and SDS codes - Sample 3**

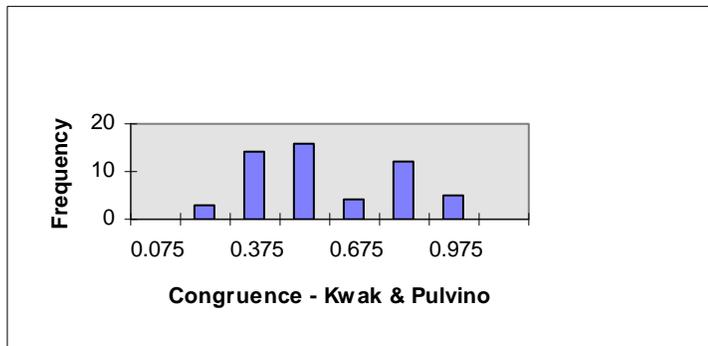


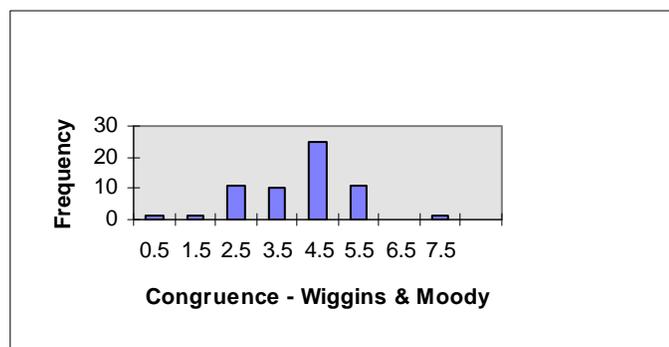
Table 4.2 (below) shows the means, standard deviations and ranges obtained using the Kwak and Pulvino index with the three subject groups' results.

**Table 4.2**                      **Distribution of congruence scores using Kwak and Pulvino (1982) index**

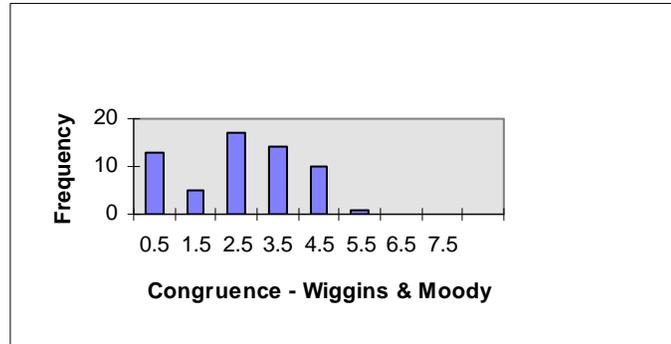
	<b>Sample 1</b>	<b>Sample 2</b>	<b>Sample 3</b>
SDS codes	mean = 0.55 s.d. = 0.22 range = 0.16 - 0.93	mean = 0.50 s.d. = 0.22 range = 0.21 - 0.95	mean = 0.52 s.d. = 0.21 range = 0.20 - 0.91

Using the Wiggins and Moody (1981) index, the mean congruence level using SDS codes was 3.58 for Sample 1, 3.65 for Sample 2, 3.62 for Samples 1 and 2 combined, and 3.89 for Sample 3. When the Wiggins and Moody index was used with CIT codes, the mean congruence level was 2.10 for Sample 1, 2.90 for Sample 2, 2.50 for Samples 1 and 2 combined, and 3.72 for Sample 3. Figures 4.10 to 4.15 (below) illustrate the distribution of congruence scores obtained using the Wiggins and Moody (1981) index. The range of possible scores is 0 to 8 using this index.

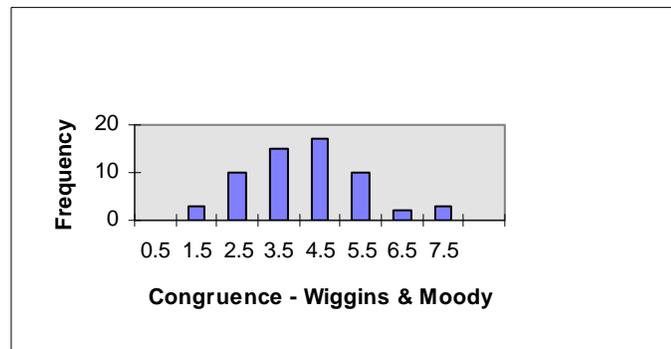
**Figure 4.10**                      **Distribution of congruence scores using Wiggins and Moody (1981) index and SDS codes - Sample 1**



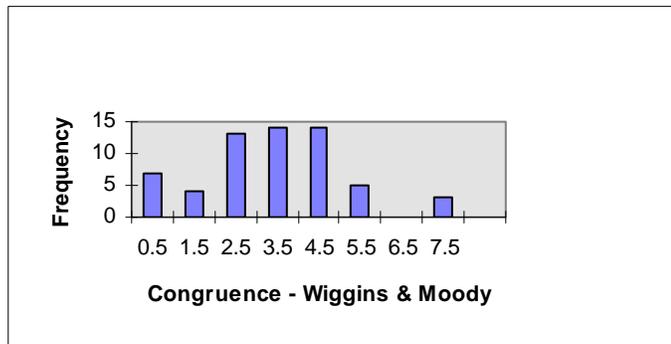
**Figure 4.11** Distribution of congruence scores using Wiggins and Moody (1981) index and CIT codes - Sample 1



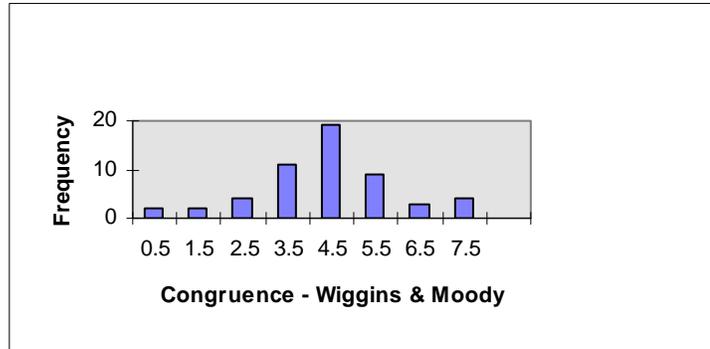
**Figure 4.12** Distribution of congruence scores using Wiggins and Moody (1981) index and SDS codes - Sample 2



**Figure 4.13** Distribution of congruence scores using Wiggins and Moody (1981) index and CIT codes - Sample 2



**Figure 4.14**                      **Distribution of congruence scores using Wiggins and Moody (1981) index and SDS codes - Sample 3**



**Figure 4.15**                      **Distribution of congruence scores using Wiggins and Moody (1981) index and CIT codes - Sample 3**

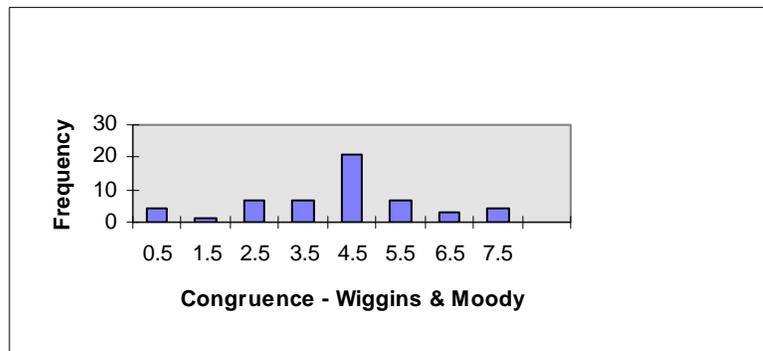


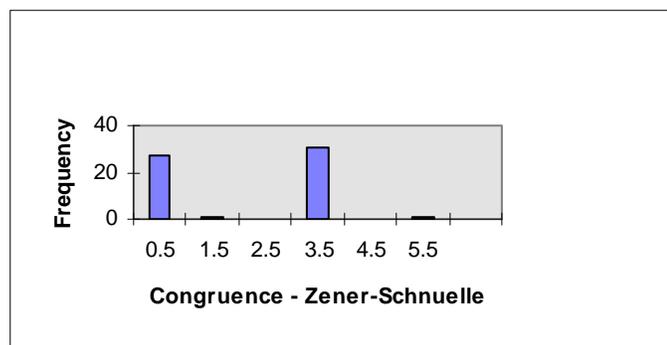
Table 4.3 (below) shows the means, standard deviations and ranges obtained using the Wiggins and Moody index with the three subject groups' results.

**Table 4.3**                      **Distribution of congruence scores using Wiggins and Moody (1981) index**

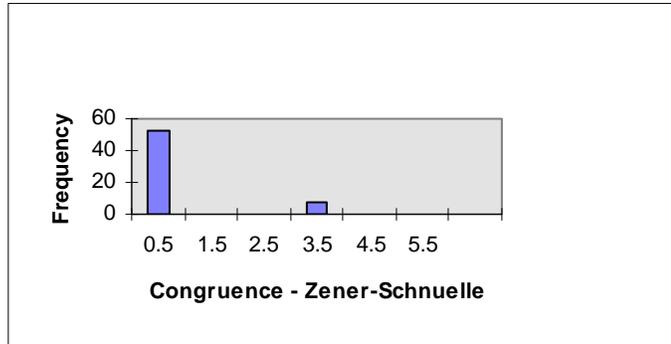
	<b>Sample 1</b>	<b>Sample 2</b>	<b>Sample 3</b>
SDS codes	mean = 3.58 s.d. = 1.23 range = 0 - 7	mean = 3.65 s.d. = 1.42 range = 1 - 7	mean = 3.89 s.d. = 1.59 range = 0 - 7
CIT codes	mean = 2.10 s.d. = 1.43 range = 0 - 5	mean = 2.90 s.d. = 1.71 range = 0 - 7	mean = 3.72 s.d. = 1.73 range = 0 - 7

With the Zener-Schnuelle (1976) index, which has a range of possible scores from 0 to 6, the mean congruence level using SDS codes was 1.65 for Sample 1, 1.48 for Sample 2, 1.57 for Samples 1 and 2 combined, and 1.26 for Sample 3. Using the Zener-Schnuelle index and CIT codes, the mean congruence level was 0.40 for Sample 1, 0.95 for Sample 2, 0.68 for Samples 1 and 2 combined, and 1.31 for Sample 3. Figures 4.16 to 4.21 (below) illustrate the distribution of congruence scores obtained using the Zener-Schnuelle (1976) index. The Zener-Schnuelle measure was less sophisticated than the other indices shown above, and most subjects scored either 0 (no congruence) or 3 (limited congruence), as shown in the graphs.

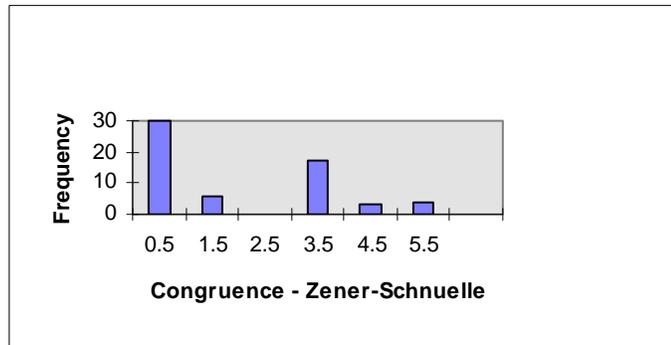
**Figure 4.16**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and SDS codes - Sample 1**



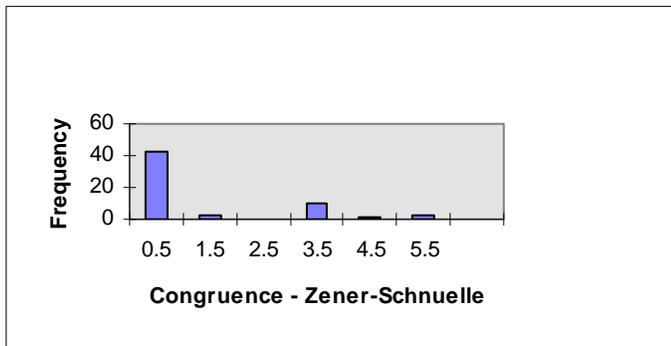
**Figure 4.17**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and CIT codes - Sample 1**



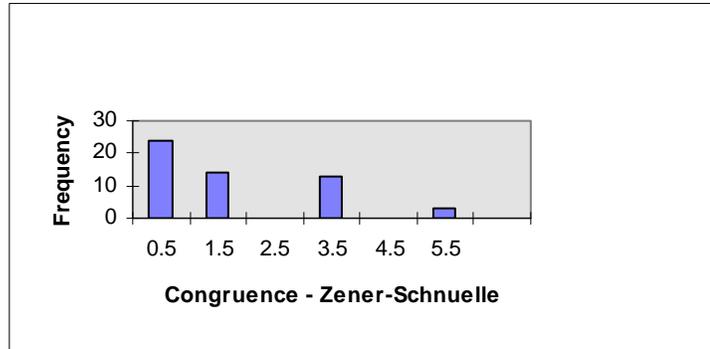
**Figure 4.18**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and SDS codes - Sample 2**



**Figure 4.19**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and CIT codes - Sample 2**



**Figure 4.20**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and SDS codes - Sample 3**



**Figure 4.21**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index and CIT codes - Sample 3**

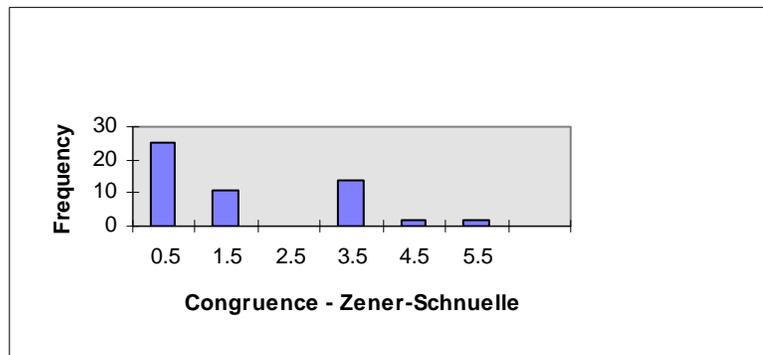


Table 4.4 (below) shows the means, standard deviations and ranges obtained using the Zener-Schnuelle index with the three subject groups' results.

**Table 4.4**                      **Distribution of congruence scores using Zener-Schnuelle (1976) index**

	<b>Sample 1</b>	<b>Sample 2</b>	<b>Sample 3</b>
SDS codes	mean = 1.65 s.d. = 1.55 range = 0 - 5	mean = 1.48 s.d. = 1.72 range = 0 - 5	mean = 1.26 s.d. = 1.51 range = 0 - 5
CIT codes	mean = 0.40 s.d. = 1.03 range = 0 - 3	mean = 0.95 s.d. = 1.62 range = 0 - 5	mean = 1.31 s.d. = 1.54 range = 0 - 5

From a cursory look at Tables 4.1 to 4.4 (above) it would appear that although the unskilled subjects (in samples 1 and 2) often showed higher mean levels of congruence than the skilled subjects (sample 3) when the SDS codes were used, this situation was reversed when the CIT codes were used. In general, this seemed to be because many factory workers interviewed named “outdoor” as their chief vocational interest type, and while this person-job combination was regarded as congruent by Holland’s (SDS, 1979) instrument, it lacked congruence when Athanasou’s (CIT, 1988) measure was used. To investigate further whether the unskilled and skilled groups differed in their congruence levels, unpaired t-tests were carried out. Again, there were marked differences in the results, depending which interest coding system was utilised. All four of the tests using the SDS codings showed there to be no significant difference between the mean scores of the unskilled and skilled groups. However, all three of the t-tests using the CIT codings found that there were significant differences (at an 0.05 level) between the means of the skilled and unskilled groups. In addition, in each case using the CIT, the skilled group proved to have a higher mean level of congruence than the unskilled subject group. The differences seen between results when SDS codes were used, and when CIT codes were used, suggest that the CIT interest types “outdoor” and “practical” did not necessarily occur together in subjects’ interest choices. This highlighted the importance of treating each as a separate interest type, rather than grouping them together, as the single type “realistic” under the SDS system. The results of the t-tests are detailed in Table 4.5, below.

**Table 4.5 Results of t-tests of congruence levels, comparing unskilled and skilled subjects**

	<b>mean - unskilled</b>	<b>mean - skilled</b>	<b>t</b>
Iachan/SDS	14.85	13.39	1.072 (p = 0.143)
Iachan/CIT	8.47	12.63	-3.031 (p = 0.001)
Kwak & Pulvino/ SDS	0.53	0.52	0.281 (p = 0.390)
Wiggins & Moody/ SDS	3.62	3.89	-1.179 (p = 0.120)
Wiggins & Moody/ CIT	2.50	3.72	-4.508 (p = 0.0001)
Zener-Schnuelle/ SDS	1.57	1.26	1.176 (p = 0.120)
Zener-Schnuelle/ CIT	0.68	1.31	-2.730 (p = 0.003)

Further tests were carried out, to establish whether there were differences in congruence levels between males and females, people with differing lengths of tenure in their jobs, and people with different levels of education. Table 4.6 (below) shows the results obtained when gender was compared. For these tests, only the unskilled group were included, as data on gender were not collected from the skilled group. The Iachan (1984) congruence index was used for the comparisons.

**Table 4.6 Results of tests of congruence levels comparing gender in unskilled subjects**

	<b>female</b>	<b>male</b>	<b>t</b>
Iachan/SDS	mean = 12.34 s.d. = 8.16	mean = 18.02 s.d. = 7.38	-3.944 (p = 0.0001)
Iachan/CIT	mean = 8.10 s.d. = 8.31	mean = 8.92 s.d. = 7.98	-0.546 (p = 0.293)

These figures indicate that while males seemed to have significantly higher congruence levels when the SDS codings were used, males and females did not show a significant difference in person-job congruence when the CIT codes were used. Again, this may stem from the tendency of people (especially males) performing factory or other repetitive work, to list “outdoor” as their favourite interest type. While this choice would be regarded as “congruent” with the SDS codes, it would be seen as incongruent under the CIT system.

Further t-tests were performed to see whether people with differing levels of education showed different levels of congruence. Table 4.7 (below) details the results of these tests. For the purpose of this analysis only the unskilled workers were included (as the skilled group all had the same educational classification), and the two lower educational groups were joined together, as were the two higher groups, as the sample sizes were otherwise too small to use.

**Table 4.7 Results of tests of congruence levels comparing education levels in unskilled subjects**

	<b>11 or fewer years of education (n = 76)</b>	<b>12 or more years of education (n = 44)</b>	<b>t</b>
Iachan/SDS	mean = 15.18 s.d. = 8.01	mean = 14.27 s.d. = 8.83	.0578 (p = 0.282)
Iachan/CIT	mean = 8.42 s.d. = 8.03	mean = 8.55 s.d. = 8.43	-0.080 (p = 0.468)

Therefore, there were no significant differences in congruence levels between the workers who did not complete secondary school, and those who did.

Rank correlations were calculated to see whether there was a correlation between congruence level and length of tenure in their jobs - this non-parametric test was selected as it was suspected that any relationship found might be non-linear. Table 4.8 (below) shows the results of the rank correlations.

**Table 4.8 Results of tests of congruence levels comparing length of tenure**

	<b>rank correlation (Spearman) unskilled subjects</b>	<b>rank correlation (Spearman) skilled subjects</b>
Iachan/SDS	r = -.1624 p = .076	r = .2793 p = .037
Iachan/CIT	r = -.0876 p = .341	r = .3090 p = .020

This indicates that while congruence was positively correlated with tenure in the skilled subjects group, there was no such relationship in the unskilled group.

*Job satisfaction*

Next, the data were analysed to learn more about the job satisfaction levels of the subjects. Table 4.9, below, summarises the measures used with each sample and the results obtained. Where results were broken down into categories (e.g., male/female, or education levels) the median job satisfaction levels have been shown rather than the mean, due to the small size of the samples, as the mean could have been skewed by very low or very high scores.

**Table 4.9 Summary of results of job satisfaction questionnaires**

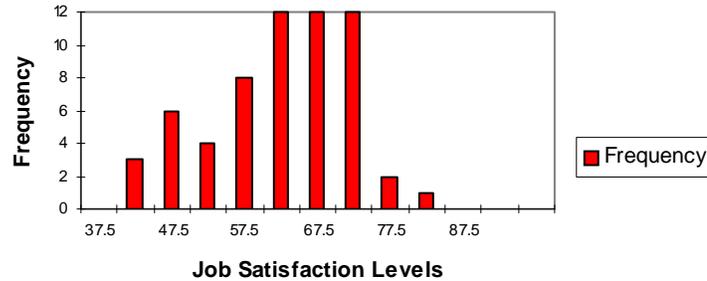
	<b>Sample 1: Unskilled/semi-skilled workers (interviews)</b>	<b>Sample 2: Unskilled/semi-skilled workers (interviews)</b>	<b>Sample 3: Technical and further education teachers (questionnaires)</b>
Job Satisfaction measure used	Brayfield & Rothe (1951)	O'Brien, Dowling & Kabanoff (1978)	O'Brien, Dowling & Kabanoff (1978)
Job Satisfaction - mean	60.0	62.3	62.4
standard deviation	9.6296	11.3007	11.2760
n =	60	60	54
Job Satisfaction/ Tenure correlation	0.0271	0.1225	0.0082
Job Satisfaction by Education level	Below Yr 10: median JS = 59 (n = 12) Yr 10-11: median JS = 60.5 (n = 30) HSC: median JS = 63 (n = 11) Some tertiary: median JS = 66 (n = 7)	Below Yr 10: median JS = 60 (n = 11) Yr 10-11: median JS = 63 (n = 11) HSC: median JS = 64 (n = 11) Some tertiary: median JS = 60 (n = 15)	(not applicable as all teachers rated as having the same education level)
Job Satisfaction by Gender	females: median JS = 62 (n = 25) males: median JS = 62 (n = 35)	females: median JS = 62.5 (n = 42) males: median JS = 59.5 (n = 18)	(unknown)
Job Satisfaction by Job Consistency *	Job Change: median JS = 62 (n = 43) No Job Change: median JS = 62 (n = 17)	Job Change: median JS = 60 (n = 51) No Job Change: median JS = 65 (n = 9)	(not applicable as all teachers had previously done other jobs)

\* "consistency" refers to whether workers had held different jobs in their working life, or were still in their first job

It is not appropriate to compare the job satisfaction scores of Sample 1 with those of Samples 2 and 3, due to the different measures used. It may be interesting to note, however, the similarities between the second (unskilled) and third (skilled) samples, which both used the O'Brien et al. (1978) measure - their means and standard deviations were very close to one another.

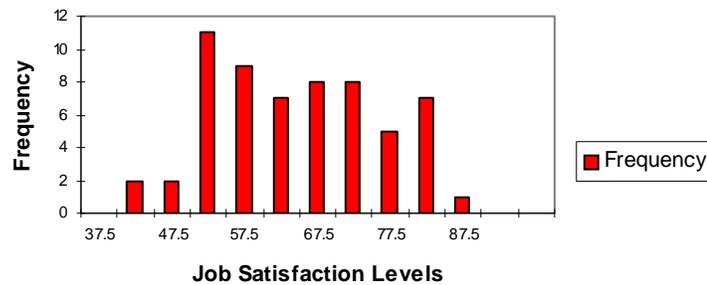
The following three graphs illustrate response frequencies to the Job Satisfaction questionnaires, over the three samples.

**Figure 4.22 Histogram showing frequency of responses to job satisfaction questionnaire - Sample 1 (Brayfield & Rothe (1951) Job Satisfaction measure used)**



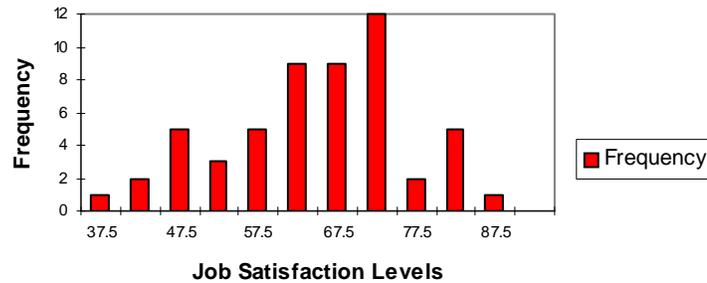
Job satisfaction scores for Sample 1 ranged from 39 to 79, with a mean of 60.0, a median of 62 and a mode of 62.

**Figure 4.23 Histogram showing frequency of responses to job satisfaction questionnaire - Sample 2 (O'Brien, Dowling & Kabanoff (1978) Job Satisfaction measure used)**



Job satisfaction scores for Sample 2 ranged from 41 to 83, with a mean of 62.3, a median of 62.15 and a mode of 60.

**Figure 4.24 Histogram showing frequency of responses to job satisfaction questionnaire - Sample 3 (O'Brien, Dowling & Kabanoff (1978) Job Satisfaction measure used)**



Job satisfaction scores for Sample 3 ranged from 36 to 83, with a mean of 62.39, a median of 64 and a mode of 69. The difference in the shapes of the histograms for Samples 2 and 3 is striking. While each sample had a similar range and mean, the distribution was more negatively skewed, and the mode several points higher, in the third (skilled) group of subjects.

The O'Brien, Dowling and Kabanoff (1978) job satisfaction questionnaire, which was used with the second and third subject groups, asked respondents about specific aspects of their work, including management, work mates, physical conditions and pay. To check whether the skilled and unskilled subjects answered the questions differently, the mean scores on each question for each group were correlated. The correlation coefficient was .5381 ( $p=0.02$ ), indicating that the two groups of subjects tended to answer the questions similarly.

*The relationship between congruence and satisfaction*

Traditional theories of vocational choice (e.g., Holland, 1985; Dawis & Lofquist, 1984) hold that there will be a positive correlation between person-job congruence, and job satisfaction. In his 1985 review of congruence studies, Spokane described the “magic .30” as the typical level of correlation between the two, but the current study did not even approach this level. Spearman’s rank correlations (the statistic chosen as it was suspected that relationships, if found, would be non-linear) were used to measure the relationships between job

satisfaction and congruence, and the results of these tests are shown in Tables 4.10 to 4.13, below, and illustrated in Figures 4.25 to 4.45. None of the correlations obtained, either with the unskilled subjects or the skilled subjects, were significant at the .05 level.

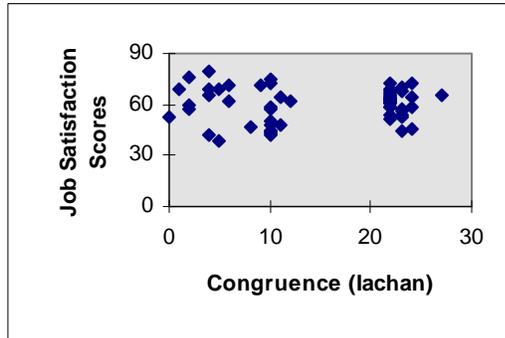
**Table 4.10 Correlations between job satisfaction scores and person/job congruence levels, over the three samples and using the Iachan (1984) congruence index**

	Sample 1: Unskilled/ semi-skilled workers (interviews)	Sample 2: Unskilled/ semi-skilled workers (interviews)	Sample 3: Technical and further education teachers (questionnaires)
Job Satisfaction/ Con- gruence correlation, using SDS codes & Iachan index	r = -.0048 p = .971	r = .0395 p = .764	r = .1991 p = .149
Job Satisfaction/ Con- gruence correlation, using CIT codes & Iachan index	r = -.0953 p = .469	r = .2332 p = .073	r = .1721 p = .213

The congruence and job satisfaction scores of the subjects in each sample were plotted on scatter diagrams, to see whether any patterns emerged. Figures 4.25 to 4.45, below, show these relationships. As noted with Figures 4.1 to 4.15 earlier, many of the graphs show two distinct clusters of correlated congruence and satisfaction scores. This is because of the rather dichotomous nature of the Iachan (1984), Kwak and Pulvino (1982) and Wiggins and Moody (1981) congruence indices - each uses a weighting system, as a result of which most subjects appear either very congruent or very incongruent, but not “partially” congruent. The following six figures show congruence and job satisfaction levels of the three groups of subjects, using the Iachan (1984) congruence measure. It is noted that while the two plots for Sample 3 (figures 4.29 and 4.30, below) look quite similar, the plots for the two unskilled samples differ depending whether the SDS or CIT interest-coding system was used. Far more people showed a “zero” congruence level, in Samples 1 and 2, when the CIT codes were applied, than when the SDS codes were used.

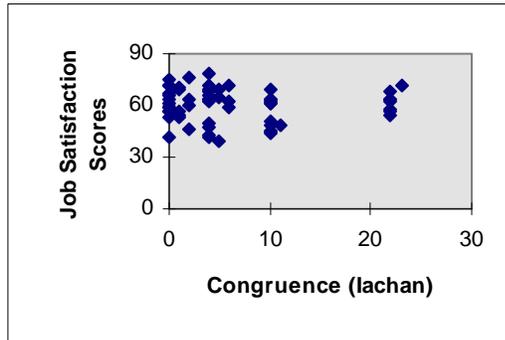
**Figure 4.25**

**Sample 1, using Iachan (1984) index and SDS**



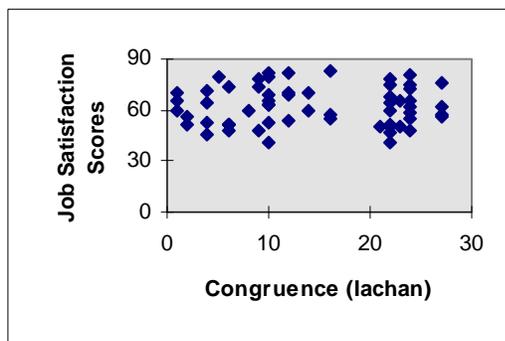
**Figure 4.26**

**Sample 1, using Iachan (1984) index and CIT**

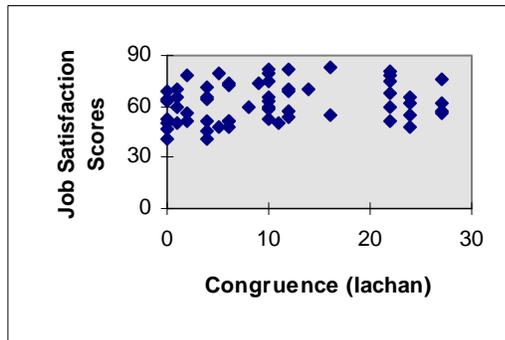


**Figure 4.27**

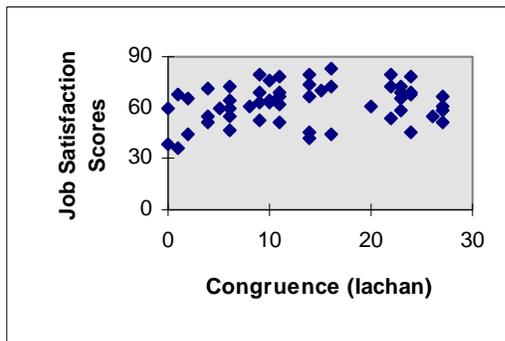
**Sample 2, using Iachan (1984) index and SDS**



**Figure 4.28** Sample 2, using Iachan (1984) index and CIT



**Figure 4.29** Sample 3, using Iachan (1984) index and SDS



**Figure 4.30** Sample 3, using Iachan (1984) index and CIT

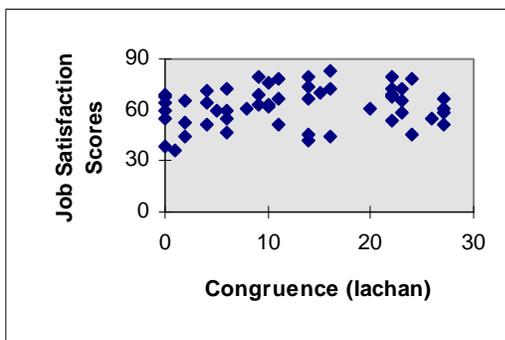


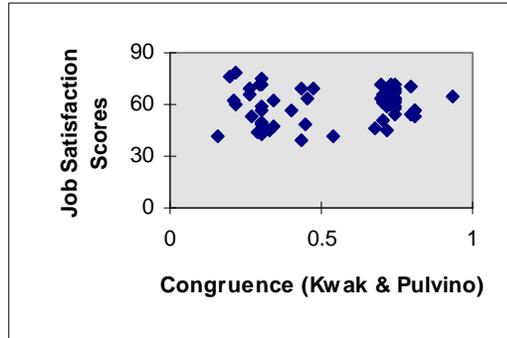
Table 4.11, and Figures 4.31 to 4.33, below, show the correlations between congruence and satisfaction for the three sample groups, when the Kwak and Pulvino (1982) congruence measure was used.

**Table 4.11 Correlations between job satisfaction scores and person/job congruence levels, over the three samples and using the Kwak and Pulvino (1982) congruence index**

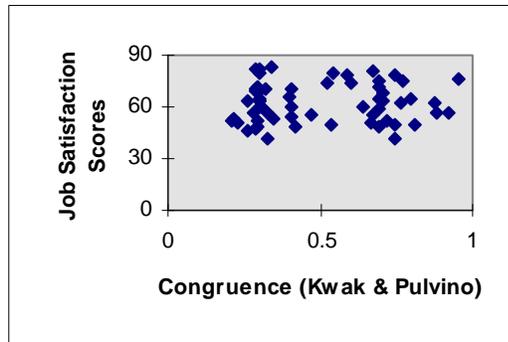
	Sample 1: Unskilled/ semi-skilled workers (interviews)	Sample 2: Unskilled/ semi-skilled workers (interviews)	Sample 3: Technical and further education teachers (questionnaires)
Job Satisfaction/ Congruence correlation, using SDS codes & Kwak & Pulvino index	r = .0599 p = .649	r = .0740 p = .574	r = .1046 p = .452

The Kwak and Pulvino (1982) congruence index is based on Holland's (1973, 1985) hexagonal model, and therefore cannot be used with the CIT interest codes. Very little correlation is apparent from the three scatter plots below.

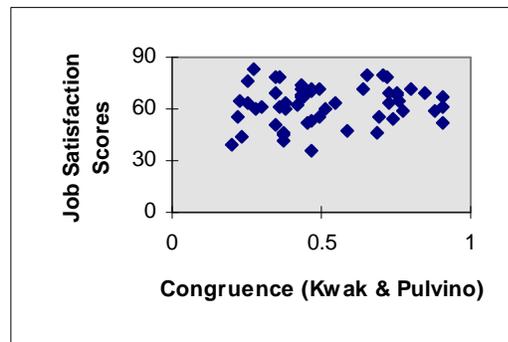
**Figure 4.31 Sample 1, using Kwak and Pulvino (1982) index and SDS**



**Figure 4.32**                      **Sample 2, using Kwak and Pulvino (1982) index and SDS**



**Figure 4.33**                      **Sample 3, using Kwak and Pulvino (1982) index and SDS**



Again, more people were shown to be “incongruent” with their jobs when the CIT codes were used than when the SDS codes were used, when the Wiggins and Moody (1981) measure was used to quantify congruence. As seen from the following table (Table 4.12) and scatter plots (Figures 4.34 to 4.39), the Wiggins and Moody (1981) index sorts subjects into eight degrees of congruence, unlike the Iachan (1984) and Kwak and Pulvino (1982) indices, which were able to differentiate more finely.

**Table 4.12 Correlations between job satisfaction scores and person/job congruence levels, over the three samples and using the Wiggins and Moody (1981) congruence index**

	Sample 1: Unskilled/ semi-skilled workers (interviews)	Sample 2: Unskilled/ semi-skilled workers (interviews)	Sample 3: Technical and further education teachers (questionnaires)
Job Satisfaction/ Congruence correlation, using SDS codes & Wiggins & Moody index	$r = .0903$ $p = .492$	$r = -.0459$ $p = .727$	$r = .1728$ $p = .211$
Job Satisfaction/ Congruence correlation, using CIT codes & Wiggins & Moody index	$r = -.0762$ $p = .563$	$r = .1755$ $p = .180$	$r = .1337$ $p = .335$

**Figure 4.34 Sample 1, using Wiggins and Moody (1981) index and SDS**

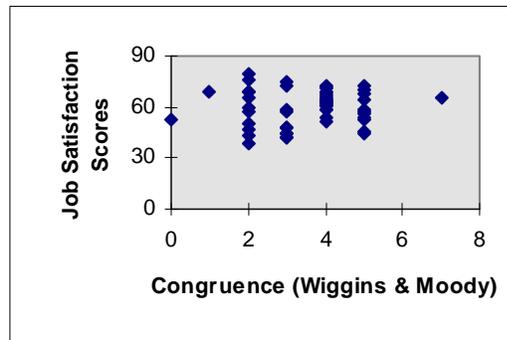


Figure 4.35

Sample 1, using Wiggins and Moody (1981) index and CIT

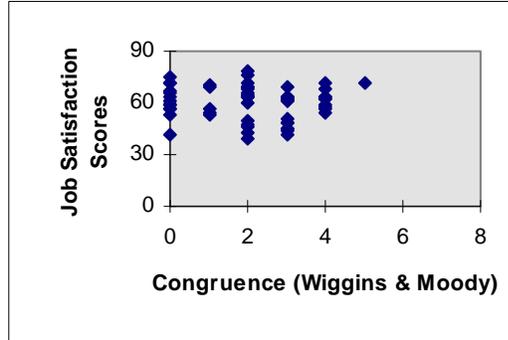


Figure 4.36

Sample 2, using Wiggins and Moody (1981) index and SDS

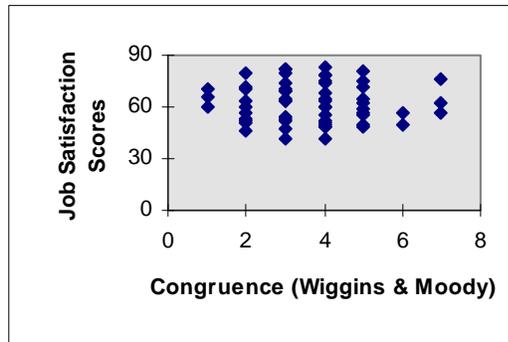
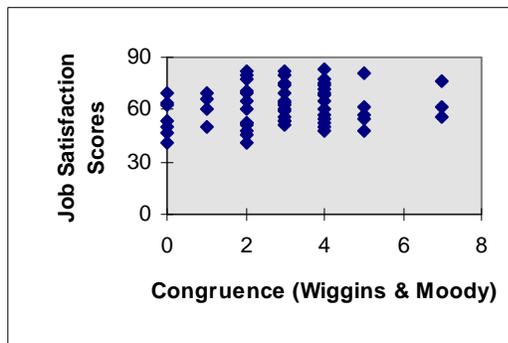


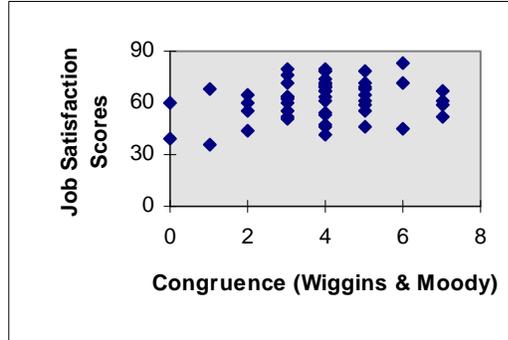
Figure 4.37

Sample 2, using Wiggins and Moody (1981) index and CIT



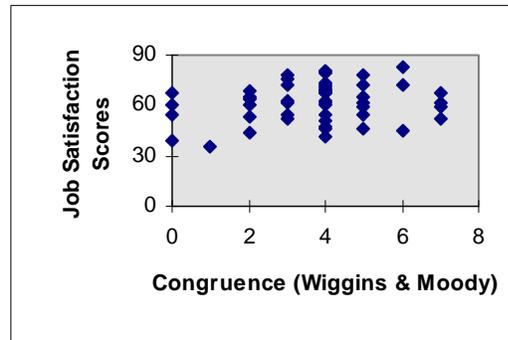
**Figure 4.38**

**Sample 3, using Wiggins and Moody (1981) index and SDS**



**Figure 4.39**

**Sample 3, using Wiggins and Moody (1981) index and CIT**



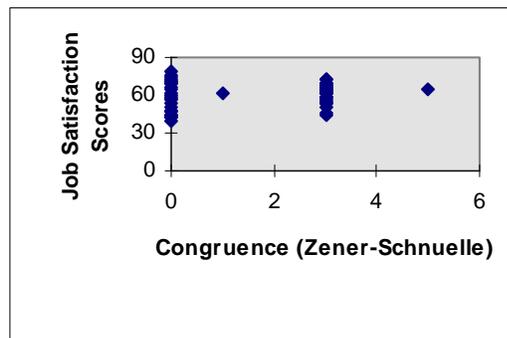
The final congruence index used with the data was the Wiggins and Moody (1976) measure. Table 4.13 shows the correlations between congruence and satisfaction for the three samples, when this measure was used.

**Table 4.13 Correlations between job satisfaction scores and person/job congruence levels, over the three samples and using the Zener-Schnuelle (1976) congruence index**

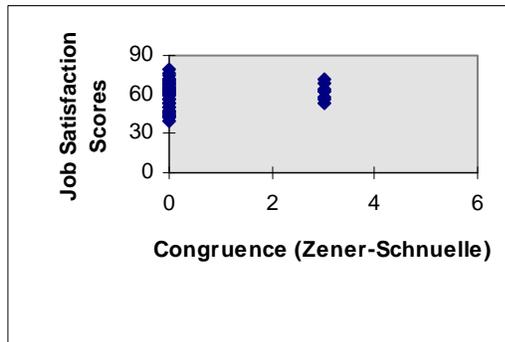
	Sample 1: Unskilled/ semi-skilled workers (interviews)	Sample 2: Unskilled/ semi-skilled workers (interviews)	Sample 3: Technical and further education teachers (questionnaires)
Job Satisfaction/ Congruence correlation, using SDS codes & Zener & Schnuelle index	r = .1104 p = .401	r = .0035 p = .979	r = .1800 p = .193
Job Satisfaction/ Congruence correlation, using CIT codes & Zener & Schnuelle index	r = .0609 p = .644	r = .1999 p = .126	r = .2647 p = .053

Figures 4.40 to 4.45 (below) illustrate the limited differentiation available when the Zener-Schnuelle (1976) congruence index was used. Most people scored either 0 or 3 (out of the possible maximum of 6) on this congruence measure and, as with the Iachan (1984) and Wiggins and Moody (1981) indices, subjects sometimes appeared less congruent when the CIT interest codes were used, than when the SDS codes were applied. All of the “scatter plots” above and below appear quite random, with no particular relationships being apparent. This is in accordance with the lack of significant correlations found between congruence and satisfaction levels.

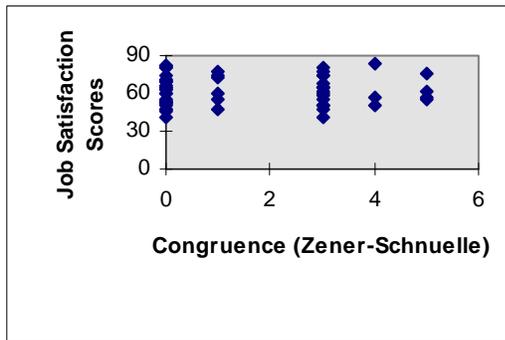
**Figure 4.40 Sample 1, using Zener-Schnuelle (1976) index and SDS**



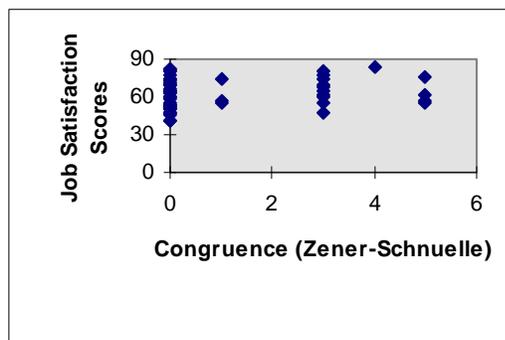
**Figure 4.41** Sample 1, using Zener-Schnuelle (1976) index and CIT



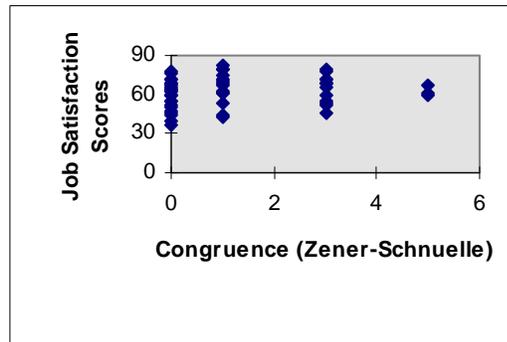
**Figure 4.42** Sample 2, using Zener-Schnuelle (1976) index and SDS



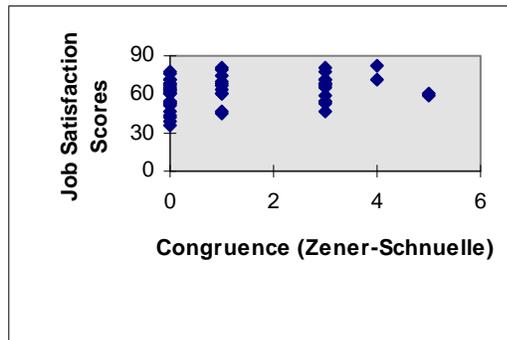
**Figure 4.43** Sample 2, using Zener-Schnuelle (1976) index and CIT



**Figure 4.44** Sample 3, using Zener-Schnuelle (1976) index and SDS



**Figure 4.45** Sample 3, using Zener-Schnuelle (1976) index and CIT



To reiterate, as shown in Tables 4.10 to 4.13 and Figures 4.25 to 4.45, no significant correlations were found between congruence and satisfaction in these studies, with any of the subject groups, either method of interest coding, or any of the four congruence indices. These findings do not support Holland's (1985) theory of vocational choice.

In addition to the above analyses, partial correlation coefficients were calculated, to see whether the correlations between congruence and satisfaction altered, when certain other factors were controlled. Two factors were controlled (tenure and education levels) in the calculations for Samples 1 and 2, however only one (tenure) could be controlled for Sample 3, as in this sample all subjects were classified as having the same level of education. Separate correlations were also calculated to see whether there were gender differences. Tables 4.14 to 4.16, below, summarise the results of these tests.

**Table 4.14 Correlations between job satisfaction scores and person/job congruence levels, over the three samples and using four different congruence indices, controlling for tenure**

	<b>Sample 1: Unskilled/ semi-skilled workers - controlled for tenure</b>	<b>Sample 2: Unskilled/ semi-skilled workers - controlled for tenure</b>	<b>Sample 3: Technical and further education teachers - controlled for tenure</b>
Job Satisfaction/ Congruence correlation, using SDS codes & Iachan index	r = .0648 p = .626	r = .0101 p = .940	r = .2148 p = .122
Job Satisfaction/ Congruence correlation, using CIT codes & Iachan index	r = -.0339 p = .799	r = .2369 p = .071	r = .1963 p = .159
Job Satisfaction/ Congruence correlation, using SDS codes & Kwak & Pulvino index	r = .1220 p = .357	r = .0602 p = .651	r = .1335 p = .341
Job Satisfaction/ Congruence correlation, using SDS codes & Wiggins & Moody index	r = .1115 p = .401	r = -.0269 p = .840	r = .2212 p = .111
Job Satisfaction/ Congruence correlation, using CIT codes & Wiggins & Moody index	r = -.0647 p = .626	r = .2215 p = .092	r = .1908 p = .171
Job Satisfaction/ Congruence correlation, using SDS codes & Zener & Schnuelle index	r = .1511 p = .253	r = .0099 p = .941	r = .1440 p = .303
Job Satisfaction/ Congruence correlation, using CIT codes & Zener & Schnuelle index	r = .0861 p = .517	r = .2290 p = .081	r = .2450 p = .077

**Table 4.15 Correlations between job satisfaction scores and person/job congruence levels, over two samples and using four different congruence indices, controlling for education levels**

	<b>Sample 1: Unskilled/ semi-skilled workers - controlled for education levels</b>	<b>Sample 2: Unskilled/ semi-skilled workers - controlled for education levels</b>
Job Satisfaction/ Congruence correlation, using SDS codes & Iachan index	r = .0844 p = .525	r = .0045 p = .973
Job Satisfaction/ Congruence correlation, using CIT codes & Iachan index	r = -.0174 p = .896	r = .2022 p = .125
Job Satisfaction/ Congruence correlation, using SDS codes & Kwak & Pulvino index	r = .1344 p = .310	r = .0594 p = .655
Job Satisfaction/ Congruence correlation, using SDS codes & Wiggins & Moody index	r = .1246 p = .347	r = -.0326 p = .806
Job Satisfaction/ Congruence correlation, using CIT codes & Wiggins & Moody index	r = -.0509 p = .702	r = .1923 p = .145
Job Satisfaction/ Congruence correlation, using SDS codes & Zener & Schnuelle index	r = .1713 p = .195	r = .0002 p = .999
Job Satisfaction/ Congruence correlation, using CIT codes & Zener & Schnuelle index	r = .1050 p = .429	r = .1954 p = .136

Therefore, there were no significant correlations between congruence and satisfaction, in any of the subject groups or using any of the congruence indices, when tenure and education levels were controlled.

**Table 4.16 Correlations between job satisfaction scores and person/job congruence levels, over the two unskilled/semi-skilled samples and using four different congruence indices, by gender**

	Sample 1: - female (n=25)	Sample 1: - male (n=35)	Sample 2: - female (n=42)	Sample 2: - male (n=18)
Job Satisfaction/ Congruence correlation, using SDS codes & Iachan index	r = .0742 p = .724	r = .1125 p = .520	r = -.0160 p = .920	r = .1986 p = .430
Job Satisfaction/ Congruence correlation, using CIT codes & Iachan index	r = -.1172 p = .577	r = .0499 p = .776	r = .1263 p = .426	r = .3872 p = .112
Job Satisfaction/ Congruence correlation, using SDS codes & Kwak & Pulvino index	r = .1498 p = .475	r = .1491 p = .393	r = .1316 p = .406	r = .0913 p = .719
Job Satisfaction/ Congruence correlation, using SDS codes & Wiggins & Moody index	r = .1311 p = .532	r = .1567 p = .369	r = -.0232 p = .884	r = .0491 p = .847
Job Satisfaction/ Congruence correlation, using CIT codes & Wiggins & Moody index	r = -.0692 p = .742	r = -.0368 p = .834	r = .1105 p = .486	r = .3952 p = .105
Job Satisfaction/ Congruence correlation, using SDS codes & Zener & Schnuelle index	r = .2198 p = .291	r = .1369 p = .433	r = .0289 p = .856	r = .0543 p = .830
Job Satisfaction/ Congruence correlation, using CIT codes & Zener & Schnuelle index	r = -.0150 p = .943	r = .1781 p = .306	r = .1257 p = .428	r = .3275 p = .185

None of the correlations between congruence and satisfaction, for females or males, appear to be significant at the .05 level

*Analysis of individual items on job satisfaction questionnaires*

The first sixty unskilled/semi-skilled workers who were surveyed completed the Brayfield and Rothe (1951) Job Satisfaction Questionnaire. Subjects' answers to individual questions were correlated with their congruence scores, to see whether any relationships were apparent. Table 4.17 shows the results of the correlations.

**Table 4.17 Correlations between subjects' responses on questions on Brayfield and Rothe (1951) job satisfaction questionnaire, and their congruence "scores" (Sample 1)**

	Iachan/ SDS	Kwak & Pulvino/ SDS	Wiggins & Moody/ SDS	Zener- Schnuelle/ SDS	Iachan/ CIT	Wiggins & Moody/ CIT	Zener- Schnuelle/ CIT
1	r = .1744 p = .183	r = .1699 p = .194	r = .2105 p = .106	r = .1989 p = .128	r = .0971 p = .460	r = -.0289 p = .827	r = .2131 p = .102
2	r = .0681 p = .605	r = .0733 p = .578	r = .1112 p = .397	r = .1062 p = .420	r = -.1728 p = .187	r = -.1770 p = .176	r = -.0500 p = .704
3	r = -.1981 p = .129	r = -.1763 p = .178	r = -.1406 p = .284	r = -.1569 p = .231	r = .0514 p = .696	r = .0956 p = .468	r = .0217 p = .869
4	r = .0508 p = .700	r = .0792 p = .547	r = .1175 p = .371	r = .1146 p = .383	r = -.0633 p = .631	r = -.0259 p = .844	r = .0264 p = .841
5	r = .0021 p = .987	r = .0057 p = .966	r = -.0108 p = .935	r = .0119 p = .928	r = -.2367 p = .069	r = -.2879 p = .026	r = -.0718 p = .586
6	r = .0572 p = .664	r = .0477 p = .717	r = .0725 p = .582	r = .0791 p = .548	r = .0477 p = .718	r = .0654 p = .620	r = .0987 p = .453
7	r = .081 p = .537	r = .1368 p = .297	r = .1131 p = .390	r = .1360 p = .300	r = -.0378 p = .774	r = -.1169 p = .374	r = .1183 p = .368
8	r = -.0687 p = .602	r = -.0874 p = .507	r = -.0559 p = .672	r = -.0075 p = .955	r = .1186 p = .367	r = .2015 p = .123	r = .1055 p = .423
9	r = .3172 p = .014	r = .3569 p = .005	r = .3509 p = .006	r = .3280 p = .011	r = .0937 p = .477	r = .0352 p = .790	r = .1198 p = .362
10	r = .1054 p = .423	r = .0405 p = .758	r = .0482 p = .714	r = .0839 p = .524	r = .0321 p = .808	r = .0125 p = .925	r = -.0172 p = .896
11	r = .0007 p = .996	r = .1011 p = .442	r = .0352 p = .790	r = .0786 p = .550	r = -.0985 p = .454	r = -.1116 p = .396	r = .0287 p = .828
12	r = -.0166 p = .900	r = .0420 p = .750	r = .0865 p = .511	r = .0378 p = .774	r = -.1347 p = .305	r = -.1660 p = .205	r = .0128 p = .922
13	r = -.0751 p = .568	r = -.0070 p = .957	r = -.0740 p = .574	r = -.0384 p = .771	r = .0618 p = .639	r = .0085 p = .949	r = .0806 p = .540
14	r = -.0253 p = .848	r = .0723 p = .583	r = -.0740 p = .574	r = .0687 p = .602	r = -.0088 p = .947	r = -.0183 p = .890	r = .0328 p = .804
15	r = .1655 p = .206	r = .1977 p = .130	r = .1436 p = .274	r = .1970 p = .131	r = -.0713 p = .588	r = -.1778 p = .174	r = -.0222 p = .866
16	r = .0973 p = .460	r = .1354 p = .302	r = .1255 p = .339	r = .1853 p = .156	r = .0871 p = .508	r = .0861 p = .513	r = .0738 p = .575
17	r = -.0597 p = .651	r = .0194 p = .883	r = .0336 p = .799	r = .0457 p = .729	r = -.1173 p = .372	r = -.0787 p = .550	r = -.0192 p = .884
18	r = -.0815 p = .536	r = -.0499 p = .705	r = -.0151 p = .909	r = -.0215 p = .870	r = -.0323 p = .806	r = .0312 p = .813	r = .0432 p = .743

Few of the questions in the Brayfield and Rothe (1951) questionnaire showed a significant correlation between their answers and congruence - only statement 9 (“I am satisfied with my job for the time being”) seemed to be related, and then only when SDS codes were used.

The second measure chosen (a questionnaire designed by Australians O'Brien, Dowling and Kabanoff, 1978) asked specific questions about different aspects of the job. As with the Brayfield and Rothe (1951) questionnaire, subjects' answers to individual questions were correlated with their congruence scores, to see whether any relationships were apparent. The use of factor analysis was considered, however as O'Brien, Dowling and Kabanoff (1978) themselves had not appeared to use this approach, and the samples sizes in the current project were relatively small, the researcher was hesitant to do this. Table 4.18, below, shows the results of these correlations for Sample 2, while Table 4.19 shows the results of the correlations for Sample 3.

Three statements in the O'Brien, Dowling and Kabanoff questionnaire correlated significantly with Sample 2's congruence levels. These were:

question 2 “being able to change the things I don't like about my job”  
question 4 “the people I talk to, and work with in my job”, and  
question 7 “the amount of change and variety in my job”.

This contrasted with the results for Sample 3, where three statements:

question 1 “having a say about the way I do things in my job”  
question 2 “being able to change the things I don't like about my job”,  
and  
question 10 “having enough time to do my job properly”,

correlated significantly with subjects' congruence levels.

**Table 4.18 Correlations between subjects' responses on questions on O'Brien, Dowling and Kabanoff (1978) job satisfaction questionnaire, and their congruence "scores" (Sample 2)**

	Iachan/ SDS	Kwak & Pulvino/ SDS	Wiggins & Moody/ SDS	Zener- Schnuelle/S DS	Iachan/ CIT	Wiggins & Moody/ CIT	Zener- Schnuelle/ CIT
1	r = .0050 p = .970	r = -.1564 p = .233	r = .0290 p = .826	r = -.0711 p = .589	r = .2211 p = .089	r = .1629 p = .214	r = .1247 p = .342
2	r = .1646 p = .209	r = .1731 p = .186	r = .1541 p = .240	r = .1629 p = .214	r = .2749 p = .034	r = .2094 p = .108	r = .2979 p = .021
3	r = .2220 p = .088	r = .1150 p = .382	r = .1586 p = .226	r = .1699 p = .194	r = .2953 p = .022	r = .1818 p = .164	r = .2241 p = .085
4	r = .1582 p = .227	r = .3075 p = .017	r = .1074 p = .414	r = .1708 p = .192	r = .2028 p = .120	r = .1698 p = .195	r = .2718 p = .036
5	r = -.1348 p = .304	r = -.0695 p = .598	r = -.0770 p = .559	r = -.0994 p = .450	r = -.1392 p = .289	r = -.0668 p = .612	r = -.0353 p = .789
6	r = .0408 p = .757	r = .1250 p = .341	r = -.0700 p = .595	r = -.0380 p = .773	r = .0727 p = .581	r = .0444 p = .736	r = .0687 p = .602
7	r = .1020 p = .438	r = .2011 p = .123	r = .0885 p = .501	r = .1263 p = .336	r = .2539 p = .050	r = .3091 p = .016	r = .2334 p = .073
8	r = .1380 p = .293	r = .1899 p = .146	r = .0825 p = .531	r = .1043 p = .428	r = .1898 p = .146	r = .2221 p = .088	r = .0975 p = .459
9	r = -.0763 p = .563	r = -.1167 p = .374	r = -.0294 p = .824	r = -.0513 p = .697	r = .0773 p = .557	r = .1078 p = .412	r = -.0344 p = .794
10	r = -.1964 p = .133	r = -.1128 p = .391	r = -.2328 p = .073	r = -.1943 p = .137	r = -.1309 p = .319	r = -.1253 p = .340	r = -.0375 p = .776
11	r = -.0533 p = .686	r = -.0521 p = .693	r = -.1223 p = .352	r = -.1118 p = .395	r = -.0069 p = .958	r = -.0487 p = .712	r = .0472 p = .720
12	r = -.1636 p = .212	r = -.1026 p = .435	r = -.1041 p = .429	r = -.1343 p = .306	r = -.0432 p = .743	r = .1147 p = .383	r = .0063 p = .962
13	r = -.1519 p = .247	r = -.0537 p = .684	r = -.2028 p = .120	r = -.1486 p = .257	r = .0168 p = .898	r = -.0481 p = .715	r = .0473 p = .720
14	r = .0606 p = .646	r = -.0332 p = .801	r = .0135 p = .919	r = .0289 p = .827	r = .1712 p = .191	r = .1449 p = .269	r = .0972 p = .460
15	r = -.0665 p = .614	r = .0912 p = .488	r = -.0263 p = .842	r = .0677 p = .607	r = .1452 p = .268	r = .1599 p = .222	r = .2385 p = .067
16	r = -.0216 p = .870	r = .0072 p = .957	r = -.0279 p = .832	r = .0603 p = .647	r = .1439 p = .273	r = .1218 p = .354	r = .0900 p = .494
17	r = -.0947 p = .471	r = .0286 p = .829	r = -.1207 p = .358	r = -.1417 p = .280	r = .0523 p = .692	r = .0939 p = .475	r = .0831 p = .528
18	r = .0951 p = .470	r = .0130 p = .921	r = .0584 p = .658	r = .0881 p = .503	r = .2404 p = .064	r = .1931 p = .139	r = .1539 p = .240

**Table 4.19 Correlations between subjects' responses on questions on O'Brien, Dowling and Kabanoff (1978) job satisfaction questionnaire, and their congruence "scores" (Sample 3)**

	Iachan/ SDS	Kwak & Pulvino/ SDS	Wiggins & Moody/ SDS	Zener- Schnuelle/S DS	Iachan/ CIT	Wiggins & Moody/ CIT	Zener- Schnuelle/ CIT
1	r = .3577 p = .008	r = .2398 p = .081	r = .3612 p = .007	r = .1883 p = .173	r = .3326 p = .014	r = .3752 p = .005	r = .2553 p = .062
2	r = .4019 p = .003	r = .2390 p = .082	r = .3429 p = .011	r = .2882 p = .035	r = .4325 p = .001	r = .3890 p = .004	r = .3686 p = .006
3	r = .0900 p = .517	r = .0084 p = .952	r = .1915 p = .165	r = .0496 p = .722	r = .0389 p = .780	r = .1209 p = .384	r = .0798 p = .566
4	r = .0684 p = .623	r = -.0277 p = .842	r = -.0145 p = .917	r = .0414 p = .767	r = .0748 p = .591	r = -.0183 p = .896	r = .0480 p = .731
5	r = -.1935 p = .161	r = -.1275 p = .358	r = -.2438 p = .076	r = -.1579 p = .254	r = -.1822 p = .187	r = -.2196 p = .111	r = -.0612 p = .660
6	r = .0964 p = .488	r = .0652 p = .640	r = .0758 p = .586	r = .0684 p = .623	r = .0367 p = .792	r = .0198 p = .887	r = .1561 p = .260
7	r = .1913 p = .166	r = .2004 p = .146	r = .2187 p = .112	r = .2214 p = .108	r = .1856 p = .179	r = .1659 p = .231	r = .2591 p = .058
8	r = .1300 p = .349	r = .1239 p = .372	r = .1138 p = .412	r = .1172 p = .399	r = .1285 p = .354	r = .0718 p = .606	r = .1452 p = .295
9	r = .0552 p = .692	r = .1170 p = .399	r = .0945 p = .497	r = -.0094 p = .946	r = .1158 p = .404	r = .1816 p = .189	r = .1121 p = .420
10	r = .2841 p = .037	r = .0846 p = .543	r = .1952 p = .157	r = .2442 p = .075	r = .3028 p = .026	r = .2372 p = .084	r = .2733 p = .046
11	r = -.0266 p = .848	r = -.1672 p = .227	r = .0751 p = .589	r = -.0618 p = .657	r = -.0717 p = .606	r = .0172 p = .902	r = .0629 p = .651
12	r = .1992 p = .149	r = .2107 p = .126	r = .1677 p = .225	r = .1216 p = .381	r = .1728 p = .212	r = .0819 p = .556	r = .1651 p = .233
13	r = .0051 p = .971	r = -.0510 p = .714	r = .0777 p = .577	r = -.0681 p = .624	r = -.0068 p = .961	r = .0591 p = .671	r = .0501 p = .719
14	r = .1013 p = .466	r = .1247 p = .369	r = .1629 p = .239	r = .1026 p = .460	r = .0532 p = .702	r = .0933 p = .502	r = .0909 p = .513
15	r = .1019 p = .464	r = -.0904 p = .516	r = .0788 p = .571	r = .0037 p = .979	r = .0582 p = .676	r = -.0018 p = .990	r = .0700 p = .615
16	r = .1199 p = .388	r = .1736 p = .209	r = .0282 p = .840	r = .1248 p = .369	r = .1666 p = .228	r = .1014 p = .466	r = .1373 p = .322
17	r = .1327 p = .339	r = .1776 p = .199	r = .1643 p = .235	r = .1604 p = .247	r = .1034 p = .457	r = .1309 p = .345	r = .1717 p = .214
18	r = .0984 p = .479	r = .1019 p = .463	r = .1652 p = .233	r = .0449 p = .747	r = .0976 p = .483	r = .1606 p = .246	r = .1516 p = .274

Tables 4.17 to 4.19, above, suggest that certain aspects of satisfaction may be related to person-job congruence, although some others appear totally unrelated. In addition, different relationships between the two constructs were apparent, when the unskilled and skilled subject groups were compared. Even after applying the Bonferroni statistical correction of alpha (Kirk, 1968) to the figures obtained in Tables 4.14 to 4.19, none of the correlations obtained were significant.

### *Summary*

This chapter described the analyses carried out on the data gathered, and the results obtained. Four different congruence measures, and two methods of coding interests were used. Although the unskilled and skilled subject groups appeared to have similar levels of congruence with their jobs when the Holland (SDS, 1985) interest coding system was used, the skilled workers were shown to be significantly more congruent than the unskilled workers, when Athanasou's (CIT, 1988) system was used. Under both systems, congruence was positively related with tenure in the skilled group, but there was no significant relationship in the unskilled subjects.

When congruence levels were correlated with global job satisfaction scores, no significant relationships were found, using any of the subject groups, any of the congruence measures, or either of the interest coding systems. Similarly, when partial correlation coefficients were calculated to control for factors such as tenure, education levels and gender, there were still no significant relationships between congruence and satisfaction. When subjects responses to individual questions on the job satisfaction questionnaires were analysed, the trend was for specific facets of job satisfaction to show some relationship with congruence levels. On the whole, however, the results of this study have shown little support for Holland's (1985) theory of vocational choice.

It was interesting to examine some of the subjects' responses to the two open-ended questions asked in the interviews (about what they liked most and least about their jobs), as these offered some clues as to the subjects' sources of satisfaction (and dissatisfaction) with their work. Chapter 5 discusses the results of the study, and includes some qualitative data.

## **Chapter 5**

### **Discussion**

#### *Introduction*

Prominent career development theories, such as that of Holland (1985), have suggested that people whose vocational interests are compatible with their work environments tend to be more satisfied with their jobs. The current study however, has shown no support for this concept, either with the unskilled subject group, or with the professional subjects. This chapter will explore possible reasons for this lack of a congruence-satisfaction relationship, discussing the findings in a similar order to the previous chapter, and ending with an examination of some of the limitations of the study.

#### *Congruence*

In these studies, congruence (the degree of “fit” between person and work environment) was quantified in several ways. Firstly, subjects’ interests were classified under two coding systems (the SDS - Holland, 1979; and the CIT - Athanasou, 1988), and their jobs were classified using Holland’s (1985) system. Four “congruence indices” were applied to measure the degree of fit. The SDS was found to measure congruence differently to the CIT, as the SDS grouped two distinct interest types together. Congruence levels were found to be significantly higher in the skilled group if CIT codes were used, yet higher in the unskilled group when SDS codes were used, and similar results were received regardless of the congruence index applied. On the whole, congruence levels were low for all three samples, suggesting that either people were not employed in vocations which matched their interests, or that some aspect of the measurement process (such as the collection of data on subjects’ interests or job satisfaction) was defective. In interpreting the results of the the studies, it must be remembered that slightly different data collection methods (differing Job Satisfaction

questionnaires; and interviews compared with written surveys) were used with each sample; this may have made the results less objective.

The interviews and questionnaires of the most- and least-congruent individuals were revisited, to see if they were somehow different from those of other subjects. Sample 1 had a greater proportion of "incongruent" subjects (that is, those "scoring" 0 on the Iachan (1984) congruence index), than Studies 2 and 3. About 22% of participants in the first study were incongruent, compared with about 10% of those in the two later studies. Incongruent people's levels of job satisfaction (as measured by the questionnaires) varied widely, and while in Studies 2 and 3, their average satisfaction levels were slightly below the sample means, in Sample 1 the "incongruent" subjects showed a mean level of satisfaction above that of the rest of the sample! Of the people who demonstrated high levels of congruence (ie. the maximum in their samples), Sample 1 was above the sample mean, Sample 2 was about the same as the sample mean, and in Sample 3, the most congruent people were less satisfied than the mean. These findings are contrary to the theories of Holland (1985) and Dawis and Lofquist (1984), who saw congruence as leading to job satisfaction. Does congruence matter? Previous studies of unskilled workers, such as that of Heesacker, Elliott and Howe (1988), found that it was not necessarily a prerequisite for job satisfaction and performance. Most studies of skilled or professional workers, however (e.g., Meir & Navon, 1992; Breeden, 1993; Meir & Yaari, 1988; and Aranya, Barak and Amernic, 1981) have shown positive correlations between person-job congruence and job satisfaction. The current study of technical teachers did not support this.

### *Satisfaction*

The study used job satisfaction as a dependent variable, seeking to discover whether person-environment congruence related to job satisfaction. The criterion was measured by way of written questionnaires, and in comparison with previous studies job satisfaction levels appeared low. Details of the norms for the two different questionnaires can be found in Chapter 3. While most of the subjects interviewed did not seem excessively unhappy with their jobs, comparison of

their "scores" with the existing norms suggested that they were less satisfied than previous samples. In every sample, the mean level of job satisfaction revealed by the questionnaires was lower than that suggested by the norms. In addition, whereas O'Brien, Dowling and Kabanoff's (1978) research showed professional and administrative workers to be much more satisfied with their roles than lesser-skilled workers, similar results were not obtained in these studies. The teachers were just as dissatisfied as the factory workers, cleaners and store persons. Why was this? The particular group of teachers surveyed in this study were all employed by the same body, all had careers elsewhere prior to beginning teaching, and were all studying at university, in addition to working full-time. These factors may have affected their satisfaction levels, as they may have had high expectations (due to their past industrial experience) or have been under stress, from juggling work and study. In addition, the post-compulsory education sector has been undergoing restructuring of late, and this may have adversely affected satisfaction levels. Another relevant point may be the age of the norms. In the seventeen years since the O'Brien et al. questionnaire was constructed and tested, Australia has endured two recessions, and immense changes have occurred in the workplace. People who once considered themselves to have "jobs for life", may have suffered retrenchments, unemployment, and insecurity brought on by constant economic, social and technological change.

Workers' expectations appeared to be important in their determination of whether they felt satisfied with their jobs. As suggested by Emery and Phillips (1976), certain groups of workers may express satisfaction simply because "they have ... low expectations of work life" (p.13). These researchers found that satisfaction levels increased with increasing skill levels of positions (a result not found in the current study); they also broke satisfaction into intrinsic and extrinsic categories, and found higher levels of intrinsic satisfaction (enjoyment of the job itself) in people performing more skilled tasks. In the current study, there was an apparent dissonance between the quantitative and qualitative responses to the questions on job satisfaction. While most people interviewed seemed outwardly happy with their work, their responses on the questionnaires often indicated that they were dissatisfied. Both groups of unskilled/semi-skilled workers had mean scores below the published norms for the questionnaires. It may have been that they responded positively to the (somewhat enthusiastic) interviewer's verbal

questioning, but were more inclined to put their real feelings about their jobs onto paper. O'Brien et al. (1978) suggested that dissatisfied people might report satisfaction "either through a social-desirability pressure or because people adjust to intolerable situations" (p.241). It also needs to be kept in mind that the published norms are rather old (1984 for Brayfield & Rothe, and 1978 for O'Brien, Dowling & Kabanoff) and that workplaces have changed since then. Workers may face far more stress in their day-to-day lives now, than when the norms were constructed.

People, whether work mates, students, clients, patients or bosses, were important to the subjects in these studies. In almost every case, they were mentioned (as most- or least-liked factors of a job) before, or instead of, work tasks. Other human beings, it appeared, had the power to "make or break" someone's attitude toward their job. Contrary to expectations, boredom or lack of variety in tasks was barely mentioned. Where people had repetitive jobs, they seemed to accept this, and to attribute their satisfaction or dissatisfaction to other issues. Kornhauser (1965), cited in O'Brien, Dowling and Kabanoff (1978) noted that the job attribute which best predicted satisfaction was the "opportunity the work offered for use of the workers' abilities" (O'Brien et al., p.3), which helps to explain the low levels of job satisfaction in the unskilled/semi-skilled workers, but does not necessarily account for the similarly low satisfaction levels amongst the teacher sample.

#### *The relationship between congruence and satisfaction*

As detailed in Chapter 4, no significant relationships were found between congruence and satisfaction, with any of the subject groups or any of the measures used. These findings are contrary to previous expectation, much of which suggests that there should be positive, significant correlations between the two. Here, we will look at some case studies, which give an insight into subjects' motivations, and offer some clues as to why so many of the study participants results were inconsistent with those predicted by the relevant theories.

In addition to the interest card-sort, satisfaction questionnaires and demographic questions, all interview and survey participants were asked two open-ended questions to try to gauge what they enjoyed most, and least, about their jobs. The three groups of subjects were quite dissimilar in their responses to the open-ended questions, which may have been a reflection of the diverse nature of the groups (most of the subjects in Sample 1 were factory workers, while a larger range of occupations and workplaces were included in Sample 2; Sample 3 were teachers who had come from a wide variety of previous occupations). Subjects in the third group (the teachers) mentioned a different selection of most-and least-liked aspects, to the unskilled/semi-skilled subjects. Their comments were more likely to be about their actual tasks, whereas the two earlier groups spoke mainly of other features of their jobs, such as work mates, hours, and money.

Answers given by subjects varied widely in their depth. While some people knew immediately what to say, others gave the questions a considerable amount of thought, and some chose to relate their "life stories", perhaps to clarify the answers they had given. The extent to which this happened depended both on the subjects and the setting, as some employers were more strict about time limits than others.

Following are some "case studies" of the people who took part in the study. They are not necessarily representative of the wider sample, but give an indication of subjects' motivations. Firstly subjects who did fit the expectation of the theories, that is, both their congruence levels and their job satisfaction levels were high (or low) will be looked at, and later subjects whose responses defied the theories (with high congruence and low satisfaction, or low congruence and high satisfaction) will be examined. Note that data on the gender of subjects were not collected in Sample 3, therefore gender-inclusive terms are used in case studies from that sample.

#### *People with high congruence levels/high satisfaction levels*

The following two case studies are of people whose interests did match their jobs, and who expressed satisfaction with these work roles. The responses of both, to

the open-ended questions posed, indicated that they were especially satisfied with their actual tasks, as opposed to peripheral or extrinsic aspects of their positions.

Subject Number 85 (in Sample 2) had worked as a factory hand for twenty years, in an electronics factory. Her current role was as "charge hand", meaning that she organised the workers on the production line, and sat in for them when they were absent from work or on breaks. The subject's job satisfaction level was very high (80, on the O'Brien, Dowling & Kabanoff scale), and her congruence level above average, at 10 on the Iachan scale (using *Career Interest Test* codings). She was very enthusiastic about her job, saying she most enjoyed keeping busy "[there is] always something for me to do ... always learning new things", and she was unable to think of anything she disliked about her job.

Subject Number T10 (in Sample 3) taught pastry cooking in a technical college, and had been doing so for one year. S/he most liked "involvement with people ... [being able to] hand over skills", and disliked "the red tape". The job satisfaction scale was high at 79 (on the O'Brien, Dowling and Kabanoff (1978) scale), while the Iachan congruence score was, at 14 (using *Career Interest Test* codes) also above average.

#### *People with low congruence levels/low satisfaction levels*

The next four people described also could be seen as supporting Holland's (1985) theory of vocational choice, that is, they were neither congruent with, or particularly satisfied with, their jobs. None expressed an enjoyment of their actual work tasks in their answers to the open-ended questions.

Subject Number 17 (in Sample 1) was a woman who had worked as an office cleaner for about two years, and had previously worked as a clerk. Her congruence level was relatively low (4 on the Iachan scale, using *Career Interest Test* (CIT) codings), and her job satisfaction level (Brayfield & Rothe, 1951, scale) was significantly below the mean, at 47. She stated that what she liked most about her job was being "on the go all the time", and that she disliked her low pay rate.

Subject Number 40 (in Sample 1) worked in a confectionery factory. For 12 years, he had been making cream and fudge centres for chocolates. While he said that the best thing about his job was that he had "more freedom than in a lot of other jobs", he disliked being "stuck inside" for nine hour shifts (this subject named "outdoor" as his second-favourite interest, after "people contact"). His job satisfaction score (on the Brayfield & Rothe, 1951, scale) was below average at 50, and his congruence level (4 on the Iachan scale, using *Career Interest Test* codings), was also low.

Subject Number 116 (in Sample 2) was a telephonist in a large centre which took Totalisator Agency Board bets over the telephone. She had been doing the same job for five years, and had also worked in child care and office positions. Her job satisfaction level (at 41 on the O'Brien, Dowling & Kabanoff scale) was very low, and her congruence level (0, on the Iachan scale using *Career Interest Test* codes) was also low. The aspect of her job she most liked was "the money", and she least liked the "rudeness of some callers ... they treat you like dirt".

Subject Number T26 (in Sample 3) was a teacher in a technical college, yet described his/her duties as mainly administration and supervision. S/he had been in that job for about six years, and had a very low satisfaction score, at 36 on the O'Brien, Dowling and Kabanoff (1978) scale. His/her congruence level (1, on the Iachan scale and using *Career Interest Test* codes) was also extremely low, and when asked to name what s/he most liked about the job, the answer given was "not much". The part of the job s/he liked least, was "internal politics".

#### *People with high congruence levels/low satisfaction levels*

The next three subjects described should, according to the theories of career choice, have shown satisfaction with their jobs. Their vocational interests were very compatible with their work tasks. In each case, however, they had recorded low levels of satisfaction, and all three attributed their dissatisfaction to other people, whether an indecisive supervisor, or indifferent students.

Subject Number 97 (in Sample 2) described himself as "chief slave" in a small plastic injection moulding factory, explaining that he was mainly involved in machine operation. He had been there for 9 years, and had previously done other factory work. His job satisfaction level (on the O'Brien, Dowling & Kabanoff, 1978, scale) was low at 51, and his answers to the open-ended questions gave further evidence of this - his favourite part of the job was "going home", and his least favourite "the boss ... [he] changes his mind all the time!" Subject 97's congruence level was very high, at 22 on the Iachan scale, using *Career Interest Test* codings.

Subject Number T3 (in Sample 3) worked as a teacher of hairdressing in a technical college, and had been doing that for one year, prior to which s/he was a hairdresser. S/he had a job satisfaction score (on the O'Brien, Dowling & Kabanoff, 1978, scale) of 59, which was slightly below the mean, and a congruence score of 27 (using the Iachan scale and *Career Interest Test* codes), which was very high. His/her favourite part of the job was "being able to help improve other people's skills", and his/her least liked aspect, "disinterested students".

Subject Number T32 (in Sample 3) taught accounting in a technical college, and had been doing so for one year. Despite a very high congruence score (27, on the Iachan scale using *Career Interest Test* codes), his/her satisfaction level was fairly low, at 52 on the O'Brien, Dowling and Kabanoff (1978) measure. The aspect of the job this subject most liked was "the challenge of teaching and the development of individuals", while his/her least-liked aspect was "the lack of student motivation ... having to almost force the information on to them".

#### *People with low congruence levels/high satisfaction levels*

The next two subjects also defied the theories, they were happy when their congruence levels suggested they should not be! In both cases the jobs met the subjects' perceived needs - for friendship, or for a non-demanding source of

income - apparently making any discrepancies between their interests and their work tasks irrelevant.

Subject Number 22 (in Sample 1) had worked in "unskilled" occupations for 30 years - 20 years as a sewing machinist, and ten years in her current position in a dairy factory, where she shredded and cubed cheese. Despite an apparent lack of congruence between her interests and her job (0 on the Iachan scale, using *Career Interest Test* codings), she was clearly happy with her situation, scoring 75 on the Brayfield and Rothe (1952) Job Satisfaction measure. When asked what she liked most about her job, this subject replied, "I love the work and I love the people". She could not think of anything she disliked about her job.

Subject Number 60 (in Sample 1) worked as a packer in a large book warehouse, and described her previous occupations as "aerobics instructor, teacher, office worker and mother". Her Job Satisfaction, on the Brayfield and Rothe (1951) scale, was high at 72, while her congruence level (0 on the Iachan scale, using *Career Interest Test* codings) was low. Her favourite aspect of the job was that it was "not too physically tiring", and she disliked the dusty atmosphere in the warehouse.

Interests did not appear to be a key factor for many of the subjects in this study in their perception of their jobs. Aspects such as work mates and money were often cited as sources of satisfaction, and it is likely that some workers "sacrificed" chances of congruent employment for other things more important to them, such as congenial working hours, high hourly pay rates, or working alongside their friends.

While the subjects in Sample 3 all had previous careers in trades or professions, and had made conscious decisions to become teachers, it must not be assumed that people in Samples 1 or 2 "chose" their jobs. Some indicated that they had been drafted into factory positions as school leavers, by friends or family, others accepted any job in a recession, or recognised that their limited qualifications (in

a labour market becoming increasingly skilled) restricted their options. One question which remained unasked, but could have been interesting (if perhaps somewhat intrusive), was why the subjects worked in their particular jobs. Some people volunteered this information spontaneously, for example:

Subject Number 118 (a hospital cleaner): "I had a messy divorce and needed a job in a hurry"

Subject Number 94 (labourer in a plastics factory): "To improve my English ... get experience in Australia"

Subject Number 92 (assistant in a nursing home): "The hours suit me"

Subject Number 67 (a factory hand in a packaging factory): "I just have to work".

Others remarked that they preferred to work in different fields (e.g., landscaping - a man doing process work in a meat factory; business equipment maintenance - a man employed as a filing clerk in a government office; textiles - a man working as a biscuit factory machine operator; statistics - a woman working as a hospital cleaner) but had been unable to find work in those fields.

### *Limitations of the study*

Postgraduate study by research is both an attempt to expand current knowledge, and an opportunity to gain "hands-on" experience in research methodologies. With hindsight, it seems inevitable that one will spot better ways the research could have been carried out, or ways in which the chosen methodology limits the usefulness of the results obtained.

This study could have been improved in a number of ways. It would have been worthwhile, in the beginning, to do more research into suitable measures of Job Satisfaction. While the Brayfield and Rothe (1951) questionnaire, used with the first sixty unskilled/semi-skilled subjects was well-known, with established valid-

ity and reliability data, it was also four decades old, North American, and did not differentiate between the causes of workers' satisfaction or dissatisfaction with their jobs. The O'Brien, Dowling and Kabanoff (1978) measure (which the researcher did not learn of until interviewing had commenced), overcame these disadvantages; therefore it may have been preferable to use this questionnaire from the start. Similarly, it would have been useful to explore the reliability and validity of the vocational interest card-sort prior to beginning data collection, rather than later on. There was a possible lack of validity in the interest measure, considering the large proportion of subjects who ranked the "outdoor" category highly. While it is possible that all of these people may enjoy being outdoors, they may on the other hand have misunderstood the concept of vocational interests (as opposed to recreational interests). An enjoyment of the outdoors does not necessarily mean that one would want to work outdoors full-time.

The people who participated in the study were, by necessity, a "convenience sample" (Cohen & Manion, 1989), and it is therefore difficult to generalise the results to a wider population. It was a challenging task, to convince employers to agree to allow their staff to be interviewed! The two groups of unskilled/semi-skilled subjects were also somewhat different. While 73% of the first group were employed in factories, there was more diversity in subjects in the second group, which included only 65% factory workers, and increased proportions of warehouse and hospital workers. This was partly due to an increased awareness, on the part of the researcher, of the range of industries in which unskilled or semi-skilled workers could be found. The differing nature of these two samples, plus the different Job Satisfaction questionnaire used with each group, makes comparisons between them difficult.

The third group of subjects investigated, the teachers, were something of an afterthought. It would have been preferable to interview them (rather than using the written questionnaire), though this idea was discarded as being logistically impossible. Nevertheless their inclusion in the study became useful, as it provided data to compare with that of the other subjects, and with that gained from previous research projects; however it may be harder to compare them with the two unskilled groups, due to the different data collection methods.

On the "wish list" ... it would have been helpful to have more, unhurried time with each of the subjects being interviewed. As most were in their work places, it was vital to keep to a strict time frame - in some cases, this meant interviewing five people within half an hour. It would also have been interesting to ask subjects one more open-ended question - "why do you do this job?". This question was not included in the structured interview or questionnaire, as it may have been perceived as intrusive, and could have made the interviews substantially longer. This question, had it been asked, could have made comparison with vocational choice theories (such as those of Holland, 1985; and Gottfredson, 1981), easier.

### *Chaos!*

As seen from the above cases, and from the statistical analyses presented in the previous chapter, the subjects in these studies were a widely disparate group of individuals, who defied "pigeon holing" into any convenient theories. Holland's (1985) view that people in jobs congruent with their interests would be more satisfied was not supported; and the lack of comparable research (that is, using non-professional, non-student subjects) was highlighted. Subjects interviewed listed a wide range of aspects of their jobs - or aspects of their lives - which affected their satisfaction levels with their employment. Relationships described were far from simple. Cooksey and Gates (1994) argued that current thinking in human resource practice assumed too much, that it pretended that human behaviour was straightforward and predictable, and that it ignored change and complexity. They pointed out that "human beings ... are open systems which can learn, adapt, create, and manipulate the environments they inhabit" (p.5) and that it is important to study individual behaviour prior to generalising to populations. The authors looked at differing responses to change, stating that " ... some individuals will respond well to endeavours to introduce work force empowerment through participatory decision making processes ... [while] other individuals will respond poorly to such 'innovative' practices simply because they neither desire nor expect control over their circumstances" (p.10). This view was borne out in the current study, where managers in two different factories (a tobacco plant, and a confectionery manufacturer) stated that certain workers,

particularly female workers, had resisted attempts to add variety and autonomy to their day-to-day tasks. Cooksey and Gates expressed concern that individual work performance was subject to a huge range of affecting conditions, and that current theories are unlikely to reflect this.

In summary, the empirical evidence from this study indicates that interest congruence is not essential for determining workers' job satisfaction, either in unskilled or skilled workers. While it may influence their choice of occupation (particularly with more skilled roles), many other factors affect workers' feelings about their jobs, to the point where interest congruence is of little consequence. Given this, it is possible that too much importance is being placed on interest congruence in vocational counselling and human resource settings, when employees are more concerned with other issues relating to their roles. In the next chapter, conclusions will be drawn and suggestions made for further exploration.

## Chapter 6

### Conclusions

#### *An overview*

Interests have long been thought to be important in career choice. Theorists such as Strong (1943), Holland (1973, 1985) and Dawis and Lofquist (1984) created complex measurement instruments, based on their findings that interest congruence (or person-environment fit) and job satisfaction were correlated. While other theories have appeared, such as that of Gottfredson (1981) who saw career choice as more related to sex-type and prestige than interests, the vocational interest theories still have many proponents. However, the development of these theories, and most of the later research work done with them, have tended to use either people in professional occupations, or students. One group which appeared particularly to have been overlooked, was unskilled (or semi-skilled) workers, for whom there was little empirical evidence as to whether the theories applied. It was felt that if this issue was explored further, the knowledge gained might be utilised in developing better methods of vocational guidance, for less-academic students (Hosking & Athanasou, 1995 - see Appendix K).

“Congruence” is a term coined to indicate the level of “fit” between a person’s interests, and their work environment. For example, a person interested in mechanical work, and performing mechanical tasks, might be seen as congruent; a person interested in office work and performing mechanical tasks, somewhat less so. Various methods of measuring interest “types” exist, and in recent years, a number of researchers have designed “congruence indices”, to quantify the level of fit between people and their jobs more finely. These have included the Iachan (1984) index, the Kwak and Pulvino (1983) measure, the Wiggins and Moody (1981) measure and the Zener-Schnuelle (1976) index. Tests of the four indices indicated that the more recent ones allowed for greater differentiation between levels of congruence, but that all gave similar results, that is, the most-

and least-congruent people scored similarly, regardless of which index was applied.

Many studies, over the past three decades, have tested Holland's (1985) vocational choice theory, most concluding that congruence does predict satisfaction. However, recent meta-analyses (e.g., Tranberg, Slane & Ekeberg, 1993) have suggested that, when studies with weak methodologies and inappropriate subjects are excluded, the congruence-satisfaction relationship is insignificant. Other issues, such as work values (Rounds, 1990) may be important in determining person-environment fit, and satisfaction. The various studies carried out used many different methods of measuring interests, satisfaction and congruence, some of which were too simple, or of spurious validity. Recognising this, the current study included a new meta-analysis, which found that regardless of subject group or interest, congruence or satisfaction measure, there were no significant relationships between congruence and satisfaction.

Given the lack of empirical evidence about the congruence and satisfaction of lesser-skilled workers, the current research project explored this group. In order to provide a comparison, a group of skilled workers were also studied. The research questions for this study, determined prior to beginning the data collection, were:

- (a) does interest-job congruence correlate with job satisfaction?
- (b) is the relationship between congruence and satisfaction a function of the congruence measure used?
- (c) does this correlation vary between skilled and unskilled workers in Australia?
- (d) does congruence relate to overall satisfaction, or to some specific aspects of job satisfaction?

As detailed in Chapter 4, the interests and satisfaction levels of 120 "unskilled" workers and 54 teachers were explored for the current study. Most of the unskilled people were visited in their work places and interviewed, while the skilled people were asked to complete a written questionnaire, which collected similar data to the interviews. Subjects' responses were analysed, with the results showing a lack of support for prevailing theories of career choice. To briefly summarise:

- average congruence levels were shown to be higher in unskilled than in skilled people when Holland's (1979) *Self-Directed Search* interest codes were used to codify worker interests, but this situation was reversed when the Athanasou (1988) *Career Interest Test* codes were used instead;
- there were no significant differences between congruence scores in unskilled and skilled workers when the SDS codings were used, but there were significant differences when the CIT coding system was used;
- there was a significant difference between congruence scores in female and male workers when the SDS codings were used, but there were no significant differences when the CIT coding system was used;
- four different congruence indices were applied to each subjects' responses, but similar results were received with each; and
- no significant correlations were found between congruence levels and job satisfaction, in any of the subject groups, or with any of the measures. When factors such as tenure, gender, job consistency and education levels were controlled, there were still no significant correlations between congruence and satisfaction.

The above results suggest that regardless of worker skill level and congruence measure, interest may not be a strong predictor of satisfaction, at least in the group of Australian workers sampled. The variation amongst the results depending whether SDS or CIT interest codings were used is substantial, and suggests that the distinction between "outdoor" and "practical" interests should be considered in collecting vocational interest data.

#### *What does it all mean?*

There are several inferences we can make from the results of the current study. Perhaps Holland's (1985) theory of vocational choice is irrelevant in the Australian context? Or perhaps, the theory is sound, but some special characteristics of the three sample groups made their results defy the theory. Another possibility is that the methodology used was erroneous, and inferences should not be made at all. The theories of Holland (1985) and Dawis and Lofquist (1984) are used widely in vocational choice situations today. They have

a strong empirical basis, and have been used in the development of a number of measurement tools, such as the *Self-Directed Search* and *Vocational Preference Inventory* (Holland, 1985). Recent meta-analyses, however, such as that by Tranberg, Slane and Ekeberg (1993) and the one in this thesis, suggest that the empirical evidence of the congruence-satisfaction relation is not so strong after all. An interesting point about meta-analysis was made by Hunter, Schmidt and Jackson (1982) who suspect that statistically insignificant studies are less likely to be published “ ... because editorial reviewers have a substantial preference for studies with statistically significant results ... there may be some research areas in which the true effect size is zero” (Hunter et al., 1982, p.29). One wonders whether further studies have found non-existent relationships between congruence and satisfaction, but have been suppressed?

Based on the previous research results available, the researcher's expectations, at the outset of this project, were that unskilled workers may or may not support Holland's theory, but that the skilled group would. Most previous studies of person-job congruence and job satisfaction have used students or professional workers, rather than "blue collar" or unskilled workers. One of the few which did use this type of subjects was that of Heesacker, Elliott and Howe (1988), who examined the interests, productivity, job satisfaction, absenteeism and insurance claims of a group of female clothing factory workers. They found that Holland's (1985) theory, of greater congruence leading to greater satisfaction was not supported - while the tasks performed were "conventional-realistic", the happiest, most productive subjects had "social" interest types. Although the current study of unskilled workers did not measure job performance, it otherwise agreed with the findings of Heesacker et al., with interest congruence not predicting satisfaction, and with many people reporting enjoying the opportunities for social interaction in their work. The results of the survey of technical teachers (Sample 3) were surprising. Previous research using professionally-employed subjects (e.g., Meir & Erez, 1981; Wiggins, Lederer, Salkowe & Rys, 1983) found significant correlations between congruence and satisfaction, whereas this study found none. It is felt that this may be related to the particular sample, however, as all were juggling tertiary study with work, and were employed in an organisation undergoing massive change. The stresses involved with this may

have made them less satisfied than a more random sample of professionals may have been.

Reflecting on the methodology chosen, it was very rewarding, if very time-consuming, to interview the people in Samples 1 and 2. Not only were the subjects, with few exceptions, eager to assist, they seemed to enjoy having the opportunity to talk about their lives, albeit briefly. The career interest card-sort was a fast and useful tool for collecting data on subjects' interests, though it would benefit from more validation work. The card-sort used seven interest categories (Business, Office, Practical, Outdoor, People Contact, Scientific, Creative) which were derived from the *Career Interest Test* (Athanasou, 1988), rather than the six categories traditionally used by Holland (Realistic, Investigative, Artistic, Social, Enterprising, Conventional - Holland, 1985). The use of the seven categories highlighted the importance of separating outdoor and practical work; whereas Holland's system groups these types of activity together, the people surveyed did not. Under Holland's (1985) coding system, subjects who worked in factories but preferred outdoor work (or vice versa) were perceived to be in "congruent" environments, while the Athanasou (1988) system recognised this inconsistency. This is a possible source of error in research, and it could therefore be valuable to further explore a seven-category interest card-sort. Another possible source of error was the use of Holland's Occupation Finder (1978, cited in Holland, 1985). This guide classified common occupations and work environments into combinations of three-letter codes, and was used to codify the subjects' interests and workplaces in this study. In using this guide, we are assuming that these (American) breakdowns of job components will be appropriate in the Australian context, which may not be the case. For example, the majority of unskilled workers in Samples 1 and 2 were factory process workers, coded by Holland's system as RIE (realistic, investigative, enterprising). This, in turn, translated to practical/scientific/business when the Athanasou (1988) interest codes were used. Are process workers really engaged in investigative, enterprising tasks? Maybe their work would be better defined as conventional, or even social? These questions highlight another issue: the possible lack of applicability of non-Australian theories to the Australian workplace. As detailed in Chapter 2, researchers such as Aranya, Barak and Amernic (1981) and Taylor (1986) have shown that congruence-satisfaction

theories should not be generalised amongst diverse cultures without further testing.

The review of previous research in the congruence-satisfaction field showed that there had been a wide range of methods used to quantify the constructs, and that previous studies varied in quality. It was also apparent that much of the literature that purported to show links between interest congruence and job satisfaction had used students rather than workers, making findings irrelevant to employment situations.

#### *Implications for theories*

Holland's (1985) theory of vocational choice, where congruence is seen to predict satisfaction, is coherent, easy to understand, and supported by a huge body of empirical research. It provided a valuable "anchor", or point of comparison, for the current research project, and the wealth of evidence in its favour meant that the researcher would not have been surprised, had the samples tested upheld the theory. They did not, however: why was this? In his discussion of the potential applications of his theory, Holland states that "hypotheses about the person-environment interactions have received support, but they also require more testing", and "[m]any important personal and environmental contingencies still lie outside the scope of the theory" (Holland, 1985, p.119). Despite the large volume of testing withstood by the theory, few unskilled subjects, Australian workers, or employed women have been investigated, so the current study serves as a reminder that we must not assume that these groups will necessarily behave in the same way as others. From the qualitative data collected, it appears that there is support for Holland's assertion (above) about personal and environmental contingencies, in that the nature of their duties was of little importance to many (skilled and unskilled) subjects in the current study; they were often more interested in their work mates, wages and hours.

Similarly, Dawis and Lofquist's (1984) theory of work adjustment suggested that satisfaction, satisfactory performance and tenure would result from a "correspondence" between worker and job. Their model makes specific reference to workers' values, rather than just their interests and abilities, and therefore may fit the subjects in the current study more closely than Holland's (1985) theory.

Many saw the friendships they had at work, or convenient hours which allowed them time with their families, as sources of satisfaction. Despite, perhaps, a lack of interest congruence, these people were often long-standing, satisfied employees, again indicating that a range of other factors, apart from vocational interests, are important in determining workers' feelings about their jobs.

A third theory examined, that of Gottfredson (1981), maintained that vocational choice processes began early in life, with young people restricting their career options based on their perceptions of gender requirements, social class and prestige levels attached to particular occupations. While the current study did not investigate the ways subjects chose their jobs, anecdotal evidence from the interviews suggested that many people had indeed been influenced by familial expectations regarding sex roles or social class, or by a lack of confidence in their intelligence and abilities, and had therefore compromised their range of potential choices.

The implication for Holland's (1985) theory is not that it is deficient, but that it should be used with caution. While it has been well tested, the theory cannot necessarily be generalised to all subject groups. Other issues, such as working conditions (in the case of both skilled and unskilled subjects in the current study) may take precedence over interest congruence, in determining whether people find satisfaction in their work lives. There has been insufficient research into the congruence-satisfaction relation in the Australian context, and it is not appropriate to extrapolate from North American and Israeli research findings. The meta-analyses (Tranberg, Slane & Ekeberg, 1993; and the one in the current study) have cast doubt over the robustness of many of the previous studies as well.

### *Practical applications*

The current research has some potential practical applications, both for career education and human resource planning. Career education is a growing field; whereas once, children might have left school at the minimum leaving-age and followed their family and friends into local factory jobs, they are now more likely

to remain until the end of high school, and to receive some guidance as to their future career direction. Connell, Ashenden, Kessler and Dowsett (1982), in a study of education and social class, found cynical attitudes toward careers advice in schools: "'Careers advising' may stress equal opportunity but has little impact since most of the kids think careers advising is a load of rubbish. They normally get jobs - if they can get them at all - via friends, neighbours, and parents" (Connell et al., p.115). Krausz (1995) interviewed school students and had more positive feedback, finding that "[s]tudents ... emphasis[ed] the need to find a good job, and indeed any job. Career education was seen as vital in the process of getting a job" (Krausz, 1995, p.18). This changed view may reflect attitudinal changes which have taken place, over the years between the two studies. The current study reminds us that, for less academically-inclined young people, career guidance based solely on interest inventories is not ideal; careers teachers must also address other needs in students, in assisting them to select study and work directions.

Information from studies such as this may also be of use in human resources planning. O'Brien, Dowling and Kabanoff suggested the use of industrial psychologists, to classify jobs on skill and ability dimensions and to test applicants: "[i]n this way, applicants for jobs could be selected on the grounds of similarity of skills and aptitudes to the jobs. Too little or too much skill would mean rejection of the applicant" (O'Brien et al., 1978, p.230). They also commented that, even with "perfect" selection techniques, there would still be too many unskilled jobs available - that to achieve worker-job match it would be necessary to reduce numbers of students proceeding to senior high school and university! They acknowledged that this was not a desirable or practicable option, and suggested that restructuring jobs, to give workers more variety and autonomy, was a more appropriate way to increase satisfaction levels. In the seventeen years since the O'Brien et al. study was published, however, there have been substantial drops in the numbers of unskilled positions available (DEET, 1995), due to advances in technology. Tasks which may once have been performed by humans, are often now done by machines. Therefore, rather than asking "where can we get enough unskilled workers?" it may be more relevant to ask "how can we retrain unskilled workers who have been superseded by machinery?"



### *Possibilities for future research*

The current study leaves many unanswered questions. What aspects of the samples, or of the methods or of theory, made the results so contrary to expectations? Was it the specific workplaces and occupations studied? Were the tools used faulty? Or maybe, Australian workers just have different priorities and needs to the American and Israeli workers and students who formed the samples in earlier research projects? It could be useful to expand this study, and interview people in a wider range of occupations, to test whether the results were a statistical anomaly, or could be generalised to larger groups.

Further research is required to be sure of the validity and reliability of some of the tools used. The *Career Interest Card Sort* was developed specifically for this project, and while it seemed to have face validity and test-retest reliability, we do not know whether it indeed measured workers' interests as accurately as the more traditional interest measures may have. In particular, this study - by coding both workers' interests and jobs according to Holland (1985) and Athanasou (1988) interest types - suggested that Holland's interest category "realistic" might be better separated into two components "outdoor" and "practical", as in the Athanasou system. Subjects interested in outdoor work were not necessarily attracted in practical work, and vice versa, so if the two continue to be grouped together (as in Holland's, 1985, theory of vocational choice) workers could be mistakenly seen to be "congruent" with their work environments, when in fact they may be quite incongruent. Thus the seven-item interest coding system (as used by Athanasou, 1988) may be more appropriate in ascertaining person-job fit than the six-item (Holland, 1985) one. Further exploration would be valuable here.

The two job satisfaction measures used in this study were not necessarily ideal. The first measure used was over forty years old, yet still being used (according to recent text books, e.g., Robbins, 1989), and it had US and English norms. The second measure was Australian, but its norms were seventeen years old. The development of a measure more relevant to our times (or the re-norming of the old measures) is another possible research direction, as many studies still investigate job satisfaction, hence the need for a valid measurement tool.

Many changes are occurring in the workplace, as industry becomes more sophisticated, the service sector grows while the manufacturing industry shrinks, and people performing repetitive tasks are replaced by machines. Whereas many of the workers interviewed may have once thought they had a “job for life”, this is rarely now the case. Unskilled people with little education are more likely than those more skilled and more educated, to suffer long-term unemployment (DEET, 1995) if retrenched, and we need to find new career paths for the unskilled. By studying patterns of demand for labour, it may be possible to predict future demand, and to design retraining programs to equip these people to move into other occupations, as their old ones disappear. Career development theories need to be relevant for the whole range of occupations, not just skilled or “professional” ones, as despite technological changes, the demand for less-skilled workers (cleaners, truck drivers, factory hands, construction labourers) is likely to continue.

In conclusion, this research project has found extrinsic factors to be more important in determining employee satisfaction, than interest congruence. While interest congruence may be desirable, it is not essential to workers’ enjoyment of their tasks. This finding contradicted earlier research, in particular the vocational choice theory of Holland (1985). The project investigated the experiences of unskilled and semi-skilled workers, a shrinking, yet still sizeable, group often overlooked by researchers. There is much scope for further study in related areas - further research with unskilled workers (to determine whether this study was a statistical anomaly), more exploration of congruence and job satisfaction (and the importance of each), and career paths for unskilled workers displaced by technological change, all offer potential for investigation.

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## Appendix A: Career Interest Card Sort

To ascertain subjects' vocational interests in the structured interviews, a set of seven cards were made up, with wording as detailed below on either side. The cards were printed on green paper, and covered in clear plastic so that they could be wiped clean. The interest types and definitions were taken from the *Career Interest Test* (Athanasou, 1988), with the permission of the author. Subjects were asked to put the cards in order, from the type of work they would most like to do, to the type they would least like to do.

(Front of Card)	(Back of Card)
<b>PRACTICAL</b>	<b>practical interests means that you like to work mainly with tools and equipment, making and fixing things as well as operating machines. Jobs in this area include pilots, factory workers, technicians, builders and engineers</b>
<b>OUTDOOR</b>	<b>outdoor interests means that you like to work and move about outside. It also involves caring for animals and growing things. Farmers, foresters, landscape gardeners, surveyors, and sportsmen/women are among those high in outdoor interests</b>
<b>CREATIVE</b>	<b>a creative interest means that you like to express yourself. It includes artistic (such as artists, photographers, signwriters, designers) occupations, musical (such as composing, dancing, singing or instrument-playing) occupations, or literary (actors, writers, editors, reporters and advertising) occupations</b>

<p style="text-align: center;"><b>PEOPLE CONTACT</b></p>	<p>an interest in people contact means that you like to work mainly with people or that you are concerned with their social welfare. The work of teachers, nurses, police officers, and welfare workers involves a great deal of personal contact. It can also include jobs such as sales, cashiers, waiters and secretaries</p>
<p style="text-align: center;"><b>OFFICE</b></p>	<p>an interest in office work means you like working indoors, and at clerical tasks which involve organising and being accurate. Clerical jobs such as secretary, office worker, receptionist, bank clerk or computer operator are in this category. An interest in office work may also mean that you like to work with numbers and do calculations</p>
<p style="text-align: center;"><b>BUSINESS</b></p>	<p>business interest means that you like meeting people, talking, discussing, and leading others such as in law, politics, buying and selling. It also involves business relations with people, as with travel agents, shop keepers, executives and managers</p>
<p style="text-align: center;"><b>SCIENTIFIC</b></p>	<p>a scientific interest means that you like to discover ideas, observe, investigate and experiment. It includes medical and health occupations. Doctors, pharmacists, zoologists, chemists, dentists and physicists have high scientific interests</p>

*Reference*

Athanasou, J.A. (1988). *Career Interest Test*. Sydney: Hobsons Press.

Appendix B: Job Satisfaction Questionnaire (i)

# job satisfaction

Some jobs are more interesting and satisfying than others. This exercise contains eighteen statements about jobs. Please tick the response next to each statement which best describes how you feel about your present job. There are no right or wrong answers.

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
My job is like a hobby to me					
My job is usually interesting enough to stop me getting bored					
It seems that my friends are more interested in their jobs					
I consider my job rather unpleasant					
I enjoy my work more than my leisure time					
I am often bored with my job					
I feel fairly well satisfied with my present job					
Most of the time I have to force myself to go to work					
I am satisfied with my job for the time being					
I feel that my job is no more interesting than others I could get					
I definitely dislike my work					
I feel that I am happier in my work than most other people					
Most days I am enthusiastic about my work					
Each day of work seems like it will never end					
I like my job better than the average worker does					
My job is pretty uninteresting					
I find real enjoyment in my work					
I am disappointed that I ever took this job					

(Source: adapted from Brayfield & Rothe (1951), in S.Robbins, (1989) "Organizational Behavior", Prentice Hall, Englewood Cliffs, N.J.)

Appendix C: Job Satisfaction Questionnaire (ii)

# job satisfaction

This survey is concerned with how satisfied or dissatisfied you are with your job. Please tick (✓) one box for each item.

	Very dissatisfied	Dissatisfied	Neither dissatisfied nor satisfied	Satisfied	Very satisfied
Having a say about the way I do things in my job					
Being able to change the things I don't like about my job					
The chance to use my abilities in my job					
The people I talk to, and work with in my job					
The chance to get to know other people in my job					
The chance to learn new things in my work					
The amount of change and variety in my job					
The chance to do different jobs					
Being able to do my job without a supervisor worrying me					
Having enough time to do my job properly					
Chances of really achieving something worthwhile					
The amount of pay I get					
Promotion opportunities					
Quality of supervision					
Physical conditions at work (cleanliness, noise levels)					
The amount of pressure or stress					
Opportunities to do challenging and interesting work					
Opportunities to grow as a person and be yourself					

(Source: O'Brien, Dowling & Kabanoff (1978). *Work, Health and Leisure*. Flinders University of South Australia: Adelaide.)

## Appendix D: Questionnaire completed by technical teachers

*Hi, my name is Karin Hosking. I am a student at the University of Technology, Sydney, and I'm doing some research on workers and their jobs as part of a Master's degree. Thank you for agreeing to fill out this questionnaire. It should only take about five minutes. I want to ensure you that the information you give me is totally confidential and won't be used in any personal way: in fact, I'm not even going to ask your name.*

*I am going to ask you a few questions, to find out about your interests, and how you feel about your job.*

*The questionnaire is contained on the following three pages. It can be returned to me, or to Dr J Athanasou at UTS. If you have any questions, difficulties, or you would like to receive a copy of the results of my study (probably around late 1995), please contact either myself (ph. [REDACTED]), or Dr Athanasou (ph. [REDACTED]).*

*MANY THANKS FOR YOUR ASSISTANCE.*

Firstly ... please tell me about your interests. Below are listed seven "interest types", with definitions. Would you please put them in order, from the type of work you'd most like to do (given a free choice) to the type of work you'd least like to do? Do this by marking the boxes from "1" (most like) to "7" (least like). Thanks!

- Business (meaning you like meeting people, talking, discussing, and leading others such as in law, politics, buying and selling)
- Creative (meaning that you like to express yourself ... it includes artistic, musical or literary occupations)
- People Contact (meaning that you like to work mainly with people or that you are concerned with their social welfare ... the work of teachers, nurses, waiters, cashiers, police officers, and welfare workers involves a great deal of personal contact)
- Office (meaning that you like to work indoors, and at clerical tasks which involve organising and being accurate ... clerical jobs such as secretary, office worker, receptionist, bank clerk or computer operator are in this category)
- Outdoor (meaning that you like to work and move about outside ... it may also involve caring for animals and growing things)
- Practical (meaning that you like to work mainly with tools and equipment, making and fixing things as well as operating machines)
- Scientific (meaning that you like to discover ideas, observe, investigate and experiment ... it includes doctors, pharmacists, zoologists, chemists, dentists and physicists)

Next, please tell me a little about your current job. What is your job title?

-----

And, what are your main duties?

-----

-----

How long have you been doing this job?

----- years -----months

What types of other jobs have you done in the past?

-----

Now, can I ask ... what do you like most about your current job?

-----

And, what do you like least?

-----

Thank you!

There is just one last thing ... would you please complete the "Job Satisfaction Questionnaire", below? Many thanks!

## Appendix E: Structured interview

Hi, my name is Karin Hosking. I am a student at the University of Technology, Sydney, and I'm doing some research on workers and their jobs as part of a Master's degree. Thank you for agreeing to talk to me. This shouldn't take long. I want to assure you that the information you give me is totally confidential and won't be used in any personal way: in fact, I'm not even going to ask your name. I am going to ask you a few questions, to find out about your interests, and what you like of dislike about your job.

Here are seven cards, each of which describes a type of work. There is more detail about each type of work, on the back of the cards. Please have a look through the cards, and put them in order, from type of work you would most like to do, to the type of work you would least like to do. Great, thank you.

Order:            /            /            /            /            /            /

Tell me a bit about the job you're doing at the moment. What are your duties?

How long have you been doing this type of work?

Have you always done this type of work?

Thank you.

I'm now going to ask you what you think of some aspects of your job. What do you like most about it?

What do you like least about it?

I have a short questionnaire here which will tell me more about your job satisfaction. Would you mind filling it out for me ... or would you like me to read the questions out to you?

There is just one more question. May I ask what level you reached in school?

That's all! Thank you very much for your time, you've been very helpful. Do you have any questions? Thank you, once again.

**Appendix F: Example of letter to employer (where visit  
already verbally arranged)**



(date)

(production manager)

(business name)

(address)

**(state, postcode)**

Dear (name)

Further to our telephone call this morning, thank you for agreeing to let me visit, and possibly interview some of the workers at your factory. I am a student at the University of Technology, working toward a Masters degree in Education, and I am doing research into workers and jobs: in particular, their interests and what they enjoy about their work.

I am using an interview procedure to collect the information I require, and each interview will take only 5-8 minutes. The following 2 pages give an indication of questions I would ask. All interviews would be anonymous and voluntary, and at this stage, would need to be with English-speaking workers. Please call me on [redacted] if you require further information.

Looking forward to seeing you about 9.45am on Wednesday! Many thanks.

Yours sincerely

**Karin Hosking**

**Appendix G: Example of letter to employer (where possible visit had been discussed by telephone, but employer required further details)**



(date)

(production manager)

(company)

(address)

**(state, postcode)**

Dear (name)

Further to my telephone conversation with you yesterday, I would like to request permission to interview a few (up to 5) of the people in your factory. I am a student at the University of Technology, working toward a Masters degree in Education, and I am doing research into workers and jobs: in particular, their interests and what they enjoy about their work. I work as a Careers Adviser, and am concerned with developing new and improved methods of Vocational Guidance, hence my interest in occupations.

I am using an interview procedure to collect the information I require, each interview would take only 5-8 minutes. The following page gives an indication of questions I would ask. All interviews would be anonymous and voluntary. I can assure you that my findings would make no reference to your company, nor would I disclose anything learned there, to any other parties. All information gained is analysed statistically, and used strictly for research purposes.

I work in the city but have some flexibility in hours so could arrange to do the interviews at a time which was convenient to you. So far, I have interviewed over 60 workers in a number of diverse industries, and most seem to enjoy chatting with me! I can arrange to talk to people in lunch hours (and have done, successfully, elsewhere) if my presence during working hours would disrupt production. I will call you on Friday to ask whether it will be possible for me to interview any of your workers, or if I can answer any questions you may have. Many thanks.

Yours sincerely

**Karin Hosking**

## Appendix H: Example of letter thanking employer



2 December 1994

(production manager)  
(company)  
(address)  
**(state, postcode)**

Dear (name)

I recently visited your factory to interview people for my Masters' degree, and I am writing to thank you for your co-operation, and to give you a little feedback on my research to date. So far, the interviews are showing that:

- personal interests don't appear to be very important in determining whether factory/warehouse/clerical workers are satisfied with their jobs, and
- most of the workers interviewed to date enjoy their jobs!

I enjoyed my visit to your workplace, and am very grateful for the assistance I received. Over the next couple of months, I hope to interview about 10 more people, to gain a bigger picture of the relationship between vocational interests and job satisfaction.

Once again, many thanks.

Yours sincerely

**Karin Hosking**  
ph. [redacted] (day)

## **Appendix I: List of employers who participated in study**

Allowrie Foods (Granville)  
Ashton Scholastic (Lisarow)  
Australian Defence Industries (Marrickville)  
Births, Deaths & Marriages (Haymarket)  
Cosmedia Productions (Riverstone)  
Edwards Dunlop Paper (Chullora)  
Jamac Cleaning Products (Riverstone)  
Matsushita Electric Co. (Penrith)  
Nestle Confectionery (Lane Cove)  
NSW TAB PhoneTAB Services (Ultimo)  
Parramatta Advertiser (Parramatta)  
Perfecto Foods (Riverstone)  
Permanent Print Ceramics (Riverstone)  
Players Biscuits (Miranda)  
Poplars Community Hospital (Epping)  
Princess Embroidery (Redfern)  
Regal Paints (Riverstone)  
Repco Cycle Co. (Wetherill Park)  
Rescrete Concrete (Riverstone)  
Rheem Packaging (Villawood)  
Sara Lee (Lisarow)  
Selective Kitchens (Riverstone)  
St Basil's Nursing Home (Lakemba)  
State Staff (Haymarket)  
Sylvania Lighting (Lisarow)  
Unifoods (Concord)  
Wills Tobacco (Pagewood)  
Wipco Plastic Moulding (Milperra)

## Appendix J: Coding system for interview/questionnaire data

### Education

1	=	Year 9 or below
2	=	Year 10 (School Certificate/Intermediate)
3	=	Year 12 (Higher School Certificate/Matriculation)
4	=	Beyond Year 12 (e.g., TAFE/trade/university)

### Like Most

1	=	Work mates
2	=	Tasks
3	=	Customers/Clients/Patients/Students
4	=	Satisfaction from job well done
5	=	Variety
6	=	Easy/no pressure
7	=	Money
8	=	Do own thing
9	=	Other
0	=	Nothing

### Like Least

1	=	Management
2	=	Main task of job
3	=	Minor task of job
4	=	Repetition
5	=	Hours
6	=	Work mates
7	=	Dirt/Noise/Fumes
8	=	Stress
9	=	Other
0	=	Nothing

### Workplace

1	=	Factory
2	=	Office
3	=	Warehouse
4	=	Hospital/Nursing Home
5	=	TAFE College
9	=	Other

**Appendix K: Journal article (published in Career Planning  
and Adult Development Journal, Spring 1995)**

**DO VOCATIONAL  
INTERESTS INFLUENCE  
JOB SATISFACTION  
IN UNSKILLED WORKERS?**

***Karin Hosking***

*Department of Employment, Education & Training*

***James Athanasou***

*School of Adult Vocational Education, University of Technology, Sydney*

June 1994

### *Abstract*

Job satisfaction has often been linked with positive work outcomes such as efficient performance and decreased absenteeism. This paper looks at some previous research into relationships between job satisfaction and vocational interests, and describes a current study using factory and unskilled workers. Initial results have shown job satisfaction to be more closely related to working conditions, than to any similarity between work tasks and personal vocational interests.

## **DO VOCATIONAL INTERESTS INFLUENCE JOB SATISFACTION IN UNSKILLED WORKERS?**

Not everyone is destined, or equipped, for a professional career. Despite changes in the labour market and manufacturing methods, unskilled labour is likely to continue to be required in Australian workplaces. How can we assist people headed for this type of work to make the transition to it, and to gain some satisfaction from their work? And how can workplaces be enhanced to increase job satisfaction and performance?

While interests represent patterns of likes and dislikes for work tasks, job satisfaction relates to an overall attitude to work. It includes a liking for work tasks, as well as the rewards, the co-workers, and many other factors. Some issues which may contribute to feelings of job satisfaction or dissatisfaction are indicated in Figure 1 below.

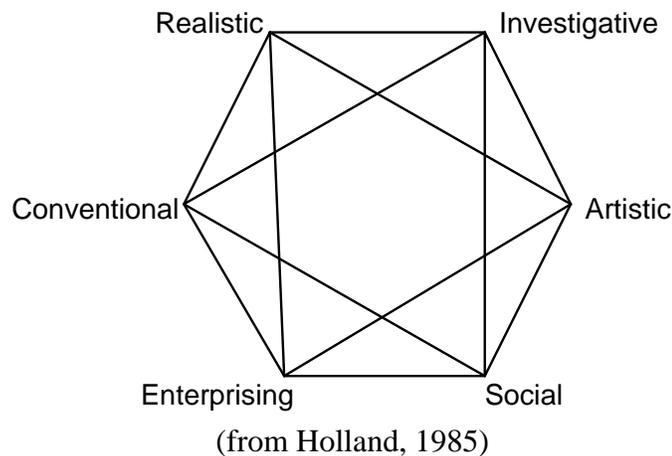
**Figure 1      Some Factors Influencing Job Satisfaction**



Vocational interests and job satisfaction may be linked in various ways. One direct link is that the work tasks reflecting a worker's interests may be more enjoyable. Indirectly, the two are linked in that some interests presuppose types of working conditions, for example, a person with outdoor interests and working in an outdoor job, may find his or her work more satisfying than someone with creative interests employed in an office. Similarly, someone with scientific interests may be happier working in a scientific environment, than in one with a great deal of people contact. The purpose of this paper is to describe and discuss some current research into interests and job satisfaction and to provide the results of a study of unskilled workers.

Since the pioneering research of E.K.Strong (1943), there have been investigations of how interests affect the careers which people will enjoy and at which they will succeed. Theorists such as Holland (1985) have proposed that people seek work environments compatible with their interests. He thought that they would achieve more and be more satisfied in these "congruent" work environments. He suggested that individuals and environments could be classified into six types, namely Realistic, Investigative, Artistic, Social, Enterprising and Conventional and he devised the familiar hexagonal model to show the relationships between the six types (see Figure 2 below).

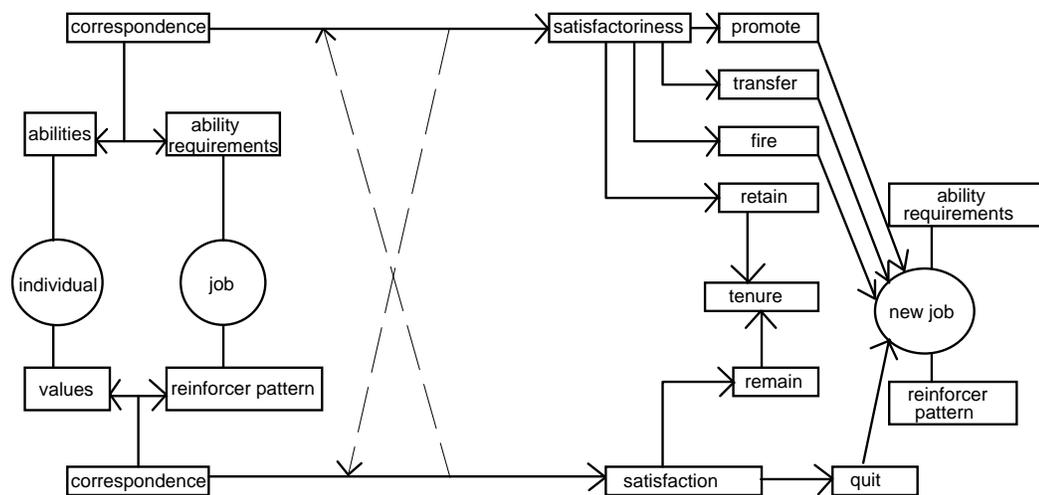
**Figure 2      A Hexagonal Model for Showing the Psychological Resemblance Among Types and Environments and their Interactions**



Another theory of person-environment fit is that of Dawis and Lofquist (1984). Their Theory of Work Adjustment used skills and values, as well as occupational interests, to predict individuals' satisfaction and performance (or satisfactoriness) in a job.

Dawis and Lofquist developed several testing instruments (such as the *Minnesota Satisfaction Questionnaire*, the *Minnesota Satisfactoriness Scales*, and the *Minnesota Importance Questionnaires*) for use in career counselling and job analysis, with a view to designing more rewarding jobs, getting people into the right jobs, and improving job performance.

**Figure 3 Dawis & Lofquist Model for Prediction of Work Adjustment**



(from Dawis & Lofquist, 1984, p.62)

The question is, where does job satisfaction fit into all of this? Earlier studies (e.g., Dawis and Lofquist, 1984; Holland, 1985; and Gati, 1990) have supported links between job satisfaction and performance. It is likely that improvements in employee satisfaction might lead to increased efficiency and productivity in organisations and to decreased absenteeism and staff turnover. It could therefore be useful to study factors influencing job satisfaction. Are workers whose interests are "congruent" with their jobs happier?

While nearly all previous studies appeared to have used professionally-employed subjects or college students, only a few researchers looked at unskilled or factory jobs. One study looked at clothing machinists, finding that subjects whose personality types were "*incongruent*" with their jobs, were both more satisfied and more productive (Heesacker, Elliott & Howe, 1988). Another study investigated ways in which blue-collar women perceived their jobs, finding that job satisfaction was affected by many things other than vocational interests (Pond & Geyer, 1991).

### *Current Research*

The purpose of the current research is to investigate interests and work satisfaction in "unskilled" workers, who tend to leave school early and "fall" into jobs, rather than planning for and training for a career path. As a guide, the *Australian Standard Classification of Occupations* (ASCO) was used to define whom to include in the study, choosing two major groups (plant and machine operators and drivers; and labourers and related workers) as the target populations. Some of the methods which had been used to collect data in previous studies, such as administering questionnaires to large groups, appeared inappropriate for this population. For example, potential subjects could be wary of "researchers" and choose not to complete or return forms, or they may have literacy problems.

Structured interviews were considered to be an effective way to gather the data required. The interviews were planned to be anonymous and non-threatening, and to use several different ways of gaining information from subjects, namely, a card sort of interest types (*Career Interest Test* categories - Athanasou, 1988), direct questioning, and a short questionnaire (Brayfield & Rothe, 1951) which could be completed by either the subject or the interviewer. The interviews conducted took about six to ten minutes each. To obtain subjects, the researcher generally telephoned or visited factories (or workplaces where there were a number of "unskilled" workers) and negotiated with production managers. Whilst there have been two rejections, most workplaces contacted to date have been helpful, agreeing to allow a visit, and providing rooms and selecting

subjects for the study.

The fourteen workplaces visited have included paint, confectionery, dairy, ceramic and concrete factories, a book warehouse, and government departments where repetitive work is carried out.

Sixty people have been interviewed for this study, 35 males and 25 females. Tenure of the subjects has ranged from 1 month to 29 years and job satisfaction ratings (on a scale of 18-low to 90-high), have ranged from 39 to 79, with a mean of about 60. The degree of congruence (or fit) between subjects' stated interest preferences and their job tasks was quantified by converting them both to Holland (1985) interest types, and then using a Congruence Index (Iachan, 1984). The following table indicates how the Iachan Congruence Index is calculated. Each of the three letters in the environment code is compared with each of the letters in the personality code, and the three "scores" obtained are added together to give one figure (between 0 and 28) which indicates the level of congruence.

**Table 1                      Scoring Method for Iachan's (1984) Congruence Index**

<b>Occupational Code</b>	<b>Interest Code</b>		
	<b>First Letter</b>	<b>Second Letter</b>	<b>Third Letter</b>
<b>First letter</b>	22	10	4
<b>Second letter</b>	10	5	2
<b>Third letter</b>	4	2	1

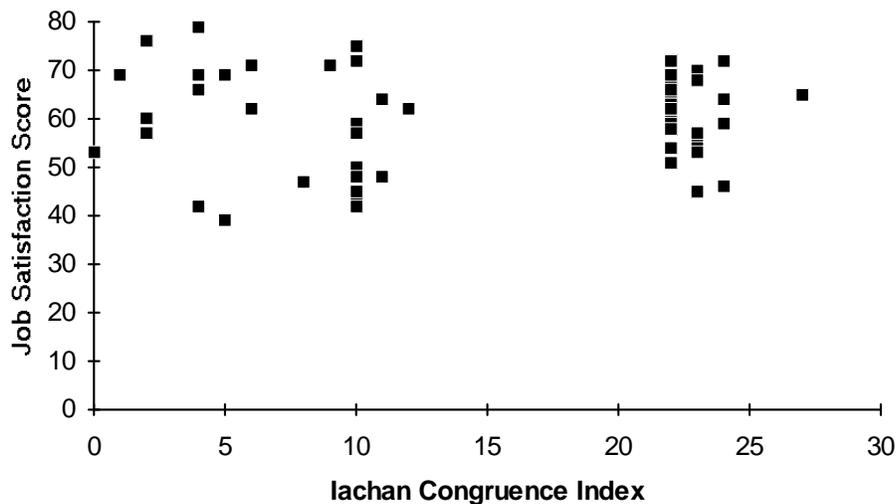
(adapted from Wiggins et al., 1983)

*Preliminary Results*

Data on job satisfaction levels and interest congruence levels were compared. The median job satisfaction score (on a scale of 18 to 90) was 62, while the median level of interest congruence (on a scale of 0 to 28) was 22.

There was little correlation (0.06) between interest congruence and job satisfaction, with some subjects reporting the highest levels of job satisfaction tending to show low levels of congruence. The following "scattergram" (see Figure 4) shows the nature of the relationship between congruence and satisfaction, in the first 60 subjects.

**Figure 4 Relationship Between Congruence and Satisfaction**



The data were also analysed by using the original seven *Career Interest Test* codes obtained for the subjects' interests, rather than converting them to Holland (1985) codes. Whereas under the Holland system, "outdoor" and "practical" interests are grouped together, and called "realistic", the *Career Interest Test* differentiates between them. Using this analysis, the median level of congruence, using the Iachan (1984) congruence index, was just *four*, and many subjects scored nil on the Iachan index. On reflection, this method of quantifying interest-job congruence may be more appropriate and accurate, for future results.

Some qualitative data has also been collected, concerning the aspects of subjects' jobs most liked and least liked. To date, "work mates" are the commonest "most liked" aspect, while "working conditions - other" (encompassing hours, breaks, dirtiness) are the commonest "least liked" aspect. Several workers could not think of anything they disliked about their jobs.

Following are some case studies of the people spoken to.

#### Case Study 1

"Ms W" is a leading hand in a dairy factory. For ten years she has been shredding, cubing and cutting cheese, and for the previous twenty years she worked as a sewing machinist. Ms W's interests are incongruent with her occupation, yet she showed an extremely high level of job satisfaction, scoring 75 on the questionnaire. When questioned about what she liked most in her job, she replied "I love the work and I love the people". She could not think of anything she disliked about her job.

#### Case Study 2

"Mr X" is a machine operator in a concrete factory, where he cuts and bends steel. He has been doing process work for 25 years, including several years in Italy before emigrating to Australia. Mr X showed quite a high level of interest congruence, although his satisfaction level is quite low, with a questionnaire score of 54. He could think of nothing he liked about his job, saying that what he liked least was "hard work", and stating that "I'd like to be Prime Minister"!

#### Case Study 3

"Mr Y" has been employed in a paint factory since he left school three-and-a-half years ago. His duties are stirring and manufacturing paint, and prior to a recent promotion, he filled paint pots. His satisfaction score is high, at 72, and his interest congruence is also high. Mr Y stated that his favourite part of the job was "making the paint", and could not think of anything he disliked about it.

#### Case Study 4

"Ms Z" works as a production typist in a government department. For eight-and-a-half-years, she has been copy-typing certificates, and while she acknowledges she is now a fast typist, she finds the work extremely repetitive. Neither Ms Z's interest congruence, or her job satisfaction, are particularly high. The aspect of

her job she likes the most is her work mates, while her least-liked aspect is "management - they think they help but they don't!" She also stated that the workload was excessive, saying the work "builds up all day long".

### *Discussion and Conclusion*

At this stage, it may be premature to draw any final conclusions about relationships between interests and job satisfaction in unskilled workers. As shown in the examples, a number of complex issues seem to contribute to the satisfaction (or dissatisfaction) of these workers with their jobs.

It is possible that while interest congruence is relevant it is not available to unskilled workers and that working conditions determine how they feel about their situations. They may have little opportunity to express their interests in their work. While tasks may be repetitive, or seemingly unrewarding, workers appear to make up for these shortcomings in their jobs by finding other things to enjoy. Many of those interviewed in the current study both liked their work mates on the job and socialised with them off the job. Some expressed delight at having a job, however monotonous, in a recession. Still others felt that the work (its location, hours, security) fitted in ideally with family or other responsibilities.

Clearly there is much more to be learned about unskilled workers and their jobs. The relationships between such workers' interests and their expressed satisfaction appear complex, not readily fitting into accepted theories of vocational development. Solutions to these issues will be of direct assistance to those involved in adolescent and adult career management.

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