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INFLUENCES ON LIFE SATISFACTION IN WESTERN PENNSYLVANIA

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by

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ABSTRACT

The present study aims to explore predictors of quality of life using the data collected by Chick et al. (1994) in western Pennsylvania. A secondary aim is to determine whether rural life is more satisfying than urban life. The data came from a sample of employees in the machining, tool and die industries and a random sample of individuals outside those occupations. This dissertation applies inferential statistical tools, whereas Chick et al.'s (1994) original study only employed descriptive statistics to depict the sample characteristics. Results showed that job satisfaction, leisure satisfaction, community interpersonal and economic satisfaction, agreement on desirability of government interference, degree of negative attitudes toward technology, and age are significant predictors of life satisfaction. Furthermore, regional differences contributed only to one's satisfaction with living conditions, not other components of quality of life such as satisfaction with one's macroenvironment or with personal development. One of the most significant contributions of the present study is its insight that life satisfaction has several layers impacted by different factors; future studies are needed to specify particular domains of life satisfaction.

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Chapter 1

INTRODUCTION

Since the 1960s, various push and pull factors drove a wave of "urban refugees" to move closer to nature and into the rural frontier in search of their own rustic heaven (Jobes, 2000; Johnson and Beale, 1998) in the USA. While prior to the 1960s America had undergone a sprawl of urbanization, since then rural areas have experienced a revival (Marans, Dillman and Keller, 1980). As a result, between the years 1970 and 1975, 131 people moved out of metropolitan areas into the country for every 100 people who moved into urban areas. From another angle, 75% of all nonmetropolitan counties showed population gains (Marans, Dillman and Keller, 1980). The rapid growth of population in U.S. rural areas began in the 1970s, ebbed during the 1980s, but revived again in the 1990s (Johns and Beale, 1998; 1999; Fuguitt and Beale, 1996; Fulton, Fuguitt and Gobson, 1997; Jones et al., 2003). Why are people motivated to live in rural or urban areas?

In their research, Campbell, Converse, and Rodgers (1976) indicated that many people favor rural life over urban life. Currently, the rural rebound phenomenon appears more driven by quality of life considerations (Fly, 1986; Sofranko and Williams, 1980). Many Americans move to rural communities in order to take advantage of the abundant natural amenities including public lands, parks, lakes, mountains, and forests (Goetz ,

Ready and Stone, 1996), and in search of higher quality environments with less population, cleaner air and water, more scenic beauty, larger open spaces, and more recreation opportunities (Jones, Fly, Talley and Cordell, 2003).

Unlike previous trends of Americans moving to rural areas, which were driven primarily by economic factors, Americans today are driven to move to achieve a better overall quality of life. Although researchers are aware that many people prefer the quality of rural and small town life, they are still learning about the factors that influence American quality of life. One objective of my dissertation is to explore factors that have a significant impact on quality of life in America. American quality of life is a topic of central concern to researchers. Generally, researchers consider quality of life to include: health, education, work, family, income, marriage, physical environment, optimism, and a sense of challenge or life purpose (Diener et al., 1995; Kahneman, Diener, and Schwartz, 1999; King and Napa, 1998; Kitayama and Markus, 2000; Lachman and Weaver, 1998; Ryff and Singer, 1998).

Unfortunately, since Marans et al's (1980) nationwide investigation, there has not been a similar large-scale research project investigating the quality of contemporary American life. There have been several studies, however, that focus on the relationship between quality of life and geographical location. For example, Plaut, Markus and Lachman (2002) found that a majority of Americans believe that they have high levels of mastery, purpose, life satisfaction, overall health, family and work obligations, and partner and family support. According to their study, which focused on finding geographic variations of quality of life, residents of the New England area reflected concern with being constrained by others; those of the Rocky Mountain area showed

concern with environmental mastery; those of the West South Central with personal growth and feeling cheerful and happy; those of the West North Central with feeling calm, peaceful, and satisfied; and those of the East South Central with contributing to others' quality of life.

These migration patterns and arguments raise many questions for researchers, and this project responds to just one of them: Is one's quality of life different in rural and urban regions? In order to answer this question, one must first define what it means by a person's quality of life and what factors one would measure to go about assessing it.

The Quality of Life / Life Satisfaction

Since life satisfaction or the quality of life is the core of this dissertation, it is imperative to understand what this implies. Frisch (1998, 1999) equates quality of life with life satisfaction, which is viewed as a cognitive conceptualization of subjective quality of life. The present study treats quality of life and life satisfaction as interchangeable in both the study's surveys and its analysis since there is a not a scale designed to measure one's quality of life but, rather, the subjective assessment of one's life satisfaction.

Quality of life is subjectively constructed by individuals and influenced by various domains of an individual's life, and the concept of quality of life varies across different people (Lloyd and Little, 2005). The various components of quality of life affect

each other as well as the overall life (Bowling, 2003). In the most general sense, quality of life is the subjective assessment of whether people have a good life and what constitutes a good life which in this dissertation is considered equally as life satisfaction (Diener and Suh, 2000; Kovac, 2004).

The World Health Organization Quality of Life (WHOQOL) (1997) group defines quality of life as "an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, values and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, and their relationships to salient features of their environment" (p.1). The organization tested their definition in multiple cultural contexts and identified six domains as part of quality of life.

Domain 1: Physical (e.g., pain, discomfort, energy and fatigue);

Domain 2: Psychological (e.g., positive feelings, self-esteem, negative feelings);

Domain 3: Level of independence (e.g., mobility, activities of daily living, work
capacity);

Domain 4: Social relationships (e.g., personal relationships, social support);

Domain 5: Environment (e.g., physical safety and security; home environment,
job satisfaction, financial resources, health and social care,
participation in and opportunities for recreation/leisure activities);

Domain 6: Spirituality/Religion/Personal beliefs.

Other researchers view quality of life as having fairly distinct factors from those determined by the WHOQOL Group. Cummins (1993, 1996) claims that quality of life is captured in both subjective and objective aspects. Each subjective and objective thread has seven life components: material well being, health, productivity, intimacy, safety, place in community, and emotional well being. Lane (1991, 2000) defines quality of life as the relationship between a person's subjective and objective sets of circumstances. The subjective set of a person reflecting a high quality of life involves nine elements: (1) capacity for enjoying life; (2) cognitive complexity; (3) a sense of autonomy and effectiveness; (4) self-knowledge; (5) self-esteem; (6) ease of interpersonal relations; (7) an ethical orientation; (8) personality integration; and (9) a productivity orientation. The objective set reflects the quality of the environmental conditions that foster opportunities for the person to achieve subjective quality of life. The eight key objective factors are: (1) adequate material resources; (2) physical safety and security; (3) available friends and social support; (4) opportunities for the expression and receipt of love; (5) leisure opportunities that have elements of skill, creativity, and relaxation; (6) available set of moral values that can give meaning to life; (7) opportunities for self-development; and (8) a justice system that is managed by disinterested and competent parties. Thus, the combination of the subjective and the objective sets represent the concrete contents of a person's quality of life.

Other research also explored the domains of quality of life. Veenhoven (1996) developed a "Happy Life Expectancy" figure and claimed that quality of life is a reflection of how long a person lives and lives happily. Renwick and Brown's (1996) conceptualization of quality of life is focused on achieving important possibilities in

one's life including being, belonging, and becoming. Being is a self-identification that is

who people understand themselves to be. Belonging is a perception that is which social

group people feel attached to. Becoming is a personal desire or expectation people set to

achieve. Rogerson et al. (1996) undertook a nationwide survey of public opinion about

environmental issues having a major impact on people's quality of life. Their findings

showed that safety, health and environment concerns were at the top of the list.

The present study employs job satisfaction, community satisfaction, leisure

satisfaction, attitudes toward government, society and economy, and values of technology

as the components to assess life satisfaction using Chick, Singh, Hood and Schlatter's

(1994) data. Job satisfaction and leisure satisfaction are included in the literature above

and combine both subjective and objective aspects of quality of life, such as the level of

independence, social support and relationships, and leisure opportunities for creativity

and relaxation and opportunities for promotion. Community satisfaction and one's

attitudes toward government, society, and economy may also influence quality of life.

Technology is not integrated into any of the frameworks in the literature. However, given

its overriding impact on society and an individual's life, and that the studied informants

are mostly from the machining and tool and die industries, it is taken into consideration

as well. More details about the relationship between these factors and life satisfaction will

be subsequently discussed.

Background

The present research draws from the data that Chick et al. (1994) collected in a project examining whether quality of life is perceived to be better in rural regions than in urban ones. They embarked on their study in a context of western Pennsylvania machine and tool and die shops. The purpose of their study was to test the general propositions of what they termed the Ford-Pinchot Hypothesis, which states that a decentralization of industry and a return to rural and semi-rural life would increase the quality of life for workers. They selected the machining and tooling industries, which provided a natural laboratory for examination of the Ford-Pinchot Hypothesis because of the demographic changes resulting from the collapse of the heavy steel industry and the relocation of workers from cities to rural and small town areas in western Pennsylvania. In order to investigate the quality of life, Chick et al.'s (1994) study focused on the following variables: life satisfaction, community satisfaction, job satisfaction, leisure satisfaction, environmental values (NEP), dominant social values (DSP), beliefs about the efficacy of technology (VT), and various ethnographic variables. This dissertation builds upon Chick et al.'s study by exploring further details and new research questions through applying a more sophisticated series of statistical methods.

The informants in their study were owners, managers, and employees of machine-tool companies as well as non-machinists in western Pennsylvania. The final sample included machine and tool and die workers from 35 different companies as well as a sample of non-machinists.

The informants were asked to provide information about their life satisfaction, community satisfaction, job satisfaction, leisure satisfaction, individual beliefs concerning statements about dominant social values, commitment to die value of technology, environmental values, and demographic information including age, gender, education, income and residence.

Their study was mainly focused on the descriptive analysis of the machinist sample instead of building any predictive models. My dissertation proposes different research questions and builds models to answer corresponding research questions discussed later.

One group of the sample was composed of machinists in western Pennsylvania, and the original study was designed to examine life satisfaction among members of an industry that, in part, replaced the moribund steel industry of western Pennsylvania. It is necessary to review the background of the machining and tool and die industries that these machinists worked in. However, since technological development has generally widely impacted American people's lives, it is worthwhile to examine attitudes toward technology first.

Technology and the Machine-Tool, Machining and Die Industries

American political writer and historian Harry Braverman (1974) claimed that the machine shop was the cornerstone of industry because the machines of industry itself were built in machine-shops. Given the importance of machine shops and tool and die

shops to the economy of western Pennsylvania, Chick et al. (1994) sought to determine the quality of life afforded to both employers and employees in those industries by virtue of their involvement in them. Therefore, attitudes toward technology formed an important part of Chick et al.'s study.

Attitudes toward Technology

Barbour (1980) claimed that technology can be considered from two opposing view points: "technology as liberator" and "technology as threat." Since technology is a highly relevant feature of the data, it is crucial to thoroughly understand how it pertains to human life. In line with Barbour's claim, the Value of Technology scale applied in Chick et al.'s study considered both positive and negative attitudes toward technology. These two general views on technology are reviewed below.

1. Technology as liberator

Human beings and their societies have been obtaining voluminous benefits from technology since the industrial revolution of 18th century England. As for America, vast resources, a virgin land, the frontier spirit, and immigrants from different countries with distinct technical skills have assured the accumulation of investment capital and accelerated the development of technology (Barbour, 1980).

As Barbour indicated the recent history of technology and its future potentialities suggest that technology brings higher living standards such as faster transportation, new drugs to treat diseases, more advanced hygiene systems, and so on. Secondly, technology offers individuals a broader scope of jobs and locations (e.g., transportation development helps people commute farther). Finally, technology can liberate people from static conventions. For example, by using birth control, people can decide when to have a baby and what size family they want.

2. Technology as threat

The footprints of technology are deeply imbedded in the environment, human beings, and societies. The second major view of technology holds that because diversity and freedom are jeopardized in technological industries, industrialization obliterates individuality and gradually forms uniformity (Barbour, 1980). From an environmental perspective, the goal of technology is to conquer nature. Thus, early development of technology has imposed pollution, degradation, and now, global warming, upon the physical environment (Barbour, 1980).

Regardless of whether it is liberator or threat, technology has a tremendous impact on human life and society. Technology accompanies the evolution of the machine industry, manufacture industry, transportation, entertainment, construction and countless other domains of human lives. The research context of the present study, the machine, tool, and die industry in western Pennsylvania, is, for obvious reasons, intimately bound to technology.

A Brief History of the Machine-Tool, Machining, and Tool and Die Industries

Because over half of the subjects in the Chick et al. study were machinists or tool and die makers, full contextualization demands a description of the machine-tool, machining, and tool and die industries and their impacts on western culture.

1. Machine-tool industry

According to Wikipedia, a machine tool is "a powered mechanical device, typically used to fabricate metal components of machines by machining, which is the selective removal of metal". The term machine tool is usually reserved for tools that "used a power source other than <u>human</u> movement, but they can be powered by people if appropriately set up", (http://en.wikipedia.org/wiki/Machine_tool, 2008). Examples of machine-tools include the drill press, the lathe, the milling machine, and the grinder. Chick et al. (1994) describe the machine-tool as "a machine that is used to make finished parts as well as parts for other machines" (p.9). Machinists use these machine tools to produce precision metal parts.

The American machine-tool industry proliferated in the post-Revolutionary War era (Chick et al, 1994). Young America attempted to stimulate a growing economy through the contemporaneous Industrial Revolution by utilizing European inventions of technology in the United States (Pursell, 1995). Meanwhile, many European immigrants possessed skills in operating machine-tools and the ambition to establish their own enterprises. The impetus for the rise of the American machine-tool industry came

primarily from two sources: the invention of Eli Whitney's cotton gin in 1772, enabling

the easy removal of seeds from short staple cotton, and standardization in the

manufacture of firearms. The shortage of cheap labor made machines imperative and

popular in America (Rolt, 1965, p. 147).

2. Machine shops

Machines shops use the products of the machine-tool companies, such as lathes,

mills, drill presses, or grinders, in order to make a myriad of industrial products and even

the parts for machine-tools themselves (Chick et al., 1994). The machine shops included

in the sample in this study make parts from a wide range of materials, incorporating

metals such as copper, brass, bronze, iron, various steel, titanium, and different aluminum

alloys, as well as plastics, ceramics, and composite materials. The machine-shop occupies

a major place in the transformation of America from a predominantly rural and agrarian

country to an urban and industrialized one (Segal, 1994).

The Machine-Tool Industry in Western Pennsylvania

At the end of the nineteenth century, Pittsburgh emerged as an attractive center

for the machine-tool industry in America since the American steel industry was centered

in Pittsburgh. The production of iron, steel, oil, and coal demanded the use of

innumerable machine-tools. However, because of the rise of the auto industry in the

midwest (Detroit), Pittsburgh's influence in the machine-tool industry diminished in spite of the presence of the steel industry (Chick et al., 1994).

Today there are still numerous machine shops in western Pennsylvania that use machine-tools and cater to the oil, coal and nuclear power industries. Prior to the 1970's, each steel company in western Pennsylvania had its own machine shop, and most of those shops had apprenticeship programs for machinists (Chick et al., 1994).

The Tool and Die Industry

According to the U.S Department of Labor (2006), tool and die companies "produce and repair tools, dies, and special guiding and holding devices that enable machines to manufacture a variety of products we use daily—from clothing and furniture to heavy equipment and parts for aircraft" (http://www.bls.gov/oco/ocos225.htm). Tool and die making differs from machining in that the tools and dies produced are typically used in the production processes of other industries. Car doors, for example, are stamped out of sheet metal using dies. The same is true of beer cans. The vast majority of manufactured consumer products are fabricated (i.e., molded, pressed, punched, extruded, cast, and so on) using tools and/or dies. Products manufactured in this manner are much less expensive to produce than through machining. The tools and dies themselves may be expensive to produce but they are typically used and reused many times. Most tools and dies are machined, usually through grinding.

The Tool and Die Industry in Western Pennsylvania

Tool and die shops are considerably less common in the southern region of the area researched by Chick et al. (1994). Given that the steel industry centered around Pittsburgh was primarily involved in refining a raw material—steel—rather than a finished product, there was less demand for tools and dies. To the north, in the Meadville area, just south of Erie, the tool and die industry developed around Talon, Incorporated, a company that was at one time the largest producer of zippers in the world. The great majority of tool and die workers over the age of 40 (at the time of Chick, et al.'s study) who live in the Meadville area are graduates of the Talon tool and die apprenticeship program.

Estimates by tool and die company owners located in the Meadville area who participated in the Chick et al.'s research suggested that there were between 100 and 200 tool and die shops in the city and the surrounding vicinity. These range from operations with 50 or more employees to garage or basement shops operated in spare time by individuals who are employed full time elsewhere.

All machinists and tool and die makers in the subsequent chapters are specified as machinists for the purpose of simplicity.

Purpose of the Research

This study will explore two major issues. First, what factors can predict an individual's life satisfaction in western Pennsylvania? Second, is a rural quality of life higher than a suburban or urban quality of life? To answer these questions, I will apply descriptive and inferential statistical methods to analyze the data from Chick et al.'s study.

The analyses combine both machinists and non-machinists. In the preliminary analyses, machinists and non-machinists did not show differences with respect to the above research questions although the demographics of two groups are not similar.

Limitations and Delimitations

Limitations

A few factors in this study constitute limitations. First, variables in this study are multidimensional concepts. There are many scales in the literature, and some have been shown to correlate differently with several demographic variables (van Liere and Dunlap, 1981). Consequently, the outcomes might be different if alternative instruments to measure these variables were used.

Second, the machining and tooling companies and workers were not randomly selected because many existing companies were not listed in the Allegheny Regional

Industrial Buying Guide (1990) for sample selection. All of the shops (more than 200)

that were presented in the guide were contacted (a small proportion agreed to participate),

so the sample was chosen based primarily on the willingness to participate. Although the

sample was not random, it appears to have been representative regarding: (a) the type of

equipment used in shops; (b) the size of the shops (one to 50 employees); (c) job shop

versus product line modes of production; and (d) the mix of manual versus Computer

Numeric Controlled (CNC) machine-tools.

A third limitation is that only shops with 50 or fewer shop floor employees were

included. Those shops with more than 50 were often unionized and Chick et al. (1994)

had trouble getting the unions to allow access to workers.

Fourth, as the marital status of the informants was not collected on any of the

surveys, it could not be examined as a contributing factor to the quality of life. Finally, in

order to keep the survey short, environmental values (NEP) were not collected for non-

machinists (Chick et al, 1994).

Delimitations

Geographically, data from Chick et al.'s investigation was limited approximately

to the western third of Pennsylvania in order to match the scope of the project with the

financial resources available. Therefore, the results may only be generalizable to

machinists without unions in western Pennsylvania, whereas the conclusions for non-

machinists may be generalized to a larger population since they were randomly selected.

However, the analyses combine these two groups and, therefore, the results are not generalizable.

Although there are many other industries that are characterized by changing technology, the selection of machining and tool and die industry workers was to the accessibility of this population, the fact that it is an understudied group and, in particular, because Chick et al. felt that it would be a good population with which to test the Ford-Pinchot Hypothesis. These industries represent an alternate occupation for those who might have gone into the steel industry had it persisted. Furthermore, this single occupational group was selected because a sample including individuals from different blue-collar occupations (i.e. machinists, textile workers, coal miners, etc.) would have made measurement of the independent variables relating to technological specialization difficult or impossible.

Non-machinists were also contained in the present study. Therefore, when analyzing the research questions, one variable, *status*, to distinguish machinists and non-machinists was created. If it significantly influenced a participant's life satisfaction, further analyses were conducted.

Chapter 2

LITERATURE REVIEW

As discussed earlier, this dissertation tackles two main questions. First, what factors predict an individual's life satisfaction? Second, is the quality of life better for urban and suburban, small town, or rural residents of western Pennsylvania? Consequently, six primary variables constituted by various factors were measured. The first four are life satisfaction, community satisfaction, job satisfaction and leisure satisfaction. Dominant Social Paradigm (DSP), a fairly comprehensive measure of one's attitudes toward government, society and economy, was also included in this study. The final two sets of variables are Values of Technology (VT) and ethnographic information. Because these variables have more or less association with life satisfaction, the major concern of the research purpose, each variable will be discussed below.

Life Satisfaction

Life satisfaction measures a person's evaluation or appraisal of his or her life taken as a whole (Diener, 2006). In assessing this broad category, life satisfaction integrates various areas of a person's life at a particular point in time. Life satisfaction is

a multi-faceted notion which is constituted by subjective assessment on various domains

of one's life (White, 1985). Many scholars discussed these domains and their influences

on life satisfaction.

One example of a domain included under life satisfaction is location. Davis and

Fine-Davis (1991) argued that location was a significant determinant of life satisfaction

when controlling for age, income and sex simultaneously. The experiences of life in a

city, a town or in the open country are very distinct from each other. Therefore it is

reasonable to extrapolate that the residential environment, local community and breadth

and genres of job opportunities are related to the evaluation of one's life (Campbell,

1981). It is certain that large cities are less sociable than rural communities, and generally

cities are more dangerous than rural areas. Rural residents are closer to nature, which not

only is less polluted, less noisy, and less crowded, but also provides a variety of outdoor

recreational and leisure activities (Campbell, 1981). Tellingly, Mannell and Dupuis

(1996) found strong evidence of positive relationships between activity (physical and

leisure activities) and life satisfaction. Mollenkopf et al. (2004) researched older adults'

quality of life in urban and rural areas of five European countries. The indicators they

used to measure quality of life were housing, mobility, services, cultural experiences,

security in the living area, social environment (social activities and relationships), the

economic situation and health status. They found that given these indicators, both rural

and urban areas have their own advantages and disadvantages.

However, not all scholars agree that location is the primary determinant for life

satisfaction. Iverson and Maguire (2000) surveyed 286 male employees from an open-cut

coal mine in remote central Queensland, Australia. Their study indicated that community

variables and job satisfaction were the two most important factors to affect life

satisfaction. Fernandez-Ballesteros et al. (2001) also showed that physical activity levels,

leisure satisfaction, and social contacts influenced life satisfaction beyond income and

education. Lucas et al. (2004) argued that unemployment status negatively impacted

one's life satisfaction level even after later reemployment. Diener, Tamir and Scollon

(2006) treated life satisfaction as evaluation of subjective well-being that encompasses

work, marriage, community involvement, income, and so on. In their study, determinants

of life satisfaction are social relationships, culture, and demographics. As Diener and

Seligman (2002) suggested, high-quality social interactions lead to a higher subjective

well-being. Married people are happier than single and divorced ones (Diener et al.,

1999). Cultural differences are emerging as important factors to influence people's life

satisfaction (Deiner and Suh, 2003). For example, self-esteem is much more important in

individualist cultures such as that of the US than in collectivistic cultures such as China.

Further complicating this picture, according to Fujita and Diener (2005), life satisfaction

is not stable. Their study found that 24% of respondents changed significantly in life

satisfaction from the first five years to the last five years in their 17-year investigation.

Job Satisfaction

Job satisfaction indicates an individual's general attitude towards his/her job

(Brooke, Russell, and Price, 1988). Andrews and Withey's (1974) findings from a

national sample of adults illustrated that, even after the removal of variance redundancy

with other predictors, job satisfaction has a significant role in overall life satisfaction. Work plays an important role in the general well-being of individuals (Campbell, 1981). Regardless of job level, a strong correlation exists between job satisfaction and life satisfaction (Kantak, Futrell, and Sager, 1992).

An abundant literature provides indicators of job satisfaction or correlations of job characteristics and perceptions with job satisfaction. Seashore and Taber (1975) outlined a comprehensive and relatively inclusive map of indicators that may influence one's job satisfaction. They classified the factors that correlate with job satisfaction into eleven types: political and economic environment (e.g., unemployment rate); occupation (e.g., prestige, power); organization environment (e.g., climate, promotional opportunity); job and job environment (e.g., pay, noise); demography; stable personality (e.g., values, needs, interaction style); abilities; situational personality (e.g., motivations, preferences); perceptions, cognitions and expectation; transient personality traits (e.g., anger, boredom); and relational concepts (e.g., interaction, feedback loop). The impact of these variables on job satisfaction are reflected in three ways: individual responses to satisfaction/dissatisfaction (e.g., withdrawal, work performance), organizational responses to satisfaction/dissatisfaction (e.g., quality, productivity), and societal responses to member satisfaction/dissatisfaction (e.g., GNP, illness rates, quality of life, etc.). Roy (2003) discovered that informal interaction in a small group of factory machine operatives during his two-month observation influenced these workers' job satisfaction because informal interaction among them offered a platform for adjusting their dissatisfaction with their jobs.

Furthermore, Dormann and Zapf (2001) showed that personality, not organizational conditions, influenced the stability of job satisfaction across time. Relationships have not only been detected between job satisfaction and job performance (Hollinger and Clark, 1982), but also between job satisfaction, absenteeism, and turnover (Martin and Miller, 1986). Griffin, Patterson and West (2001) found a mediational relationship between teamwork, supervisor support and job satisfaction. Pollnac and Poggie, Jr. (2006) examined job satisfaction through the criteria of basic needs, self actualization in the workplace and control of work for different groups of commercial fishers. They found some differences among charter boat operators, plant workers, and processing workers. Meanwhile, crew status and size were also related to job satisfaction. A person's work values re thought to be connected to job satisfaction (Knoop, 1994). Knoop determined five sets of work values through factor analysis: intrinsic work-related, intrinsic work-outcome, extrinsic job-related, extrinsic job-outcome, and extrinsic people-related. The first two factors accounted for nearly all variance in job satisfaction. In the study of job perception and job satisfaction, Wong, Hui, and Law (1998) demonstrated the reciprocal relationship between job perception and job satisfaction. Many of these factors were included in the job satisfaction scale of the present study.

In contrast, some factors trigger one's job dissatisfaction. Quinn et al. (1973) reported that job dissatisfaction is significantly associated with: (1) life dissatisfaction, (2) low self-esteem, (3) depression, (4) psychosomatic illness symptoms, (5) work-related fatigue, and (6) participation in off-job recreational, political, and religious organizations. Sheppard and Herrick (1972) found associations between job dissatisfaction and extremist political voting behavior. French and Caplan (1972) discussed correlations

between job dissatisfaction and an index of physiological heart disease risk factors. Heaney, Israel and House (1994) argued that working conditions depicted as uncertain and insecure incurred job dissatisfaction and physical symptoms among automobile workers. Marmot et al. (1997) indicated that low job control contributed to the incidence of coronary heart disease. Bogg and Cooper (1995) conversely found that poor pay and work conditions as well as workers' perceptions that they had little control over their jobs induced job dissatisfaction, as well as mental and physical health problems in senior UK civil servants.

Researchers also have interest in the relationship between job satisfaction and non-work domains, including leisure. Wilensky (1960) summarized three basic theories of the relationship between work and leisure: compensation, spillover and segmentation. Compensation theory asserts that leisure choices are the opposite of one's work activities to make up the needs and wants that are not satisfied in work (Chick and Hood, 1996; Herbert, 1987; Kando and Summers, 1971; Kelly, 1976; Near, 1980). Spillover theory posits a carry-over effect from work to leisure. According to the spillover theory, one's choice of leisure is an extension of interests and attitudes toward work (Chick and Hood, 1996; Kornhauser, 1965; Meissner, 1971; Rousseau, 1978; Tait, Padgentt, and Baldwin, 1989). Segmentation theory holds that work and leisure are thoroughly unrelated spheres (Banner, 1985; Bacon, 1975; Champoux, 1979; Herbert, 1987; Kabanoff, 1980; Near, Rice and Hunt, 1980; Parker, 1983; Roberts and Cosper, 1987; Rousseau, 1978). Finally, a fourth perspective, held by some researchers, proposes that work and leisure may both influence each other, as opposed to work being primary, as in the compensation and spillover theories (Chick and Hood, 1996). This theory was tested using the same data as

the present study. Chick and Hood found that machinists recreate with machines more than would non-machinists and concluded that work and leisure interests and attitudes inter-animate one another.

Many scholars have taken up the question of the relationship between work and leisure. Champoux (1979) claimed that the results of his study do not support any of the three traditional theories. Some studies found a compensatory relationship while others may provide evidence for spillover or segmentation theories. Elizur (1991) defined two facets in his study, namely behavior modality (instrumental, affective, and cognitive) and social environment (work and home). He found a compensatory relationship between work and home in the instrumental and cognitive items and yet segmentation in the affective items. Tai, Padgett, and Baldwin (1981) found evidence in support of the spillover theory. Kirchmeyer (1992) argued that through active involvement in non-work domains, such as family, recreation, and community, workers could relieve the strains of work, gain contacts and information valuable to work, and develop useful skills and perspectives for work. Cohen (1997) claimed that nonwork domain variables were saliently related to withdrawal cognitions. Watkins and Subich (1995) indicated that because work is inextricably woven with other aspects of life, it is hard to measure work satisfaction accurately. Even though researchers are not able to fully determine the extent to which job satisfaction and leisure are related, most scholars agree that work and leisure do influence each other in some fashion.

Beyond the factors and relationships discussed above, rural and urban differences are believed to cause certain differences in job satisfaction. Fossum's (1974) study shows that subjects with a rural socialization are inclined to be more satisfied with their pay and

with performing a repetitive task than urban socialized subjects. Although antecedents

and consequences of satisfaction have been researched across many occupations,

industries, and regions, the consensus has not been reached (Mottaz and Potts, 1986).

Mottaz and Potts (1986) suggested that existing research does not permit any firm

conclusions about the causes and consequences of job satisfaction.

Community Satisfaction

Community is an interactional structure through which residents fulfill needs and

pursue interests (Wilkinson, 1991). Community satisfaction can be determined by

"subjective assessments of the community as a place to live, degree of emotional

attachment to the community, or by estimates of the community future" (White, 1985;

p.584). As indicated by Campbell (1981), the community in which people live influences

their life very much because the school system, local taxes, collection of garbage, police

protection, parks and recreation resources, public transportation, and so on are entangled

with residents' daily life. Fried also (1984) discusses that fact that, in his study, although

there were socioeconomic status and other variations, community satisfaction seemed to

be an overridingly important factor of life satisfaction. Theodori (2001) found that the

satisfaction with the community and attachment to the community were associated

independently and positively with individual well-being.

Experience of community has been structured in different ways and measured by

different indicators. Davies (1945) discovered that community satisfaction is unrelated to

age or sex, is moderately associated with intelligence, and is strongly related to community size. Fessler (1952) developed a forty-item scale for determining community solidarity, focusing primarily on institutionalized behavior in communities. Miller and Crader (1979) proposed economic and interpersonal domains as indicators of community satisfaction. Fried (1984) structured four different dimensions of community satisfaction: the immediate residential environment of home and neighborhood, the local availability and ease of access to alternative resources and services, local interpersonal interaction, and the community in the sense of providing services and with respect to its responsiveness to citizens.

Scholars have constantly searched for the factors that may play a role in one's community satisfaction. Allen and Beattie (1984) evaluated the role of recreation in community satisfaction by dividing community satisfaction into satisfaction with health and safety, public administration, community involvement, environment, recreation, economy and education. They found that the economic factor was the most important, while community involvement was the least important. Bardo (1984) predicted community satisfaction by the role of environmental perception based on residents' feelings of belongingness within a neighborhood area. He found that the relationship among community satisfaction, physical environmental variables, and sociodemographics was correlational as opposed to causal.

In addition, various studies investigated the subjective assessment of community attributes in relation to community satisfaction (e.g, Marans and Rodgers, 1975; Goudy, 1983; Sofranko and Fliegel, 1984). Sociodemographic factors such as age (Campbell, 1976; Filkins et al., 2000), income and occupational status (Bradburn, 1965), gender

(Filkins et al., 2000), education (Campbell et al., 1976; Filkins et al., 2000; Marans and Rodgers, 1975), and family size (Miller and Crader, 1979) were substantially related to community satisfaction. When income was controlled, country residents expressed slightly higher levels of community satisfaction than did town or urban dwellers (Crider, Willits and Kanagy, 1991). Furthermore, Prezza and Costantini (1998) also found that measures of a sense of community and life satisfaction were higher in small and rural communities than in larger urban communities. Filkins, Allen and Cordes (2000) suggested that residents could reside in smaller, rural communities to experience the quality of life benefits that accompany a rustic lifestyle. With the development of technology, communication and transportation, people have more choices to stay in a rural community. For example, Brown (1993) believed that improvements in transportation and communication permitted the separation of residence and place of employment, thus providing residents more options in terms of recreation, shopping, and services and decreasing the attachment to their local community (Goudy and Ryan, 1982; Pinkerton et al., 1995).

Rural and urban communities differ in many respects, such as community size, quality of schools and medical facilities, and availability of other resources. Miller and Carder (1979) found significant differences between urban and rural areas in satisfaction with community. Campbell (1981) suggests that the larger the community where people live, the less likely they are to rate their life as satisfying. He summarized the surveys asking people living throughout the country where they would choose to live if they had a choice and found that residents from large cities most often indicated that they would prefer to live in more rural areas. If people actually followed their stated preferences,

urban areas would lose half their population and rural areas would gain more than double their current population. Bruning, Langenhop, and Green's (2004) study disclosed that community relations are positively associated with city homeowners' evaluation of life satisfaction in urban residence.

The present research incorporates community satisfaction as an important domain of one's quality of life. Furthermore, regional differences appear to impact one's level of community satisfaction and therefore may exert influence on life satisfaction as well. One of the goals of this dissertation is to determine if quality of life differs by region.

Leisure Satisfaction

The connection between participation in leisure and recreation and quality of life has captivated researchers' attention for decades; however, the findings are not always consistent and sometimes even contradict each other (Baker and Palmer, 2006).

Leisure satisfaction is considered an essential component of an individual's sense of well-being by many researchers (Argyle, 1996; Murphy et al., 1991). In fact, a great number of studies have shown a positive relationship between leisure/recreation participation and quality of life (Lloyd and Auld, 2002; London et al., 1977; Moller, 1992; Unger and Kernan, 1983). There is also substantial literature regarding the positive benefits of leisure participation, such as relaxation, self-improvement, family functioning, and cultural awareness (Csikszentmihalyi, 1990; Driver, Tinsley and Manfredo, 1991; Edginton et al., 2002; Hills and Argyle, 1998; Murphy et al., 1991). Additionally, leisure

satisfaction has been associated with psychological health (Pearson, 1998). Ragheb (1975) argued that family leisure satisfaction correlated with family cohesiveness. Ragheb and Griffith's (1982) findings from the regression with a set of six variables (leisure satisfaction, satisfaction with standard of living, satisfaction with health, satisfaction with family relations, leisure participation, and marital status) show that leisure satisfaction accounted for the greatest amount of the variance in life satisfaction.

Nevertheless, there are a few studies which present conflicting results on the importance of leisure to quality of life (Campbell, 1981; Cummins, 1996; Flanagan, 1978; Marans et al., 1980). Some of them found a negative relationship between recreation participation and quality of life (Allen, 1991), or found it not as significant as other domains of quality of life in improving life satisfaction (Campbell, 1981; Cummins, 1996; Baker and Palmer, 2006).

Given this debate, several researchers attempted to divide the measurement of leisure into distinct spheres such as place-centered indicators (e.g., the frequency of leisure facility or resource usage) and person-centered criteria (e.g., satisfaction with leisure experience). It has been argued that the value of an activity is determined by not only the frequency of engagement, but also the attitude and state of mind of the participants (Lloyd and Auld, 2002). Russell (1987, 1990) found that the frequency of participation in leisure activities is not significantly related to life satisfaction among retirees, while satisfaction with leisure activities does significantly and positively influence life satisfaction. Ragheb and Tae (1993) found that a person's attitude toward leisure had a strong and positive effect on both the extent of leisure participation and the degree of satisfaction derived from leisure engagement. Brown, Frankel ad Fennel (1991)

found that leisure satisfaction was more critical to quality of life enhancement than the specific leisure activity in which a person was engaged. Lloyd and Auld's (2002) research supported previous claims that while leisure satisfaction was the best predictor of quality of life, place-centered attributes of leisure failed to impact quality of life. Furthermore, they found that people who engage in social interaction more frequently and who are more satisfied with the psychological benefits derived from leisure experience higher levels of perceived quality of life. One interesting counterexample is that no matter what subjective (leisure satisfaction) or objective (frequency of participation) indicators are examined, people positively value natural or outdoor leisure resources and activities (Yuen, 1996).

Dominant Social Paradigm (DSP)

Environmental concerns have been prominent in academic research for the past thirty years (Kilbourne and Polonsky, 2005). Though interest in the subject declined in the 1980s, it has begun rising precipitously recently (Pickett et al., 1993). To examine social responses toward environmental issues, Pirages and Ehrlich (1974) coined the term "Dominant Social Paradigm" (DSP).

The DSP was defined by Milbrath (1984) as "…the values, metaphysical beliefs, institutions, habits, etc. that collectively provide social lenses through which individuals and groups interpret their social world" (p. 7). Cotgrove (1982) suggested that a paradigm was dominant due to its being possessed by dominant groups who used it to legitimize

and justify prevailing institutions. Both Cotgrove and Milbrath discerned three

dimensions within the DSP construct: the political, economic, and technical (Kilbourne,

Beckmann and Thelen, 2002). These dimensions were confirmed by Dunlap and Van

Liere (1984). In the present study, the modified DSP by Dunlap and Van Liere (1984)

was selected as the scale to measure DSP values. However, all three of these studies were

empirically driven as opposed to theoretically conceptualized. DSP is introjected within

society so that its directions and justifications are accepted as truth requiring no

examination (Kilbourne, 1998). Therefore, the DSP has been theoretically conceptualized

as a two dimensional construct with three components in each dimension since

Kilbourne, McDonagh and Prothero's work (1997).

The first domain is the socio-economic, which contains the political, economic,

and technological components. The political dimension is based on Locke's political

liberalism (1963). He proposed that all that is created by a person's labor rightfully

becomes their private property, to be protected by the government. The economic

dimension directly follows the political dimension and is centered around individualism,

limited government control, and the accumulation of property, implying the pursuit of

material gain as the meaning of life (Kilbourne, 2006). This model assumes that the

maximum social good is achieved through the sum of individual goods. Thus, continuous

economic growth is portrayed as necessarily positive because the more we as individuals

have, the better off we as a society are. (Kilbourne and Polonsky, 2005). The economic

aspects of one's life are considered the most significant in terms of quality of life. More

and more individuals strive to enhance their perceived well-being through consumption

(Kilbourne, 2006). Finally, the economic leads to the technological: reinforcing material

well-being requires environmental exploitation and technological advance. According to Eliade (1962), the goal of science and technology is to master them and improve upon nature. Within a technically mediated society (Winner, 1986), technical efficacy and maximum output form the foundation of economic organization. Kilbourne and Beckmann (2002) also suggested that technology mediates the relationship between individuals and society impacting upon social, economic, and political relationships. The technological dimension is the mode of thought that is most characteristic of industrial society (Postman, 1993), and thus technology plays a fundamental role in the DSP of western societies because technological progress is equated with material progress (Bury, 1932).

The second domain is the cosmological, containing organization (human position in nature), structure (atomism-holism), and function (cooperation-competition) as the predominant character of the cosmos. The structural dimension (atomis-holism) refers to beliefs about the composition of the world. All the elements of nature are linked like parts of a machine. The functional dimension indicates the fundamental beliefs within the DSP, individual competitiveness and the human competition with nature, and they motivating the prevailing conception of the role of humans in nature. The human position dimension illustrates two perspectives. One is anthropocentrism, which considers humans as a separate from and morally superior to the rest of nature. The second dimension is antipodal, also called ecocentrism, which regards nature as having inherent value regardless of its usefulness to humans (Merchant, 1980; Purser, Park and Montuori, 1995; Shrivastava, 1995).

In relation to the quality of life/life satisfaction, Morris et al. (1995) provided a series of quality of life domains including economic, health, technological, work, institutional, and ecological domains which were adopted by Kilbourne (2006) to examine the relationship between DSP and quality of life. Echoing the dimensions of the DSP, Kilbourne only selected economic, technological, institutional, and ecological domains to discuss. His results suggested that economic and political liberalism and technological optimism shape the basis for the DSP of western societies and this contributes to the quality of life. This association between the environment and quality of life is a function of a DSP within which progress is identified as increased capacity to consume material goods and therefore maximize the perceived well-being. In Kilbourne and Polonsky's (2005) study, the results showed that one's belief in the DSP has a negative effect on both environmental attitudes and perception of change necessary to ameliorate degradation of the environment.

Instead of the DSP, Chick et al. (1994) used the New Environment Paradigm (NEP) to measure individual attitudes towards the environment. However, because the NEP was applied to none but machinists, it was removed from the current study given the purpose of the research. Nonetheless, it is helpful to briefly review the NEP. It proposes a shift in people's perceptions about the relationship between humans and nature from the Dominant Social Paradigm to a New Environment Paradigm (NEP) (Bostrom et al., 2006). In formulating the NEP, Dunlap and van Liere (1984) developed scales to measure both pro- and anti-environment attitudes and concerns. NEP measures a set of generalized beliefs and values about human-environment relations. It focuses on beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth

for human societies, and humanity's rights to rule over the rest of nature (Dunlap et al., 2000). However, the new environmental paradigm has been questioned. For example, although Dunlap and van Liere (1978) created the NEP scale as a one-dimensional framework, continuing research has revealed three dimensions: balance of nature, limits to growth, and relations with nature (Edgell and Nowell, 1989; Gooch, 1995). Lalonde and Jackson (2002) found that the NEP scale is limited with respect both to anachronistic wording of items and its inability to capture people's increasingly thorough understanding of the nature, severity, and scope of environmental problems over the last two to three decades. Perhaps yet another newer environmental paradigm is on the rise.

Value of Technology (VT)

Values and attitudes towards technology are influenced by a variety of factors. Taviss (1972) found that occupation and education were associated with attitudes toward technology, but age, gender, marital status, and religion were not. In general, the more formal education people have, the more positively they regard technology. However, Goldman, Platt, and Kaplan (1973) noted that the professional literature lacked a measure of dispositions toward machinery, so they collected their own data via an 80-item questionnaire. The study utilized a sample of university students with differing majors to examine attitudes toward technology. Mechanical curiosity was the only dimension of attitudes toward technology that differed across majors. Science majors, for example, are more intrigued by mechanical interests and activities than other majors. Page, Orr, and

Nash (1981) investigated high school students' attitudes toward technology in Britain using a four dimensional scale: (1) attitudes towards technology, (2) attitudes towards industrial careers, (3) attitudes towards technical training, and (4) attitudes towards technology as a school subject. All of these measures were designed and used in the 1970s and there is little evidence of their application in recent years.

With the development and popularity of technology, people's awareness about technology has gradually evolved. In a comparison study between men's and women's attitudes toward computer technology, Ray, Sormunen, and Harris (1999) found that females held more positive attitudes than males regarding the ability of computers to make users more productive. Perhaps surprisingly, women also displayed greater comfort in using computers than men. Other research has detected concern about the risks of technology. For example, people have expressed concerns about hazards such as fluorine which is a product of modern technology and the potentially devastating uses for nuclear technology (Martin, 1989). Frewer, Howard and Shepherd (1998) found that individuals who do not have positive attitudes towards technology are most likely to favor green alternatives, which have far less environmental impact. Public acceptance of technology is leveraged by the perception of the benefits and risks of a particular technology.

With respect to the background of this study, Braverman (1974) proposed that automation stole trade knowledge from skilled tradesmen, transferred it to the machines themselves, and thus eliminated the need for skilled labor. Therefore, highly skilled craft workers could be replaced by low skilled machine tenders and technology necessarily plays a vital role in machinists' lives. The scale outlined by Taviss (1972) consists of items which measure attitudes toward occupational technology in terms of machines and

their presumed consequences on society which will be more concretely discussed in
Chapter three. Because of its attention to the occupational effects of technology, Taviss's
instrument was used in the present study to gauge the worker's commitment to the value
of technology.

Demographic Variables

In the present study, ethnographic variables such as age, gender, education and
income were considered.

Age is recognized as a critical factor to the quality of life (Campbell, 1981). At
different life stages, people have distinctive needs and wants in relation to well-being.
Bradburn (1965) found that young people reported both more positive experiences and
more negative experiences than older people. In addition, satisfaction with health is
surely related to age (Campbell, 1981). Taken together, sex, age and socioeconomic
status are effective predictors of quality of life (Lloyd and Auld, 2002). Seashore and
Taber (1975) summarized that sex, age, educational achievement, job tenure, region of
residence, and one's father's occupational level are all linked to job satisfaction. Pearson
(1998) argued that occupational level affects job satisfaction, leisure satisfaction and
psychological health. White (1985) found that income and race were particularly
important in the regression analysis for community satisfaction. Income, home
ownership, and attendance at religious meetings are also relevant to the increased levels
of perceived well-being (Theodori, 2001). Dierner and Bisas-Diener (2002) also

suggested that lower income may induce lower subjective well-being. In the present study, income, gender, education, regional variables, and age are considered.

The literature reviewed above illustrates that job satisfaction, community satisfaction, leisure satisfaction, attitudes toward the government, society, and economy (DSP), and values of technology (VT) play a certain role in overall life satisfaction. Demographic variables such as those discussed above may also contribute to one's life satisfaction. Consequently, these variables are included in the present study. Discussions of the concrete scales used to measure each of these dimensions follow in Chapter 3.

Chapter 3

Research Methods

Sample

The initial informants in this study were owners, managers, and employees of machine-tool companies in western Pennsylvania. The companies were in a geographical area about 40 miles wide and 90 miles long stretching from Pittsburgh to just north of Meadville. Companies were selected from: (1) the *1990 Greater Allegheny Regional Industrial Buying Guide, Edition 9*, Machine Work - General Contract, and Machine Work - Precision sections; (2) *1989 National Tooling and Machining Association Buyers Guide*, Pennsylvania Northwestern and Pittsburgh sections; and (3) referrals from several company owners. Because this geographical area provides a natural laboratory, imperative for Chick et al's goal of evaluating the Ford-Pinchot Hypothesis, this particular area was ideal for this study. Furthermore, the Principal Investigator (PI), Dr. Chick, has done previous research in the area, both with respect to machine-tool shops (Chick and Roberts, 1987) and area residents (Roberts and Chick, 1979, 1984; Chick and Roberts, 1986, 1989, 1990; Chick, Roberts and Romney, 1991). Dr. Chick also worked in the area as a machinist for four years in the early 1970's. Therefore, this particular area was both ethnographically familiar and able to provide the contextual opportunity to test

the primary hypothesis of the research project.

According to Chick et al. (1994), in June 1990, letters were sent to 225 companies listed in the *1990 Greater Allegheny Regional Industrial Buying Guide* asking company owners and managers to participate in the study. After an initial response rate of eight percent (18 companies), a follow-up letter was sent one month later. By mid September, 29 companies had agreed to participate in the study. Additional companies were contacted during a field trip to the region in mid September. These included companies from the original list of 225 companies who had not yet responded and other companies listed in the *1989 National Tooling and Machining Association Buyers Guide*. Five more companies were recruited during the field trip, and six shops were recruited during a second field trip in mid October. By mid November, 1990, following a third field trip, 51 companies had agreed to participate in the study. The companies combined employed approximately 760 machine-tool workers. During the course of the research, sixteen companies dropped out of the study, leaving a total of 35 companies with a combined total of approximately 620 machine-tool workers. Of the companies that dropped out, six went out of business entirely, one filed for Chapter 11 protection and wished to discontinue participation, and the others chose not to continue for unspecified reasons.

Chick et al.'s (1994) final sample included 302 machine-tool workers from 35 machine-tool companies. Although 316 individuals completed questionnaires, a response rate of 51 percent, 29 of those individuals were in managerial or secretarial positions with no reported contact with machine-tools and therefore were excluded from the analysis. Their study required that more or less equal numbers of companies and employees from urban, suburban, small city, small town, and rural areas be compared in terms of the

primary variables of interest. Employing similar techniques to investigate machinists and tool makers, Chick et al. (1994) collected information from 488 individuals in western Pennsylvania who were not machinists or tool makers to form a normative sample to be compared to the machinists and tool makers.

Chick et al.'s original study was about machinists and tool and die makers, whereas the present study combines machinists, tool and die makers, and non-machinists, a comprehensive sample not restricted to a particular industry or professions.

Data Collection

Interviews

Throughout the course of their research, Chick et al. (1994) designed and conducted interviews with both employers and employees of the machine-tool companies in the sample. Interviews were conducted by the PI (Dr. Chick), a graduate assistant, and by an interviewer who was a former machinist intimately familiar with western Pennsylvania and the industry. However, the data from the conducted interviews will not be discussed in this dissertation for that is not pertinent to the purpose of research.

Surveys

Five surveys, including an initial request for participation, were sent out to companies in the target area. The second questionnaire, sent to the company owner,

requested preliminary information about the nature of the machine-tool company. The

third questionnaire, distributed to shop floor employees, gathered demographic

information and data on the variables of interest to the study. A random sample of

residents in western Pennsylvania completed a fourth survey, collecting normative data

with which the data from machine-tool workers could be compared. Finally, an

experience sampling survey was completed in one machine company in order to

determine workers' feelings about various aspects of their jobs. To solve the research

questions in the present study, the data collected from survey 3 and survey 4 (pertaining

to the shop floor employees and the non-machinist residents of western Pennsylvania)

will be analyzed. The distribution and content of each of the questionnaires is discussed

in more detail below.

Survey 3

The third survey was directed at employees and conducted with the explicit

permission and assistance of company owners or managers. After the company owners or

managers returned survey 2, the researchers contacted them to ask if they would be

willing to distribute a survey to their employees. All agreed to do so (although one

apparently failed to do so; no employee responses were received even though the

company was one of the largest, with nearly 50 employees). For those companies

composed only of the owner-operator, that individual was asked to complete the

employee questionnaire in addition to the company survey.

Prior to the official mailing, the third questionnaire was pilot tested using a group of machine-tool employees at the University of Illinois at Urbana. After recruiting seventeen shop floor workers from five shops on the University campus, in April of 1991, the questionnaires were delivered to each shop foreman to be retrieved one week later. The researchers instructed the foreman to ask each individual to complete the questionnaire and note, in the provided comment section, any problems or ambiguities with any of the questions. The machinists did not report any difficulty completing the questionnaire and did not identify any problems with item interpretation.

In September 1991, packets of questionnaires were sent to each company for distribution to all shop floor employees. The contact person at each shop was instructed to distribute the questionnaire packets to employees and request that each employee complete the questionnaire at home and return the questionnaire using the return addressed, postage paid envelope accompanying the questionnaire. Each packet also contained a cover letter briefly explaining the project and requesting the assistance of the metalworkers. The questionnaire was designed to measure personal estimations of the percentage of work performed on various types of machines, life satisfaction, community satisfaction, job satisfaction, leisure satisfaction, the strength of individual beliefs concerning statements about dominant social values, commitment to the value of technology, environmental values. It also gathered demographic information, including age, gender, education, income, and residence (see Appendix A).

Survey 4

In order to compare data from the machine-tool workers to a normative sample, it was necessary to collect data similar to that obtained in survey 3 from a random sample of residents of western Pennsylvania. In the fall of 1992, 1,400 survey instruments (Appendix B) were mailed to a random sample of western Pennsylvania residents stratified by ZIP code in order to match as closely as possible the sample of machine-tool workers. By February 10, 1993, residents had completed and submitted a total of 488 responses.

Survey 4 was the same as survey 3, except that questions specific to the machine-tool occupation were eliminated, as were the NEP scale and the leisure satisfaction scale. The NEP scale was eliminated in an effort to keep the questionnaire as short and simple as possible; the leisure satisfaction scale was eliminated because it was regarded, after its use and evaluation in regards to survey 3, as having poor validity. The results section discusses both of these issues in detail.

For the purposes of the current research and analysis, data from surveys 3and 4 were extracted from Chick et al's original data set. The breakdown of the total sample in terms of employment status is given in the results section of this report. Therefore, given the purposes of the present research, only the data combining surveys 3 and 4 will be analyzed in this dissertation to explore predictors of life satisfaction.

Variables and Their Measurement

The principal variables used in surveys 3 and 4 are described in the following section. All the scales are the same as those used in the surveys Chick and his colleagues adopted in their 1994 study.

Life Satisfaction

In this project, life satisfaction was measured using a modified version of the 16 item life satisfaction scale developed by Warr, Cook, and Wall (1979) and shown in Appendix A ("How do you feel about various aspects of your life at the present time"). Modifications to the original scale included changing or deleting certain words from their British original to their American equivalents (e.g., "The house or flat that you live in" was changed to "The house that you live in" and "Freedom and democracy in Britain today" was changed to "Freedom and democracy in the United States today"). One item was also added to the original scale: "Your recreation." Therefore, the scale had 17 rather than the original 16 items. Responses were gathered using a 5 point Likert-type scale (1 = very dissatisfied, 2 = dissatisfied, 3 = not sure, 4 = satisfied, 5 = very satisfied). The life satisfaction scale used in this study has no items directly related to work which is specially stated in the job satisfaction scale (Warr, Cook, and Wall, 1979).

Warr, Cook, and Wall (1979) found this scale to have satisfactory psychometric properties when used with samples of blue-collar workers in the United Kingdom. Cluster analysis of the scale provided three subscales: (1) "satisfaction with personal life" (items 5, 6, 9, and 11), (2) "satisfaction with standards and achievements" (items 7, 8, 12,

13, 14, 15, and 16), and (3) "satisfaction with life style" (items 1, 2, 3, and 4). Item 17,

"Taking everything together, your life as a whole these days" was regarded as a separate

single-item scale by Warr, Cook, and Wall (1979). They reported that coefficient alphas

for the total (summed) scales, 1, 2, and 3 were 0.78, 0.59, and 0.81, respectively.

Unfortunately, after their work, few additional studies on blue-collar workers (or workers

with similar social status, such as machinists) used this scale for measuring life

satisfaction.

Job Satisfaction

Job satisfaction was measured using a second scale developed by Warr, Cook, and

Wall (1979). They developed a 15-item scale with one additional global item ("Taking

everything into consideration, how do you feel about your job as a whole?"). To these,

Chick et al. added two additional items from a Perceived Intrinsic Job Characteristics

scale, also developed by Warr, Cook, and Wall (1979). In Appendix A, these two

additional items are those numbered 16 and 17 under the heading "How do you feel about

your job these days?" Using a sample of blue-collar workers in Britain, Warr, Cook, and

Wall (1979) found that this scale was comprised of two subscales (plus the additional

single-item scale), the first labeled "intrinsic job satisfaction" (items 2, 4, 6, 8, 10, 12, and

14) and the second labeled "extrinsic job satisfaction" (items 1, 3, 5, 7, 9, 11, 13, and 15).

Warr, Cook, and Wall (1979, p. 136) pointed out, though, that "... the full set of items

could also be viewed at a different level in terms of three other clusters." The first of

these alternate clusters they named "job itself intrinsic satisfaction" (items 2, 6, 8, and 14)

the second "working conditions extrinsic satisfaction" (items 1, 3, 5, 13, and 15), and the third "employee relations satisfaction" (items 4, 7, 9, 10, 11, and 12).

With respect to reliability, a summation of the 15 items had an alpha coefficient of 0.85 while the subscales for intrinsic and extrinsic job satisfaction had alpha coefficients of 0.79 and 0.74, respectively (Warr et al., 1979). If viewed in terms of the three different clusters of items that Warr et al. (1979) identified, alpha reliabilities were 0.76, 0.60 and 0.80, respectively. Warr et al.'s (1979) scale has been widely adopted by researchers who support the application of the scale by the evidence of their own distinct studies (Cordery, Mueller and Smith, 1991; Morrison, 2004; Simoens and Scott, 2002). For just one example, Griffin et al. (2001) used the scale to examine job satisfaction and found the reliability to be above 0.75. Dormann, Fay, Zapf and Frese (2006) sorted eight items from the original scale and found that the average reliability was about 0.78.

Community Satisfaction

Chick et al. (1994) measured community satisfaction using a 12 item scale, of which the first 11 are taken directly from Miller and Crader (1979). The final additional item is a global question: "In general, how satisfied are you with where you live?" This particular scale divides community satisfaction into two dimensions, "economic satisfaction" and "interpersonal satisfaction" (Miller and Crader, 1979). Miller and Crader found that rural residents had higher levels of satisfaction than urban residents on the interpersonal level, but that urban residents were more satisfied financially than rural residents. These relationships held when various controls for personal characteristics

were used. The unique division of the scale makes it particularly appropriate for use in this study, given the interest in work and interpersonal factors in urban, rural, and mixed areas. Alpha reliability coefficients for the interpersonal and economic subscales were 0.68 and 0.71, respectively (Miller and Crader, 1979). Crider, Willits, and Kanagy (1991), in their study comparing country life and city life in relation to community satisfaction and happiness, used Miller and Crader's scale. Wozniak, Draughn, and Knaub (1993) also applied the scale to probe what domains influence the subjective well-being of farm men and women.

Leisure Satisfaction

Leisure satisfaction was measured with a modification of the short version of Beard and Ragheb's (1980) leisure satisfaction scale. The original scale contained six subscales: psychological, educational, social, relaxation, physiological, and aesthetic domains (Siegenthaler and O'Dell, 2000). The scale evaluates the extent to which individuals feel that their needs are met through their leisure activities (Trottier et al., 2002). In the present study, the leisure satisfaction scale has 20 items categorized into five subscales: "cognitive" (items 1- 4), "learning" (items 5 - 8), "social" (items 9 - 12), "physical" (items 13 - 16), and "relaxation" (items 17 - 20). Beard and Ragheb's scale was modified in that the term "recreation" was substituted for "leisure," in response to evidence from interviews suggesting that many in the population under study, workers in the machine-tool industry, view "leisure" as an upper middle or upper class phenomenon,

not something that they themselves experience or participate in. On the other hand, "recreation" is part of their common parlance and understanding (Appendix A).

Although the Beard and Ragheb (1980) scale is commonly used in the measurement of leisure satisfaction, it appears to lack face validity inasmuch as none of the questions actually refers to satisfaction in any way. Responses to each of the 20 statements are on 5 point Likert-type scales ranging from "Almost never true" to "Almost always true." "True," in this case, refers to whether or not the statement in question accurately describes the informant. However, the informants are never asked whether or not what is referred to in these statements, which may describe them with greater or lesser accuracy, is satisfying to them. The scale assumes that the researchers know which statements the informants will want to be true or false, what truths about their lives are more or less satisfying to them. This criticism has not appeared elsewhere in the literature on leisure satisfaction and only became apparent in this investigation after initial analyses of the data from the survey of machine-tool workers. For this reason, the instrument was not included in the survey of the general population of western Pennsylvania. In any case, the life satisfaction instrument (described above) has one item that asks about leisure satisfaction and one that refers to recreation satisfaction. A third item asks about social life which is also pertinent to leisure satisfaction. As will be noted in the results section of this dissertation, these three items appear to comprise a satisfactory measure of the construct of leisure satisfaction.

The measurement developed by Ragheb and Beard is widespread and many claim that it is useful in numerous studies (Breg, Trost, Schneiger and Allison, 2001; Garton, Harvey and Price, 2004; Lloyd and Auld, 2002). Ragheb and Tate's (1993) study of

leisure participation, attitude, motivation and satisfaction obtained a reliability of 0.92 for the shortened leisure satisfaction scale. Siegenthaler and O'Dell's (2000) instrument to measure leisure satisfaction was modified from Ragheb and Beard's scale and attained 0.96 reliability. Unlike many others, this scale has been examined in different cultures, as well. Lu and Hu (2005) explored the relationships among personality, leisure involvement, leisure satisfaction and happiness in a representative sample of Chinese university students in Taiwan. A Cronbach alpha of 0.92 indicated a high reliability for this instrument. And, indeed, Ngai (2005) also found the scale to be highly reliable among people in Macao, China.

However, reliability does not imply validity. After Chick et al. (1994) collected their data and compared the leisure satisfaction component extracted from the life satisfaction scale with the information from the Beard and Ragheb scale, the two did not correlate well enough to indicate a high level of convergent validity. The leisure satisfaction component extracted from life satisfaction correlated at only 0.45 with items in the scale modified from Beard and Ragheb (1980), while the three items within that factor, "Your recreation", "Your social life", and "The way you spend your leisure time" yielded a strong intercorrelation (r=.66). The moderate correlation between these three items and Beard and Ragheb's scale suggests that there is a lack of convergent as well as construct validity. Therefore, Chick et al. deleted this scale from the survey for the non-machinist sample. Therefore the leisure satisfaction component extracted from life satisfaction scale for both groups replaced the Beard and Ragheb's measurement as an instrument to evaluate the leisure satisfaction of machinists and non-machinists.

Dominant Social Paradigm

The DSP includes faith in science and technology, support for economic growth, faith in material abundance, and faith in future prosperity, but also core elements of conservative ideology (Dunlap and van Liere, 1984). The DSP values were measured using items from Dunlap and van Liere's (1984) Dominant Social Paradigm (DSP) scale. Sixteen items were used from the original 37-item DSP Scale, which was conceptualized and statistically confirmed to have eight substantive dimensions (Dunlap and van Liere, 1984). The 16 items included items from each of the eight subscales of the DSP Scale. Items that were selected to represent each subscale were those that loaded highest on each of the eight factors reported in Dunlap and Van Liere's study. Each item was measured using a five point Likert-type scale. The response categories were "strongly disagree," "disagree," "not sure," "agree," and "strongly agree," and were numbered 1 to 5 respectively.

Items 2, 6, 8, 9, 10, 12, 13, and 14 of the shortened version of the DSP were reverse coded to facilitate the calculation of a summated measure of support for dominant social values (Appendix B). The wording of each of these items reflected a position counter to the prevailing worldview (Dunlap and van Liere, 1984). After recoding, all the scale items were consistent such that higher scale scores reflected greater commitment to dominant social values. The summated score ranged from a low of 16 to a high of 80 with higher scores representing more support for dominant social values. Scores for the subscales—Quality of Life, Economic Growth, Government Regulation, Property Rights,

Individual Rights, Science and Technology—were tallied in a similar manner with higher

scores representing greater commitment to each dimension of the DSP Scale.

Empirical work on the DSP is very sparse. Besides Dunlap and van Liere (1984),

Grunert-Beckmann and Kilbourne (1997) tested each dimension of the DSP on a sample

of Danish business students. The economic dimension has been extensively although not

empirically examined (Daly, 1991; Sagoff, 1988). The technological dimension has been

examined by Winner (1986) and Drengson (1995), and the political dimension by

Eckersley (1992) and Dryzek (1996). All of these examinations yielded fairly acceptable

validity values for the DSP.

Value of Technology (VT)

This study utilized a modified version of the scale discussed by Taviss (1972) as

the primary measure of commitment to the value of technology. The Technology Scale

included 12 of 23 original items used to examine "popular attitudes toward technology"

in a New England community (Taviss, 1972). Originally used in a small pilot survey

conducted at the Harvard University Program on Technology and Society in 1970, the

items selected for the Technology Scale in the present research were those that made

specific reference to machines and advanced technology. Essentially, the technology

scale was intended to represent a more pertinent dimension of technology with respect to

the specific research questions and included items that were relevant to the alienation

hypothesis, such as "Automation creates better working conditions." In actual analysis,

items 5, 12, 13, 15, 18, 19, 22, and 23 were reverse coded to facilitate the calculation of a

summated measure of commitment to the value of technology. Each item was measured using a five-point Likert-type scale in the same format as the DSP Scale items. The summated score for the Technology Scale ranged from a low of 12 to a high of 60 with higher scores representing a greater commitment to the Value of Technology. The Technology Scale includes items 17 through 28 under the heading, "How do you feel about certain social, political, and economic issues in the United States at the present time?" (Appendix A).

Demographic Variables

Finally, the researchers collected personal information from machine-tool workers regarding the following variables: age, gender, education, employment history, personal income, home residence (rural, small town, suburb, small city, large city), and childhood residence (rural, small town, suburb, small city, or large city). Likewise, the general survey of the area (survey 4) gathered personal information such as age, gender, annual income, and formal education. The survey asked informants to indicate the type of area where they currently lived versus where they grew up and to provide details about their employment history. Surveys 3 and 4 also solicited and provided space for comments about the surveys themselves or the topics covered by the surveys.

Data Analysis

Descriptive Statistics

This project will calculate descriptive statistics for all appropriate variables. Frequency distributions and summary statistics will describe the samples of machining and tool and die companies, machininsts and tool and die workers, and the non-machinists.

Both Principal Components Analysis (PCA) and Confirmatory Factor Analysis (CFA) can be applied to reduce the items within each primary variable. This project employs both methods. The method for determining which method to use with each variable is as follows. PCA reduces data dimensions to summarize the observed variables without any hypothesis. However, CFA is designed to find the latent structures under the observed variables with a prior hypothesis. The procedure of variables reduction in CFA is related to latent structure testing. Therefore, in the current research, if the original scale had an empirical data-reduction model, CFA was considered most suitable. If the results did not match those in a previous model, PCA was employed. Under SPSS (Statistical Package for Social Science), PCA is a subset of extraction methods in Factor Analysis. CFA is normally conducted through principal axis factoring.

Other auxiliary tools such as reliability analysis, correlation analysis and regression analysis facilitate retaining important components/factors. The goal of the study is not to test the empirical latent models of the scales but to find relationships between these factors and life satisfaction. Therefore, the analysis is not restricted to one

data reduction instrument. All the variables used to examine the two major research questions, discussed in more detail below, result from the PCA or CFA procedures.

Analysis of Research Questions

There are two primary research questions. The first asks what factors can predict life satisfaction. To answer this question, the project analyzes data from surveys 3 and 4 incorporating both machinists and non-machinists. Exploratory analyses did not show any significant differences between these two groups in terms of the two research questions. Therefore, the two groups were combined in the following procedures. Analysis of Covariance (ANCOVA) will be used to solve these research questions in Chapter 4. The model selection process will involve status (machinists or non-machinists), sex, income, education, regional variables, job satisfaction, community satisfaction, leisure satisfaction which was a component extracted from life satisfaction, Dominant Social Paradigm, Value of Technology, and age. The response variable is life satisfaction. Among these predictors, status, sex, income, education, and regional variables are fixed factors. Job satisfaction, community satisfaction, leisure satisfaction, Dominant Social Paradigm, Value of Technology, and age are covariates. This procedure will be applied to employed informants through ANCOVA because job satisfaction was only provided by those who were employed.

The second research question asks whether rural life satisfaction is higher than life satisfaction in other areas. Derived from the results of model selections, the final model that contains regional variables will be further analyzed using general linear model

techniques in SPSS. The mixed procedure in SAS will answer whether life satisfaction differs by region. These statistical analyses will be first completed in SPSS and then in SAS (Statistical Analysis System). SAS provides more and better functions to perform a new statistical method to analyze life satisfaction by regional differences. More details will be provided in Chapter 4.

With respect to the final models not containing regional variables, the relationship between predictors and life satisfaction components will be analyzed in detail. If all categorical factors were removed in the final model, regression can be employed to probe the specific associations between the life satisfaction component and the predictor. If the final model includes categorical variables other than regional variables, comparisons of life satisfaction components by different levels of the categorical variables will be discussed. Simultaneously, how interval variables influence a life satisfaction component can be evaluated as well.

Chapter 4

RESULTS

The research focus of this study is to determine what factors predict life satisfaction in western Pennsylvania. Therefore, life satisfaction is the dependent variable. All remaining variables, including categorical (sex, education, income, and region) and continuous (job satisfaction, community satisfaction, leisure satisfaction, Dominant Social Paradigm, and Value of Technology) variables, are independent.

This chapter provides descriptive characteristics of the sample. Next, since there are many items in each continuous independent variable, this chapter shows my application of data reduction techniques. I used Principal Components Analysis to reduce dimensions of scales without latent structures and Confirmatory Factor Analysis to examine the variable with demonstrated latent structures. Third, I applied a model selection procedure to determine which items are significant for predicting life satisfaction. The model selection process was implemented on the combined sample that includes machinists and employed members of the non-machinist sample. Although the model selection was set to measure the entire sample, those who were unemployed or retired did not evaluate their job satisfaction. Thus, in the process, the unemployed and retired groups were removed in the analysis process. In other words, the outcomes of applying the model selection tool on the entire sample and just on the employed sample are the same if job satisfaction is treated as one of the predictors. Fourth, after testing the

final models to predict life satisfaction, I will further discuss the extent to which regional

influences on life satisfaction were significant in the final models.

Sample Characteristics

The sample of the present study was composed of two groups from Western

Pennsylvania: machinists (including tool makers) and non-machinists. The total sample

size was 790, of which 316 informants were from the machining, and tool and die

industries while 474 were non-machinists (specified as "status" variable for each

informant. "1"= "machinists", "0"= "non-machinists"). The mean age of the entire

sample is 45, 36 for the machinists, and 51 for the non-machinists. The gap in the

average age of the two groups might be due to the fact that all of the machinists in the

sample were employed, while in the non-machinists' sample, 37 were unemployed and

91were retired. Merely 2.5% of machinists were equal to or older than 60, while 31.4%

of non-machinists were 60 or older. The demographic information of the sample,

including sex, income, employment status, education, region where the informant lives

now, region where the informant grew up, and change of living region, is summarized in

Tables **4-1**, **4-2**, **4-3**, **4-4**, **4-5**, **4-6**, and **4-7**.

Table **4-1** shows that male informants composed almost 80% of the entire sample.

This is mainly due to the overwhelming dominance of men in the machinists' sample, in

which there were only five female informants. Table **4-2** displays the frequency of

income levels. The informants' salaries were mainly dispersed in two intervals: $15,000-

$24,999 (32.6%) and $35,000-$44,999 (33.2%). Table **4-3** shows that 83.6% of the

informants were employed. The unemployed and retired informants all came from the non-machinists' sample. Table **4-4** illustrates the educational background of the sample. The original scale of education included nine categories: "1" equaled "1-8 years"; "2" equaled "9-11 years"; "3" equaled " High school graduate"; "4" equaled "Some Vocational-technology training"; "5" equaled "Voc-tech graduate"; "6" equaled "Some college education"; "7" equaled "College graduate"; "8" equaled "Some graduate study"; and "9" equaled "Graduate degree". In order to simplify the levels in the analysis, to group informants more meaningfully by making each level have more cases, and to better explain educational prediction in life satisfaction later, the first three levels were grouped into "High school graduate or less", "4" through "6" were collapsed into "Some Voc-Tech training to some college education", and the last three levels were aggregated as "College graduate or more". As the table depicts, nearly half the sample had some voc-tech training to some college education (47.2%). 32.7% informants received high school education at the most. The smallest subsection were those with a college education (20.1%).

Table 4-1: Frequency of Sex (N=786)

Sex	Frequency	Percent
Male	626	79.6
Female	160	20.4

Table 4-2: Frequency of Income Levels (N=775)

Income	Frequency	Percent
0-$14,999	137	17.7
$15,000-$24,999	253	32.6
$25,000-$34,999	128	16.5
$35,000-$44,999	257	33.2

Table 4-3: Frequency of Employment Status (N=790)

Employment	Frequency	Percent
Employed	662	83.6
Unemployed	37	4.7
Retired	91	11.5

Table 4-4: Frequency of Education (N=786)

Education	Frequency	Percent
High school or less	257	32.7
Some Vocational-Tech training to some college education	371	47.2
College graduate or more	158	20.1

In addition to the focus of the present study on the significant predictors of life

satisfaction, I am also interested in whether rural life corresponds with higher life

satisfaction than urban life. For this reason, region is a crucial variable in the analysis.

There are five categories within this scale: large city, small city, suburb, small town, and

rural or farm. In order to better interpret the models in the following analysis, these five

levels were reorganized into three categories: "Cities (small and large)", "Small towns

and suburbs", and "Rural or farms". Informants provided information for "Where you

live now" (*regionnow*) and "Where you grew up" (*regionbefore*). Given these two

manifest variables, a new variable, "Change of region where you live" (*regionchange*)

was created as a dummy variable, for which "0" indicated no change of residence

between where informants grew up and where they live now, and "1" meant change of

residence between where informants grew up and where they live now. This variable was

added to explore the addition question of not only whether where one lives affects life

satisfaction, but also whether changing locations or staying consistent in locations has

any impact. For example, this variable draws attention to people who might have grown

up in rural areas and relocated to different rural areas. This group might have different

life satisfaction levels than the group of people who have stayed in the same rural area

throughout their lives. Table **4-5** shows that the majority of informants lived in small

towns, suburbs and rural areas (81.7%), while only 18.3% informants lived in cities. The

frequency pattern of the region where one grew up is similar to that of the current place

of residence. Table **4-6** shows that more informants grew up in cities than currently reside

there. Finally, Table **4-7** illustrates that about 62% of informants did not relocate from

one region to another.

Table 4-5: Frequency of Region Where You Live Now (N=782)

regionnow	Frequency	Percent
Cities (small and large)	143	18.3
Small towns and suburbs	356	45.5
Rural or farm	283	36.2

Table 4-6: Frequency of Region Where You Grew Up (N=777)

regionbefore	Frequency	Percent
Cities (small and large)	171	22.0
Small towns and suburbs	306	39.4
Rural or farm	300	38.6

Table 4-7: Frequency of Change of Region to Live (N=776)

regionchange	Frequency	Percent
No Change	480	61.9
Change of region to live	296	38.1

Exploratory Analysis of the Scales

Six scales were analyzed in the present study: life satisfaction, community satisfaction, job satisfaction, Dominant Social Paradigm (DSP), and Value of Technology (VT). The scale for the first three domains is a five-point Likert-type ranging from strongly dissatisfied ("1") to strongly satisfied ("5"). The last two domains were also measured by a five-point Likert-type scale that gauged agreement on the items in these two domains, from strongly disagree ("1") to strongly agree ("5"). The purpose of conducting the exploratory analysis of these scales is to reduce the dimensions of the scales since there were ample items in each. For the scales without latent structure, I applied Principal Component Analysis (PCA), while, for those with demonstrated latent structure, I employed Confirmatory Factor Analysis (CFA) to examine whether the latent

structure satisfied the current data. Subsequently, I applied both tools on the combined sample in SPSS (Statistical Package for the Social Sciences).

Reliability analysis was also employed to measure the reliability of each component/factor. If Cronbach's α (alpha) was low (<0.6), correlation analysis between items and life satisfaction factors was implemented to determine which item/component should be retained (Cortina, 1993). The cutoff point for loading scores of a variable on one component is commonly set at 0.5 (Rathbun, 2004). An eigenvalue greater than 1 is the rule of thumb for determining how many components should be extracted in PCA. The numbers of factors in CFA were determined by the previous empirical tests. Reliability analysis, correlation analysis and regression analysis were also used to identify the newly reduced scales. For reliability analysis, Cronbach's alpha roughly equal or greater than 0.6 is empirically treated as the threshold.

Life Satisfaction Scale

In total, there are 17 items in the life satisfaction scale. Warr, Cook, and Wall (1979) used cluster analysis to categorize these items, rather than PCA. Therefore, PCA was employed on the sample (N=790) to explore the factors composing the life satisfaction scale. Table **4-8** shows the eigenvalue for each component. The four components explained 57.23% variance in the 17 items of the life satisfaction scale.

Table 4-8: Eigenvalues and Variance Explained for Four Components of the Life Satisfaction Scale

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.915	28.913	28.913
2	2.197	12.923	41.836
3	1.405	8.263	50.098
4	1.212	7.130	57.229

Table 4-9 shows the loadings (the outcomes are highly similar with either varimax rotation or no rotation) for the life satisfaction scale items as well as Cronbach's α for extracted components. The variables were ranked from the highest to the lowest loading larger than 0.5. The five items loaded on the first component provided a good measurement structure with a reliability of 0.79. These five items—including satisfaction with morals and values in the US today, political and justice systems, and government—can be labeled as "Life satisfaction with the macroenvironment of America". The three items in the second component reliably (α= .846) measured "Leisure satisfaction". The four items in the third component can be summarized as "Life satisfaction with personal development", such as education, accomplishments in life, possibilities for the future, and life as a whole. "House you live in", "Local district", and "Standard of living" constituted the last component, which can be described as "Life satisfaction with living conditions". The reliabilities are good for life satisfaction with personal development and life satisfaction with living conditions, all greater than 0.6.

The last two items, as shown in Table **4-9**, did not load on any components and were removed from the scale. Averaging the item values of each component provided a mean value to represent the corresponding component. That means there is one score on

each component for every informant. Since the original leisure satisfaction scale

(Ragheb and Beard, 1980) in the questionnaire 3 (machinists) did not provide good

validity, it was not applied in survey 4 (non-machinists). Hence to measure one's leisure

satisfaction, one component extracted from the life satisfaction scale was used as an

independent factor. Because informants of both samples rated their leisure satisfaction

within the life satisfaction scale, the leisure satisfaction component could be a predictor

for the combined sample in model selection process. Consequently, the remaining three

components would be the three dependent variables implying life satisfaction.

Table 4-9: Component Loadings and Reliability of Components for the Life Satisfaction Scale

Items	Component			
	1	2	3	4
State of law andorder in US today	**.801**	.086	.096	.054
Morals and values in US today	**.761**	.094	-.036	-.036
US reputation in world today	**.716**	.081	.087	.018
Freedom and democracy in US today	**.706**	.047	.092	.195
Present federal government	**.611**	.022	.263	.119
	α=.790			
Your recreation	.042	**.858**	.171	.038
Your social life	.023	**.823**	.191	.033
How you spend leisure time	.071	**.787**	.217	.125
		α=.846		
What the future seems to hold	.093	.118	**.825**	.040
What you are accomplishing in life	.053	.246	**.788**	.101
Education received	.079	.058	**.574**	.144
Life as a whole these days	.258	.490	**.500**	.222
			α=.745	
House you live in	.016	.151	.073	**.790**
Local district	.120	.093	.092	**.789**
Standard of living	.176	.156	.434	**.580**
				α=.673
Present state of health	.162	.330	.368	-.002
Your family	.084	.451	-.015	.213

As depicted in Chapter Three, all continuous variables in this study were measured by five-point Likert-type scales. For satisfaction measurements, "1" represents strongly dissatisfied whereas "5" indicates strongly satisfied. Hence, Table **4-10** shows that whereas sample informants from western Pennsylvania were most satisfied with living conditions (mean=3.85), they were most dissatisfied with the macroenvironment of the society (mean=2.63).

Table 4-10: Means and Standard Deviations of the Extracted Life Satisfaction Scale

Component	Labels	N	Mean	Std. Deviation
1	**Macroenvironment**	786	2.6304	.76469
2	**Leisure satisfaction**	787	3.7656	.78759
3	**Personal development**	787	3.6309	.65802
4	**Living conditions**	787	3.8467	.68425

Job Satisfaction Scale

Warr, Cook, and Wall (1979) developed a 15-item scale to evaluate job

satisfaction. They used blue-collar workers in Britain to examine the scale and extracted

two subscales ("intrinsic job satisfaction" and "extrinsic job satisfaction), as discussed in

Chapter 3. Thus, CFA was applied to examine whether these two latent factors were

supported. However, the present data did not support this two-factor structure. As with

Warr's factors, the job factors are most strongly correlated within life satisfaction with

personal development (LifeS3). Given this situation, PCA was also considered.

Examining the factor loading plots did not show a difference between PCA and CFA with

or without rotation. The PCA components yielded even lower correlations with life

satisfaction factors compared to the results of CFA using Warr et al's two-factor

structure. Hence PCA was not appropriate either.

An alternative solution of using the mean of 18 items (JS) to reduce scale

dimensions of job satisfaction was therefore employed. The average job satisfaction of

the sample is 3.59, and the standard deviation is .673 (N=651). The correlation between

the mean of 18 items on the job satisfaction scale and the three life satisfaction factors are

0.242, 0.342, and 0.541 (life satisfaction 1, 3, and 4 respectively). Cronbach's alpha of the 18 total items is over 0.91. Hence the mean of job satisfaction (JS) for each employed informant would be used in the modeling process.

Community Satisfaction Scale

Miller and Crader (1979) proposed two subscales out of 11 items in their study by applying PCA with varimax rotation. The two factors they found were "Interpersonal satisfaction" (items 1, 10 and 11) and "Economic satisfaction" (items 4, 5, 6). The last item was added by Chick et al (1994) as a general evaluation. Therefore, in the CFA procedure, item 12 was not included.

CFA produced two similar factors to Miller and Crader's. The first factor, "Interpersonal satisfaction," was exactly the same. However, the "Economic satisfaction" factor in the present study only contained two items (4 and 5), excluding "Availability of suitable housing", which did not load on either of the two factors. Three items constituting a factor is the minimum threshold. However, these two items show high loadings (0.801 and 0.805). Hence items 4 and 5 were still treated as a factor. Table **4-11** shows the loading factors of community satisfaction.

Table 4-11: **Factor Loadings for the Community Satisfaction Scale and Reliability of Factors**

Scale Items	Factor	
	1	**2**
1. As a place to raise family	**.570**	.128
10. Quality of religious life	**.592**	-.021
11. Friendliness of the people	**.568**	.057
	α=.612	
4. Availability of good jobs for youth	.025	**.801**
5. Opportunity for earning livable income	.176	**.805**
2. Adequate medical/health facilities	.382	.235
3. Quality of schools	.467	.163
6. Availability of suitable housing	.441	.294
7. Adequacy of law enforcement	.482	.107
8. Access to outdoors and wide-open spaces	.478	-.003
9. Absence of a polluted environment	.403	.126

In order to determine how to represent the "Economic satisfaction" subscale, given the present data, correlation analysis was performed. The outcome showed that a variable created as the mean of items 4 ("Availability of good jobs for youth") and 5 ("opportunity for earning livable income"), rather than a factor based on the means of items 4, 5, and 6, had a closer association with the three life satisfaction components respectively. Thus the mean of items 4 and 5 was used to measure "Economic satisfaction" although the usual norm to form a factor is at least three items. The loading values of items 3, 6, 7, 8, and 9 are between 0.4 and 0.5, and these items are composed of almost half of the community satisfaction scale. To be conservative, reliability analysis of these five items were still examined. However, the Cronbach's alpha for each was smaller than 0.5. Therefore, the five items were removed. Integrating results of all these analyses, Table **4-12** exhibits that in community satisfaction, sample informants were more satisfied with the interpersonal regard of the community where they lived, but

somewhat dissatisfied with the economic situation in their community based on the five-

point Likert scale.

Table 4-12: Means and Standard Deviations of the Extracted Community Satisfaction Scale

Component	Labels	N	Mean	Std. Deviation
1	**Interpersonal satisfaction**	787	4.16	.56493
2	**Economic satisfaction**	786	2.46	.97347

Dominant Social Paradigm (DSP) Scale

The original scale Dunlap and van Liere (1984) developed included 37 items, of

which the current study merely used 16. Hence the eight-dimension original latent

structure cannot be considered the number of factors recovered by CFA since at most two

of 16 items derive from a single dimension of the original scale. Thus, PCA was applied

to the data (Table **4-13**).

Table 4-13: **Component Loadings for the Dominant Social Paradigm and Reliability of Components**

	Component					
	1	2	3	4	5	6
1.Should be more government regulations on business	**.780**	-.086	.054	.207	-.028	-.051
6.Regulations by government more harm than good	**.774**	-.060	.029	-.151	-.015	-.138
11.Government restricts on private property necessary	**.566**	.130	-.049	-.245	.321	.297
α=.601						
14.Standard of living will improve for most	-.079	**.896**	-.004	-.021	.012	-.054
15.Quality of life better in future	-.004	**.892**	-.018	.036	-.021	-.071
7.Economic growth improves quality of life	.057	-.201	**.695**	-.273	-.165	-.160
13.Better if nation's economy stop growing fast	.090	.103	**.739**	.246	.120	.124
16.Rapid economic growth more problems than benefits	-.072	.025	**.749**	.121	.102	.223
α=.565						
2.Owners should use land as they see fit	-.359	-.019	.004	**.664**	-.173	-.161
3.Change usually makes things worse	.027	-.084	.090	**.619**	.152	.067
9.Know will work before taking chance	.113	.201	.056	**.515**	-.012	.331
α=.337						
5.Necessary to restrict individual rights sometimes	.038	.043	.071	.058	**.805**	-.081
12.Solve problems by restricting individuals behavior	.030	-.047	.008	.024	**.793**	.122
8.Must drastically reduce consumption	.100	-.028	.149	.103	.109	**.617**
10.Cannot count on science and technology to solve problems	-.224	-.130	.021	-.025	-.052	**.728**
4.Problems can be solved by more technology	.341	.315	-.017	.388	.167	-.321

Component 1 and component 3 have decent reliability, although not a desirable

one. The reliability of component 4 is too low to accept. Thus, I performed bivariate

correlation analysis of every item of component 4 and the remaining items with loading

values over 0.5 with each life satisfaction factor. All correlation coefficients were smaller

than 0.4. To retain probably predictive items of the DSP, regression analysis was

conducted and showed that item 15 had a significant influence on all three life

satisfaction factors. Item 10 was only significant in predicting life satisfaction with

macroenvironment (LifeS1). Item 14 did not significantly predict life satisfaction with

living conditions (LifeS4). Given the high factor loadings of items 14 and 15, component

1 as DSP1, component 3 as component DSP3, item 14 and item 15 were retained in the

subsequent modeling procedure.

Table **4-14** shows that informants did not agree with the beliefs of the dominant

social paradigm (all means are less than three).

Table 4-14: **Means and Standard Deviations of the Extracted Dominant Social
Paradigm Scale**

Component	Labels	N	Mean	Std. Deviation
1	**Government Interference**	779	2.73	.75883
3	**Economic Concerns**	779	2.70	.71385
Item 14	**Improved Living Standard**	776	2.64	.87786
Item 15	**Better Quality of Life**	776	2.75	.88134

Value of Technology (VT) Scale

Taviss' original scale included 23 items and two dimensions: Protechnology and

Antitechnology. The present study modified his scale and curtailed it to a 12-item scale

drawn from both dimensions. Therefore, CFA was improper to perform the data

reduction function, whereas PCA was implemented to reduce scale dimensions. Table **4-**

15 shows that component 1 of the VT scale is Antitechnology attitude while component 2 and 3 are the contrary. The correlation coefficients between the remaining items loading values over 0.5 and the three life satisfaction factors are very small (all less than 0.2). Items 3 and 6 have coefficients larger than 0.1. Component 1(Antitechonolgy, VT1) also has a low correlation with life satisfaction factors (-0.118 versus life satisfaction with macroenvironment (LifeS1); the rest were both less than -0.1). The reliability of the entire scale is less than 0.5. The regression analysis showed that except for item 6, to predict LifeS1, both VT1 and item 3 had significant effects on all three life satisfaction factors. Thus, to be consistent with the rule to retain possible significant items based on the outcomes of correlation and regression analyses, items 3 and 4 were kept in the reduced VT scale.

Table 4-15: **Component Loadings for the Values of Technology Scale and Reliability of Components**

Items	Component		
	1	**2**	**3**
1.Machines throw people out of work	**.641**	.061	-.006
4.Technology made life complicated	**.656**	.063	.076
5.Handmade better than machine-made	**.595**	.132	.019
8.Pace of life—no time to relate	**.510**	.272	-.326
10.Technology more harm than good	**.670**	-.149	.370
12.People dependent on machines	**.630**	.210	.058
	α=.725		
6.Machines have made life easier	-.275	**.579**	-.227
11.Life better in country than city	.263	**.538**	-.250
3.Technology advances solve overpopulation problem	-.074	.334	**.799**
2.Automation creates better working conditions	-.496	.404	.345
7.Stop building factories—back to nature	.481	.305	.061
9.Computers increase efficiency	-.446	.524	-.065

Table **4-16** shows that informants most strongly agreed that machines makes life easier (mean=3.98) but disagreed that technology is the solution of overpopulation (mean=2.40). Informants held relatively neutral attitudes toward antitechnology statements (mean=3.06).

Table 4-16: Means and Standard Deviations of the Extracted Values of Technology Scale

Components	Labels	N	Mean	Std. Deviation
1	**Antitechnology**	781	3.06	.50969
Item3	**Solution of Overpopulation**	772	2.40	.86368
Item6	**Life Easier by Machines**	777	3.98	.66632

Model Selection

This procedure aimed to detect the significant predictors among newly extracted components/factors/items of job satisfaction (*JS*), community satisfaction (*CS*), leisure satisfaction (*LS*), DSP, and VT, as well as demographic variables, education, income, region where you live now (*regionnow*), region where you grew up (*regionbefore*), whether you changed your living region (*regionchange*), and age. The dependent variables are the three components of life satisfaction: satisfaction with macroenvrionment, personal development, and living conditions. Job satisfaction is widely considered a vital factor for life satisfaction, as reviewed in the discussion of the previous literature on the subject. Consequently, it is imperative to include this factor in the predictive models of life satisfaction. However, since only those who were employed (83.6%) rated their job satisfaction, the inclusion of job satisfaction removed the

unemployed and retired informants even though the models were meant to fit the entire

sample. Thus, the results of examining the complete sample and only the employed

informants were the same. Therefore, I narrowed the sample for analysis to the employed

informants. A correlation analysis of the three life satisfaction components demonstrated

that the three domains were not significantly related to one another. The dependent

variables in MANOVA are normally intercorrelated and have certain associations so that

the correlations and covariances of these dependent variables must be considered.

Therefore, an ANCOVA model for respective life satisfaction components was chosen

over a MANOVA model.

Table **4-17** illustrates the full models of the employed informants. The

independent variables are the same at the beginning of the model selection, but the

dependent variable is changed from component one to component three.

Table 4-17: **Full Models for Employed Machinists and Non-machinists**

Sample	DV: Life Satisfaction	Full Model
Employed Machinists and Non-machinists	1. Macroenvironment	$= regionnow + regionbefore + regionch + status +$ $sex + edu + income + LS + JS + CS1 + CS2 + DSP1$ $+ DSP3 + ils + bql + VT1 + sop + lem + age$
	2. Personal Development	
	3. Living Conditions	

***DV**: Dependent Variable
status: machinists or non-machinists; *regionnow*: Where you live now; *regionbefore*: Where you grew up *regionch*: Whether you changed your living region after growing up; *edu*: Educational level; *LS*: Leisure satisfaction; *JS*: Job satisfaction; *CS1*: Community interpersonal satisfaction; *CS2*: Community economic satisfaction; *DSP1*:Government interference; *DSP3*: Economic concerns; *ils*: Technology improves living standard; *bql*: Quality of life is better in future; *VT1*: Antitechnology; *sop*: Technology advances solve overpopulation problem; *lem*: Machines make life easier.

Another issue is the unbalanced sex distribution in the combined data. Scatter

plots were utilized to detect any patterns between males and females in the sample

regarding each predictor in the full model versus a life satisfaction factor. An example is displayed below.

From Figure **4-1**, we cannot establish a different pattern in females and in males regarding the relationship between life satisfaction and macroenvironment or age. Similar tests were conducted for every predictor and each life satisfaction component. Sex was found not biased in prediction for the three life satisfaction factors. Hence, the analysis can proceed to the stage of model selection.

Figure 4-1: Scatter Plot of LifeS1 VS Age By Sex
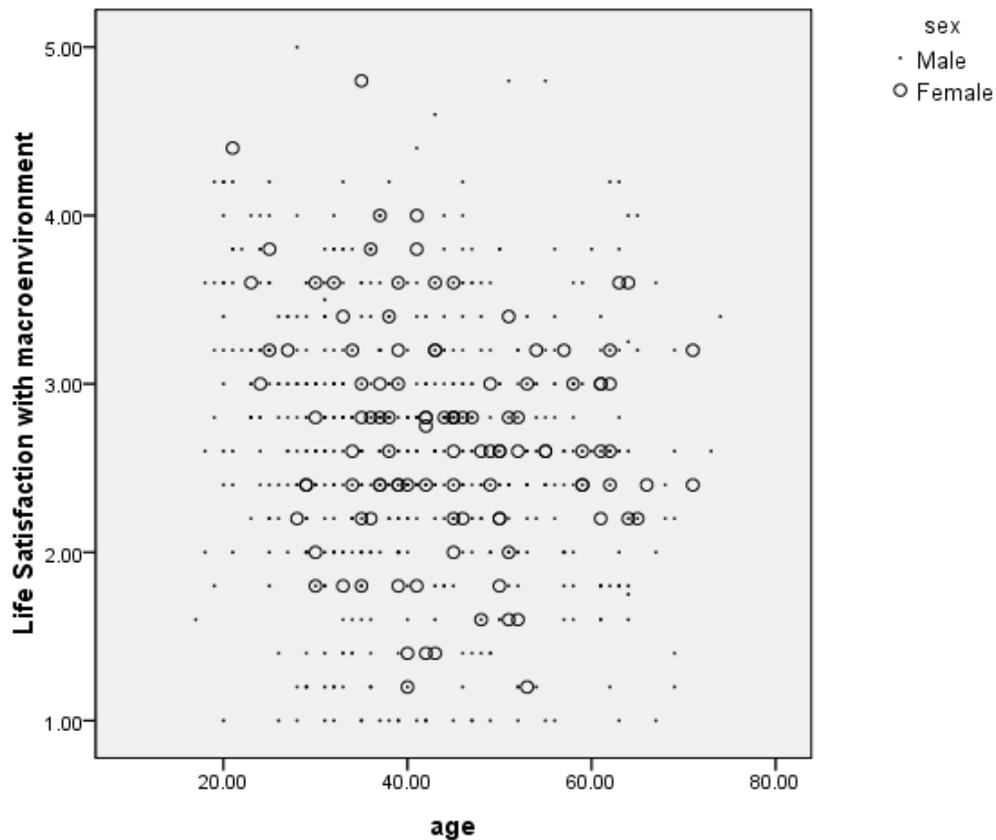
In the models, while *regionnow, regionbefore, regionchange, sex, edu,* and *income* are categorical variables, the remaining predictors are all treated as interval variables. Therefore, ANCOVA was conducted in SPSS with *regionnow, regionbefore, regionchange, sex, edu,* and *income* as fixed factors and all other variables as covariates. In this procedure, no interaction term was included since the purpose was to find the significant terms. Thus, regarding all of these independent variables as main effects is a simple and feasible way to solve the problem.

In model selections, each step removed the least significant term without reducing adjusted R square (the adjusted R square is used as an indicator in ANCOVA because it does not have inflation or deflation problems, as R square does). Because conservativeness and parsimoniousness are the best criteria to judge which terms should be incorporated in the final model, the terms with a p-value smaller or equal to 0.2 were kept in the model. However, after completing model selections and analyzing the final model, the level of significance, error rate, remained at 0.05 in order to decide the significant predictors in the final model.

1. Life Satisfaction with Macroenvironment

Table **4-18** shows the procedure of the model selection for life satisfaction with macroenvironment. From Step 9, all the remaining predictors yielded a p-value less than 0.2. The adjusted-R score is fairly low (0.254). Subsequently, the final model was shaped in Table **4-19**.

Table 4-18: **Model Selection for Life Satisfaction with Macroenvironment**

Step	Model	Adj R^2	Least significant term	P-value
1	*Full*	.241	*Income*	.946
2	*-income*	.245	*Lem*	.659
3	*-lem*	.246	*regionchange*	.637
4	*-regioachange*	.247	*regionnow*	.632
5	*-regionnow*	.251	*Edu*	.536
6	*-edu*	.253	*Status*	.550
7	*-status*	.254	*CS2*	.542
8	*-CS2*	.254	*Sex*	.251
9	*-sex*	.254	*regionbefore*	.175

Table 4-19: **Between-Subjects Effects of Life Satisfaction with Macroenvironment**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	101.888[a]	12	8.491	18.678	.000
Intercept	2.067	1	2.067	4.547	.033
regionbefore	1.591	2	.796	1.750	.175
LS	2.709	1	2.709	5.959	**.015**
CS1	3.296	1	3.296	7.251	**.007**
JS	4.704	1	4.704	10.348	**.001**
DSP1	6.941	1	6.941	15.268	**.000**
DSP3	1.203	1	1.203	2.647	.104
ils	7.655	1	7.655	16.839	**.000**
bql	3.099	1	3.099	6.818	**.009**
sop	6.670	1	6.670	14.672	**.000**
VT1	7.257	1	7.257	15.963	**.000**
age	10.921	1	10.921	24.024	**.000**
Error	277.298	610	.455		
Total	4733.558	623			
Corrected Total	379.186	622			

a. R Squared = .269 (Adjusted R Squared = **.254**)

Table **4-19** exhibits the significant predictors in the final model, including *LS* (leisure satisfaction)*, CS1* (community interpersonal satisfaction)*, JS* (job satisfaction), *DSP1* (government interference)*, ils* (improved living standard)*, bql* (better quality of life)*, sop* (technology is solution of overpopulation)*, VT1* (antitechnology) and *age*. However, overall, merely 25.4% of the variation of life satisfaction with macroenvironment could be explained by these predictors. This result indicates that region is not a significant factor influencing informants' life satisfaction regarding their

macroenvironment, nor is status (either machinist or nonmachinist), education level, sex, or income.

2. Life Satisfaction with Personal Development

Table **4-20** displays the model selection process for life satisfaction with personal development. The final model emerged at step 8 after removing predictors with a p-value greater than 0.2. As shown in Table **4-21**, the significant predictors of life satisfaction with personal development are *income*, *edu* (education), *LS* (leisure satisfaction), *CS1* (community interpersonal satisfaction), *CS2* (community economic satisfaction), *JS* (job satisfaction, *DSP1*(government interference), and *ils* (improved standard of living). These predictors explained 43.7% variation in informants' life satisfaction with personal development.

Table 4-20: **Model Selection for Life Satisfaction with Personal Development**

Step	Model	Adj R^2	Least significant term	P-value
1	Full	.428	regionbefore,VT1	.956
2	-regionbefore,VT1	.431	regionchange	.954
3	-regionchange	.435	Bql	.789
4	-bql	.435	Lem	.722
5	-lem	.436	DSP3	.717
6	-DSP3	.437	Sex	.490
7	-sex	.437	regionnow	.427
8	-regionnow	.437	Sop	.196

Table 4-21: **Between-Subjects Effects of Life Satisfaction with Personal Development**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	116.263[a]	14	8.305	35.564	.000
Intercept	1.719	1	1.719	7.364	.007
status	.514	1	.514	2.199	.139
income	1.951	3	.650	2.786	**.040**
edu	1.663	2	.831	3.560	**.029**
LS	23.066	1	23.066	98.779	**.000**
CS1	1.227	1	1.227	5.255	**.022**
CS2	2.724	1	2.724	11.667	**.001**
JS	28.104	1	28.104	120.356	**.000**
DSP1	.968	1	.968	4.147	**.042**
ils	1.044	1	1.044	4.472	**.035**
sop	.392	1	.392	1.677	.196
age	.703	1	.703	3.010	.083
Error	142.441	610	.234		
Total	8432.069	625			
Corrected Total	258.704	624			

a. R Squared = .449 (Adjusted R Squared = **.437**)

3. Life Satisfaction with Living Conditions

In the backward model selection, the final model for life satisfaction due to living conditions was formed at step 11. The significant predictors of life satisfaction with living conditions are exhibited in Table **4-23**. In the ANCOVA model, *regionnow* (Where you live now), *regionbefore* (Where you grew up), *LS* (Leisure satisfaction), *CS1*

(Community interpersonal satisfaction), *CS2* (Community economic satisfaction), *JS* (Job

satisfaction), and *age* account for 34.3% variation in life satisfaction with living

conditions. Regional variables played a role in one's satisfaction with living conditions.

Considering the research interest in regional influence on life satisfaction, further analysis

of the model in Table **4-23** was implemented subsequently.

Table 4-22: **Model Selection for Life Satisfaction with Living Conditions**

Step	Model	Adj R^2	Least significant term	P-value
1	*Full*	.335	*DSP3*	.994
2	*-DSP3*	.336	*VT1*	.976
3	*-VT1*	.337	*DSP1*	.962
4	*-DSP1*	.338	*Ils*	.874
5	*-ils*	.337	*Edu*	.812
6	*-edu*	.340	*Lem*	.693
7	*-lem*	.341	*Bql*	.499
8	*-bql*	.341	*Sop*	.384
9	*-sop*	.346	*Sex*	.292
10	*-sex*	.343	*Status*	.299
11	*-status*	.343	*regionchange*	.059

Table 4-23: Between-Subjects Effects of Life Satisfaction with Living Conditions

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	98.129[a]	13	7.548	26.165	.000
Intercept	3.193	1	3.193	11.069	.001
income	1.954	3	.651	2.257	.081
regionnow	3.806	2	1.903	6.597	**.001**
regionbefore	2.021	2	1.011	3.503	**.031**
regionchange	1.033	1	1.033	3.581	.059
LS	7.315	1	7.315	25.355	**.000**
CS1	16.480	1	16.480	57.125	**.000**
CS2	12.071	1	12.071	41.842	**.000**
JS	2.927	1	2.927	10.146	**.002**
age	8.238	1	8.238	28.555	**.000**
Error	176.844	613	.288		
Total	9443.722	627			
Corrected Total	274.974	626			

a. R Squared = .357 (Adjusted R Squared = **.343**)

Life Satisfaction with Living Conditions by Regional Differences

Based on previous model selections through ANCOVA procedures, it is clear that region-related variables are only significant in the last model: life satisfaction with living conditions (*regionnow* and *regionbefore*, Table **4-23**). Since life satisfaction by regional differences was one of the research interests of this study, this model was further analyzed in SAS (Statistical Analysis System). PROC MIXED (Appendix C) was adopted to find whether life satisfaction differs by different living area. PROC MIXED

fits a variety of mixed linear models to data and enables researchers to use these fitted

models to make statistical inferences about the data. It provides the flexibility of

modeling and gives not only the means of the data (as in the standard linear model), but

their variances and covariances as well. This procedure can be done in SPSS whereas

SAS offers more functions to perform the analysis. In the ANCOVA models, regional

differences were categorical variables and others were treated as covariates. The peculiar

method discussed below which fits the model without intercept and covariates are all

interacted with the categorical variable is valid only if there is one categorical variable in

the model. Therefore, *regionnow* and *regionbefore* are entered into the ANCOVA model,

respectively. Furthermore, to combine the effects of *regionnow* and *regionbefore*, a third

categorical variable "*region*" was created with nine levels (1= '*regionnow*=city and

regionbefore=city'; 2= '*regionnow*=city and *regionbefore*=suburb'; …9=

'*regionnow*=rural or farms and *regionbefore*=rural or farms'). The same method was

implemented with *region* as the only categorical variable in the model. The concrete

explanations of this method are presented below, using *regionnow* as an example.

Table 4-24: Tests of All Slopes Equal to Zero of the ANCOVA Model of Life Satisfaction with Living Conditions

(1)

Predictors	Num DF*	Den DF	F value	P value
regionnow	3	621	6.21	0.0004
LS**regionnow*	3	621	7.66	<.0001
CS1**regionnow*	3	621	19.16	<.0001
CS2**regionnow*	3	621	17.22	<.0001
JS**regionnow*	3	621	3.72	<.0114
age**regionnow*	3	621	14.74	<.0001

(2)

Predictors	Num DF	Den DF	F value	P value
regionnow slopes are all equal for LS	2	621	0.05	0.9532
regionnow slopes are all equal for CS1	2	621	0.47	0.6273
regionnow slopes are all equal for CS2	2	621	0.07	0.9286
regionnow slopes are all equal for JS	2	621	0.49	0.6107
regionnow slopes are all equal for age	2	621	2.20	0.1114

*Note: Because the model is fitted without intercept, it is overparameterized.

The first table in Table **4-24** lists the effects of each term in the model. The covariates, such as *LS,* did not appear alone in the model, but as interactions with *regionnow*. In Table **4-24** (1), the interaction terms assess whether the covariate is a significant predictor of the response at any of the values of *regionnow*. The p-values in this table are all significant, suggesting that there is some effect of the covariate on the response for at least one of the *regionnow* levels. The second table contrasted whether the slopes of these covariates differed by the categorical variable, *regionnow* (Shumway, 2007). The purpose of the second table was to assess whether the effect of the covariate differed among regions. Therefore, as the slopes of one covariate are not significantly

different across three levels of *regionnow*, the interaction terms of covariates and

regionnow can be removed. The tests for equal slopes yielded an insignificant outcome,

indicating that *LS, CS1, CS2, JS,* and *age* influenced employed informants' life

satisfaction with living conditions in a similar way across regions where they lived now,

from urban places to rural areas (p-value>0.05 for all contrasts).As the slopes could not

be judged distinct in Table (2), the model was adjusted into <u>life satisfaction with living</u>

<u>conditions = *regionnow* + *LS* + *CS1* + *CS2* + *JS* + *age*</u>.

Applying the same method, three individual models with *regionnow*,

regionbefore, and *region* were built respectively. The slopes of covariates were analyzed

in the similar fashion. However, of three, the most suitable one is to be identified. To find

the model with the best fit, I utilized BIC (Bayesian Information Criterion). BIC is a

statistical standard for model selection. It can "measure the efficiency of the

parameterized model in terms of predicting the data and penalize the complexity of the

model, where complexity refers to the number of parameters in model" (Wikipedia, 2008,

http://en.wikipedia.org/wiki/Bayesian_information_criterion). The BIC is an increasing

function of residual sum of squares and an increasing function of number of parameters.

Smaller BIC implies either fewer explanatory variables, better fit, or both. It encompasses

the factors of sample size and number of parameters in the model. Consequently, BIC is

adopted to select a best model that can explain the most variances in dependent variable

with a decent number of parameters. Table **4-25** displays BIC of three models.

Apparently, the *regionnow* model had the lowest BIC value (1104.5). The *region* model

generated the highest BIC score, and so this model was deleted. The BIC value of the

regionbefore model (1107.4) is not too far from the *regionnow* one (1104.5). To be

conservative, the *regionbefore* model was further analyzed along with the *regionnow*

model.

Table 4-25: BIC of ANCOVA Models with *regionnow*, *regionbefore*, and *region*

ANCOVA Model	BIC
regionnow	**1104.5**
regionbefore	1107.4
region	1163.7

Based on the results of *regionbefore* model, and using the same technique as in

table **4-24**, all slopes of covariates did not differ by the three levels of *regionbefore*.

Hence the model was modified to <u>life satisfaction with living conditions = *regionnow* +</u>

<u>*LS + CS1 + CS2 + JS + age*</u>. Table **4-26** illustrates that *regionbefore* does not

significantly impact one's life satisfaction with living conditions, whereas *regionnow* has

a significant effect. Therefore, the ANCOVA model with *regionnow* is the most desirable

model.

Table 4-26: **Model Selection of Personal Development**

(1)

Predictors	Num DF	Den DF	F value	P value
regionnow	2	631	4.19	**0.0155**
LS	1	631	24.27	<.0001
CS1	1	631	57.62	<.0001
CS2	1	631	51.64	<.0001
JS	1	631	9.81	0.0018
age	1	631	40.75	<.0001

(2)

Predictors	Num DF	Den DF	F value	P value
regionbefore	2	626	0.24	0.7898
LS	1	626	24.87	<.0001
CS1	1	626	60.20	<.0001
CS2	1	626	48.92	<.0001
JS	1	626	8.65	0.0034
age	1	626	32.41	<.0001

In Table **4-27**, according to the estimated coefficients in the ANCOVA model, observing these coefficients, it becomes evident that, generally speaking, community satisfaction plays a more important role in one's satisfaction with living conditions than leisure satisfaction, job satisfaction, or age.

Table 4-27: **Slopes of Covariates For Life Satisfaction with Living Conditions**

Predictors	Estimate	Std. Error	DF	T value	P value
Intercept	0.7044	0.1937	631	3.64	0.0003
LS	0.1387	0.0281	631	4.93	<.0001
CS1	**0.3246**	0.0428	631	7.59	<.0001
CS2	0.1748	0.0243	631	7.19	<.0001
JS	0.1131	0.0361	631	3.13	0.0018
age	**0.0118**	0.0018	631	6.38	<.0001

R-square=.339

The final model includes *regionnow, LS, CS1, CS2, JS*, and *age* (Table **4-27**). The aim was to explore whether life satisfaction with living conditions differed by the region where informants currently lived. Hence, Tukey's test was employed. Tukey's compares all possible pairs of means and depends on a studentized t distribution. In common usage, it is often adopted to contrast the means of the dependent variable with different levels of a categorical independent variable in the model. The estimates of all continuous variables in this model represent slopes. Evidently, community interpersonal satisfaction (*CS1*) has the greatest impact on an informant's life satisfaction with living conditions. With one-unit increase in community interpersonal satisfaction, an informant's life satisfaction with living satisfaction increases 0.3246 units. Likewise, age has the least influence on one's satisfaction with living conditions (slope=0.0118). Table **4-28** depicts the outcome of Tukey's test. Informants who lived in rural or farm areas achieved higher life satisfaction with living conditions than those who lived in cities in western Pennsylvania. Suburban residents did not show a significant difference of life satisfaction from rural or urban residents regarding living conditions. These predictors explained about 40% of variation in life satisfaction with living conditions.

Table 4-28: **Tukey's Test of** *regionnow* **on Life Satisfaction with Living Conditions**

regionnow	*regionnow*	Estimate	Std. Error	DF	T value	Adj. P
1	2	-0.06399	0.05991	631	-1.07	0.5343
1	**3**	-0.1641	0.06128	631	-2.68	**0.0207**
2	3	-0.1002	0.04738	631	-2.11	0.0878

ANCOVA Model of Life Satisfaction with Macroenvironment

In the model selection section for life satisfaction with macroenvironment (Table **4-19**), the remaining independent variables are *regionbefore*, *LS*, *CS1*, *DSP1*, *DSP3*, *ils*, *bql*, *sop*, *VT1*, and *age*.

Table **4-29** presents the slopes of continuous predictors in this model. *LS* (Leisure satisfaction), *CS1* (Community interpersonal satisfaction), *DSP1* (Government interference), *DSP3* (Economic concerns), *ils* (Improved standard of living), *bql* (Better quality of life), *sop* (Technology advances solve overpopulation problem), *VT1* (Antitechnology attitude), and *age* generally accounted for 26.9% variation in life satisfaction with macroenvironment. Both antitechnology attitude and age have a negative impact on satisfaction with macroenvironment. With one-unit increase of negative attitude toward technology, an informant's life satisfaction with macroenvironment decreases .235 units. Age appears to be the least significant predictor because one-year older informant is .012 units less satisfied with macroenvironment. Also, employed informants in western Pennsylvania tended to be more satisfied on the whole if they were more satisfied with their leisure and community interpersonal

communication, believed more strongly in government interference, felt that technology improved one's standard of living, was likely to provide a solution for overpopulation, or were younger.

Table 4-29: **Slopes of Covariates for Life Satisfaction with Macroenvironment**

Predictors	Estimate	Std. Error	DF	T value	P value
Intercept	.717	.345	622	2.078	.038
LS	.088	.036	622	2.441	.015
CS1	.147	.055	622	2.693	.007
JS	.145	.045	622	3.217	.001
DSP1	.145	.037	622	3.907	.000
DSP3	.064	.039	622	1.627	.104
ils	.175	.043	622	4.104	.000
bql	.113	.043	622	2.611	.009
sop	.131	.034	622	3.830	.000
VT1	**-.235**	.059	622	-3.995	.000
age	**-.012**	.002	622	-4.901	.000

R-square=.269

ANCOVA Model of Life Satisfaction with Personal Development

In the model selection, life satisfaction with personal development is significantly predicted by *income*, *edu*, *LS*, *CS1*, *CS2*, *JS*, *DSP1*, and *ils*. The remainder of this section discusses the concrete effects of these variables on life satisfaction with personal development.

The first part of Table **4-30** shows that income level is not as important as other predictors of life satisfaction with personal development. Therefore, in the second table, the effects of income are not presented. Of all covariates, job satisfaction shows the

greatest influence. With one-unit increase in job satisfaction, an informant's life

satisfaction with personal development increases 0.3669 units. Belief in the improved

standard of living has the least influence on life satisfaction with personal development

(slope=0.0516). Regarding educational background, SAS defaults the largest level (3) as

the baseline. The p-values of two education levels (1 and 2) indicate that life satisfaction

with personal development is significantly lower among these educational levels, as

compared to level three (college or more education). Since life satisfaction with personal

development has a fair degree of association with one's educational level, further

comparisons of the three levels were conducted.

Table 4-30: **Fixed Effects on Life Satisfaction with Personal Development**

(1)

Predictors	Num DF	Den DF	F value	P value
income	2	614	2.35	0.0716
edu	1	614	4.94	**0.0074**
LS	1	614	99.06	**<.0001**
CS1	1	614	4.29	**0.0388**
CS2	1	614	13.62	**0.0002**
JS	1	614	121.83	**<.0001**
DSP1	1	614	5.28	**0.0218**
ils	1	614	4.86	**0.0278**

(2) Slopes of Covariates

Predictors	Estimate	Std. Error	DF	T value	P value
Intercept	0.6835	0.1982	614	3.45	0.0006
LS	0.2570	0.0258	614	9.95	<.0001
CS1	0.0791	0.0382	614	2.07	0.0388
CS2	0.0821	0.0223	614	3.69	0.0002
JS	**0.3669**	0.0332	614	11.04	<.0001
DSP1	0.0594	0.0258	614	2.30	0.0218
ils	**0.0516**	0.0516	614	2.21	0.0278

In Table **4-31**, employed informants also display differences in life satisfaction with personal development between those with some vocational training or some college education and those with college or more education. For this sample, it is obvious that a full college education greatly affects one's satisfaction with personal development.

Table 4-31: **Tukey's Test of Education on Life Satisfaction with Personal Development**

education	education	Estimate	Std. Error	DF	T value	Adj. P
1	2	-0.0067	0.0454	614	-0.15	0.9881
1	**3**	-0.1618	0.0576	614	-2.81	**0.0142**
2	**3**	-0.1551	0.0530	614	-2.92	**0.0100**

Summary

In this chapter, the statistical methods of CFA, PCA, reliability analysis and general linear models were utilized to resolve the research questions. Most original scales were reduced to three or four components/factors or items as independent variables to predict life satisfaction components. In general, leisure satisfaction, community satisfaction, job satisfaction, and age are the major variables influencing the different aspects of one's life satisfaction.

The ANCOVA analysis provided corroboration for the assertion that people are more satisfied with rural life regarding living conditions than urban life. Life satisfaction with living conditions incorporated three items: satisfaction with one's house, local district and standard of living. In this model, leisure satisfaction, community interpersonal satisfaction, community economic satisfaction, job satisfaction, and age predicted one's satisfaction with living conditions. More specifically, community interpersonal satisfaction has more influence on an individual's satisfaction with living conditions, with community economic satisfaction running a close second. It is to be expected that housing is very different in cities such as Pittsburgh than in rural western

Pennsylvania. Apartment living environments and neighborhoods are very different from a house with a larger, open back yard or garden. Secondly, as Campbell (1981) concluded, a local district in rural areas is clearly differentiated from one in cities. The satisfaction with living conditions being higher for rural informants is possibly resulted to their desire for good housing, an amiable community with good interpersonal relations and economic development, higher leisure satisfaction, and greater job satisfaction while controlling the effects of age.

Additionally, an individual's belief in antitechnology values and age negatively influences his/her life satisfaction with the macroenvironment, while leisure satisfaction, community interpersonal satisfaction, job satisfaction, belief in government interference, and agreement on the improved standard of living, better quality of life, and technology advances being the solution to the overpopulation problem have positive effects on one's satisfaction with the macroenvironment in western Pennsylvania. With respect to life satisfaction with personal development, education plays a crucial role; individuals with college or more education tend to be more satisfied with their personal development. Meanwhile, leisure satisfaction, community interpersonal and economic satisfaction, job satisfaction, approval of government interference and agreement on an improved standard of living positively impact one's satisfaction with personal development.

As summarized above, all significant predictors of respective life satisfaction component are presented in Table **4-32**.

Table 4-32: **Significant Predictors of Life Satisfaction**

Sample	DV: Life Satisfaction	Significant Predictors
Employed Machinists and Non-machinists	1. Macroenvironment	*LS* (Leisure satisfaction), *CS1* (Community interpersonal satisfaction), *DSP1* (Government interference), *ils* (Improved standard of living), *bql* (Better quality of life), *sop* (Technology advances solve overpopulation problem), *VT1* (Antitechnology attitude), and *age*
	2.Personal Development	*education*, *LS*, *CS1*, *CS2*(Community economic satisfaction), *JS*, *DSP1*, and *ils*
	3. Living Conditions	*regionnow*(Where you live now), *LS, CS1, CS2, JS, and age*

Generally speaking, leisure satisfaction and community interpersonal satisfaction are common predictors to all three life satisfaction domains. Job satisfaction and community economic satisfaction contribute to differences in life satisfaction associated with personal development and living conditions. Age is a significant predictor of life satisfaction with the macroenviroment and living conditions. Belief in government interference and improved standard of living are associated with the variation in life satisfaction with the macroenvironment and personal development. Degree of agreement on better quality of life and technology advances resolving the overpopulation problem and degree of antitechnology attitudes predict life satisfaction with the macroenvironment, in particular. Education especially contributes to the change of life satisfaction with personal development, whereas one's current residential area more strongly predicts life satisfaction with living conditions.

Chapter 5

Conclusions

This study's primary aim is to explore significant predictors of life satisfaction. Additionally, it asks whether rural or urban life satisfaction is higher. The original data was collected by Chick et al. (1994). For this dissertation, I selected only the variables pertaining to these research purposes. These included profession status, sex, income, education, regional variables, job satisfaction, community satisfaction, leisure satisfaction, Dominant Social Paradigm (DSP), Value of Technology (VT), and the response variable, life satisfaction.

Summary of Results

Sample Characteristics

The present study involved two subgroups, machinists (including tool makers), and a general population (non-machinists), both coming from western Pennsylvania. The sample size was 790, of which 316 were machinists and 474 were non-machinists. The mean of age of the entire sample was 45. While the average age of the machinists was

approximately 36, the mean of age of the non-machinists was much older, about 51. The gap in the average age of the two groups might be due to the fact that all of the machinists in the sample were employed, but in the non-machinists' sample, 37 were unemployed (average age is 51) and 91were retired (average age is 71). Because of industry characteristics, only five of the 316 machinists were female. Therefore, male informants composed almost 80% of the entire sample. The informants' salaries were for the most part in two pay grades: $15,000-$24,999 (32.6%) and $35,000-$44,999 (33.2%). Almost half of sample had some voc-tech training to some college education (47.2%). About a third (32.7%) of the informants had only received high school education or less, and a college degree was much less likely (20.1%).

The most crucial demographic factor, the area where informants lived, was divided into three variables to analyze. One was "where you live now" (*regionnow*), the second was "where you grew up" (*regionbefore*), and the third was a newly created variable, "change of region where you live" (*regionchange*), which indicated whether or not one had migrated from where he or she grew up to where he or she lives now. The living regions were divided into three categories: cities, suburbs, and rural areas. Regarding *regionnow*, most machinists and nonmachinists resided in rural or suburban areas. The frequency pattern of the region where one grew up approximates that of the current place of residence. Slightly more informants grew up in cities. With respect to *regionchange*, a majority of machinists did not migrate to a different type of region, while about half of the nonmachinists had migrated to a different type of region.

Revised Scales

I employed Principal Components Analysis, Confirmatory Factor Analysis, correlation analysis, and regression analysis to extract components and items from the original scales so that the number of variables would be reduced and easier to interpret. All analyses were applied to the entire sample, not just a single group. All instruments used a five-point Likert scales. The five-point Likert scales for life satisfaction, job satisfaction, community satisfaction, and leisure satisfaction ranged from strongly dissatisfied ("1") to strongly satisfied ("5"). The five-point Likert scales for DSP and VT were between strongly disagree ("1") and strongly agree ("5").

Life Satisfaction Scale

Four components were extracted from this scale: "satisfaction with macroenvironment," "leisure satisfaction," "satisfaction with personal development," and "satisfaction with living conditions." The mean score of life satisfaction with living conditions was the highest, while that of life satisfaction with macroenvironment was the lowest. The leisure satisfaction component derived from the life satisfaction scale replaced the leisure satisfaction scale in the original survey because the latter did not display adequate face validity. Therefore, there were three dependent variables to represent life satisfaction.

Community Satisfaction Scale

The community satisfaction scale was reformed through applications of CFA, correlation analysis and regression analysis. CFA resulted in two factors somewhat similar to those established by Miller and Crader (1979): interpersonal satisfaction and economic satisfaction. The original economic factor from Miller and Crader's (1979) study showed relatively lower reliability and intercorrelation coefficients as compared with the coefficients resulting from the mean of item 4 ("Availability of good jobs for youth") and item 5 ("Opportunity for earning livable income"). Hence, the resulting community satisfaction scale included both interpersonal satisfaction and two-item (items 4 and 5) economic satisfaction factor. On average, informants were highly satisfied with the interpersonal opportunities in their community and dissatisfied with community economic situations.

Job Satisfaction Scale

CFA of the present data did not support Warr et al.'s (1979) two-factor scale. Thus, PCA was employed. However, the components resulting from PCA yielded even lower correlations with the three life satisfaction components than Warr et al.'s two factors. However, by using the mean of the entire 18-item scale, I attained a much stronger correlation than those provided by either CFA or PCA. Therefore, job satisfaction was reduced into one value: the mean of the original whole scale.

DSP Scale

Because the modified DSP scale had many fewer items than the original framework Dunlap and van Liere developed (1984), their extracted factors could not be treated as a possible structure for CFA. Instead, four components were extracted using PCA. However, upon examining the reliability analysis and applying the minimum number of items in a component criterion, only two components proved to be usable: government interference (DSP1) and economic concerns (DSP3). Through implementation of correlation analysis and regression analysis, two more items were retained: "improved standard of living" and "better quality of life."

VT Scale

Taviss's (1972) original scale had nearly twice as many items as the modified version used by Chick et al. Because of the size of his scale, Taviss's two-factor latent structure could not be examined via CFA. The PCA outcomes indicated only one valid component: antitechnology. Among the remaining items with high loading values, "technology being solution of overpopulation problem" and "machines making life easier" were kept in the revised scale, based on the correlation and regression analyses.

Model Selection

This procedure aimed to explore the significant predictors among newly extracted components of job satisfaction, community satisfaction, leisure satisfaction, Dominant Social Paradigm, and Value of Technology, as well as demographic variables, education, income, gender, region where you live now (*regionnow*), where you grew up (*regionbefore*), whether you changed region after growing up (*regionchange*), and age in order to predict three components of life satisfaction: satisfaction with the macroenvironment, with personal development, and with living conditions. Employed machinists and non-machinists were combined for the analysis because those who were retired or unemployed did not rate their job satisfaction. Job satisfaction, as reviewed in Chapter 2, was shown to influence life satisfaction in previous studies. Therefore, unemployed and retired (16.7% of the original sample) informants were removed from the model selection process. All models were backward selected in ANCOVA.

In terms of life satisfaction with the macroenvironment, the significant predictors were degree of antitechnology attitudes, agreement on improved standard of living, community interpersonal satisfaction, job satisfaction, degree of belief in government interference, degree of the belief that technology advances will solve the overpopulation problem, a sense of a better quality of life, and leisure satisfaction, age in sequence of importance to predict the response variable. These predictors accounted for 25.4% of the variance of life satisfaction with macroenvironment.

As to the life satisfaction with personal development, income, education, job satisfaction, leisure satisfaction, community interpersonal and economic satisfaction,

approval of government interference and agreement on improved standard of living

positively impact one's satisfaction with personal development at a rank of predictability.

43.7% of the variation in an informant's satisfaction with personal development is

associated with these factors.

Finally, *regionnow, regionbefore*, community interpersonal and economic

satisfaction, leisure satisfaction, job satisfaction and age in sequence of prediction

significantly explained approximately 34.3% of variation in life satisfaction with living

conditions.

Regional Differences in Life Satisfaction with Living Conditions

Regional differences in life satisfactions were one focus of the present study. Of

the previous model selections, one exhibited an influence from regional location: life

satisfaction with living conditions (*regionnow*, *regionbefore*, Table **4-23**). In order to

fully understand what was beneath this model, ANCOVA was conducted. To complete

this process, regional differences were treated as categorical variables and others as

covariates in the ANCOVA models. Based on the ability of the three models containing

three regional variables to predict life satisfaction with living conditions, respectively, the

regionnow model was adopted. Employed informants who currently lived in rural areas

had a higher life satisfaction with living conditions than those who resided in cities.

Suburban and urban residents did not differ significantly (Table **4-28**).

These findings properly answered the research questions proposed in the first chapter of this dissertation. The first research question explored predictors of life satisfaction. Based on the results, leisure satisfaction, community satisfaction, job satisfaction, and age have a strong influence on one's life satisfaction. Furthermore, the results indicate that, for employed informants in western Pennsylvania, the quality of life with respect to living conditions is considered better in rural than in urban areas.

Discussion

The purpose of this study was to explore significant predictors of life satisfaction. Moreover, this dissertation examined whether rural life satisfaction is higher than its urban counterpart. Hence, life satisfaction is at the core of the research interests in this study. Every analytical step revolved around that central issue. The results of the model selections regarding effects of subdomains/factors on life satisfaction and models delineating regional differences will be discussed in order below.

What Influences Life Satisfaction?

According to model selection for the subgroups of this sample, the best predictors of one's life satisfaction with macroenvironment were leisure satisfaction, community interpersonal satisfaction, job satisfaction, belief in government interference, agreement on improved standard of living and a perception of a better quality of life, degree of

negative attitude toward technology (Antitechnology), belief that technology advances hold the solution to the overpopulation problem, and age. Income, education, leisure satisfaction, community interpersonal and economic satisfaction, job satisfaction, approval of government interference, and agreement on an improved standard of living positively impact one's satisfaction with personal development. With respect to the life satisfaction with living conditions, *regionnow, regionbefore*, leisure satisfaction, community interpersonal and economic satisfaction, job satisfaction and age are salient predictors.

My research results are compatible with existing research about the relationship between the listed predictive factors and life satisfaction. Regarding leisure satisfaction, Iso-Ahola (1980) hypothesized a positive relationship between leisure and life satisfaction. Kelly and Godbey (1992) reported similar findings. Brown, Frankel and Fennel (1991) found that, in terms of enhancing quality of life, leisure satisfaction was more critical than the specific leisure activity in which the person was engaged. Lloyd and Auld's (2002) research supported previous studies indicating that place-centered attributes of leisure failed to have an impact on quality of life and that leisure satisfaction was the best predictor of quality of life. Kim (2000) discovered that participation in leisure activities explained a significant portion of the variance in life satisfaction measures. Edginton et al. (2006) concluded that leisure played a crucial role in life satisfaction. Fernandez-Ballesteros, Zamarron and Ruiz (2001) researched a sample of 507 Spanish seniors aged 65 and over, and their results indicated that physical activity levels, satisfaction with leisure activities, and social contact significantly influenced one's life satisfaction.

Job satisfaction has had a long-standing connection to life satisfaction. As Sirgy et al. (2001) suggested, job security, collegiality at work, recognition and appreciation of work within the organization, actualization at work, educational opportunities to enhance job and professional skills, and creativity at work contributed to the quality of work life, a vital component of life satisfaction. Van Praag, Frijters, and Ferrer-i-Carbonell (2001) analyzed quality of life. Their analyses supported the proposition that job and financial satisfaction were the most important subdomains for an individual's global life satisfaction. My results showed the effectiveness of job satisfaction at predicting life satisfaction, especially in regard to satisfaction with management, self-actualization in work, and with reward and security at work.

The importance of community satisfaction in general to life satisfaction has been substantiated in the past. For example, Sirgy, Siegel, and Lee (2001) revisited several studies on community satisfaction from a quality of life perspective, utilizing survey data from four different communities. They found that residents' satisfaction with individual government services (e.g., police, fire/rescue, and libraries), business services (e.g., banking/savings, insurance, and department stores), and nonprofit services (e.g., alcohol/drug abuse services, crisis intervention, and religious services) affected satisfaction with community. Theodori (2001) surveyed four communities in Pennsylvania and found that community satisfaction was positively associated with an individual's well-being. Sirgy and Cornwell's (2002) study in a variety of southwest Virginian communities also indicated that satisfaction with the social, economic, and physical features in a neighborhood tended to positively contribute to overall life satisfaction. Their investigation encompassed satisfaction with social interactions with

neighbors, satisfaction with ties with people in the community, and satisfaction with cost of living in the community. These closely correspond to my two subdomains of community satisfaction in the present study: interpersonal and economic satisfaction. Ultimately, community satisfaction, in tandem with other subdomain satisfactions (work, leisure, family, etc.), influenced global life satisfaction. In my results, satisfaction with environment and resources, satisfaction with adequate medical/health facilities, quality of schools, adequacy of law enforcement, and satisfaction with economic opportunities affected global life satisfaction.

Age is consistently treated as a possible predictor in many studies, especially, and understandably, in aging research. Because older adults coped more effectively with stress and were more resilient when they faced failure, quality of life was generally perceived by older adults much more positively among their younger counterparts (Hamarat et al., 2002). However, Schilling (2006) claimed that life satisfaction on the whole was fairly stable across the adult life span, while mean levels declined slightly in older age. In the present study, age was mostly aligned with life satisfaction with personal development and living conditions for both machinists and non-machinists.

Comparing my results with those of the previous literature on the subject, it is interesting that the relationship between all these significant predictors—leisure satisfaction, community satisfaction, job satisfaction, and life satisfaction—are extensively researched, whereas scarce attention has been given to the role of these predictors in different domains of life satisfaction. From a global perspective, the results of my study echo the research completed in the past. However, my study reveals that

envisioning life satisfaction in different layers would facilitate a more specific, accurate and concrete anatomy of these predictors' effects on different life satisfaction domains.

Regional Effects on Life Satisfaction with Living Conditions

Abundant scholarship postulates that rural life is considered preferable to urban life by contemporary Americans. The regional variables (*regionnow, regionbefore*) saliently predict life satisfaction with living conditions for employed informants in the current study. Hence, the assertion of previous empirical studies is supported by my analysis if the focus is on one domain of life: living conditions.

My study results show that rural-urban differences only affect one's perception of living conditions, not perceptions of the macroenvironment or one's personal development in life. It is reasonable that regional differences would result in different life satisfaction levels. Rural communities provide a living environment closer to nature than urban living allows. Generally, rural environments are safer than cities. Cities may have more theatres and shopping malls, and convenient public transportation, but cities also have unclean roads, crowds, and crime. Meanwhile, rural neighborhoods may also offer closer social interaction among residents. The lifestyle possible in the city and in the country is very different. It is plausible that community satisfaction, especially interpersonal satisfaction, casts the longest shadow on one's perception of living conditions. On the continuum of different types of regions, suburbs are in the middle. Suburbs are not significantly different from rural or urban areas in predicting life

satisfaction with living conditions. Suburban areas combine some stereotypically urban and rural features. Consequently, informants living in suburban areas do not evaluate their living conditions differently than those living in either rural or urban regions.

Mollenkopf et al.'s (2004) findings of the similarities and differences between quality of life in urban and rural areas of five European countries showed that rural and urban areas have their own advantages and disadvantages. For example, rural areas generally provided fewer shops and medical services, but more abundant and accessible contact with the environment. Therefore, it is reasonable that not every domain of quality of life should benefit from rural living. In the same regard, city dwellers may like some elements of city life and not others.

Predictors of Life Satisfaction with Macroenvironment

Scott and Vitartas's (2008) findings indicated that the levels of involvement and attachment felt by residents had both a direct and a combined effect on perceptions of satisfaction with local government services. Higher levels of attachment corresponded positively with satisfaction. Of all predictors in the present study, having a strong belief in an improved standard of living shows the greatest effects on one's satisfaction with the macroenvironment. This is perhaps congruent with Scott and Vitartas's conclusion regarding the positive and optimistic attachment to the government. They postulated that only those who were satisfied with the current society and government would have faith in the possibility for an improved standard of living for most people. Therefore, if an

individual strongly believed in the improvement of standard of living, he/she would likely already be satisfied with the American political system, the government's role, and the status of the US in the world, feeling that these structures would continue to advance his or her standard of living. Strongly negative attitudes toward technology will result in lower life satisfaction with the macroenvironment, as reflected in the model. Little literature has discussed predictors of life satisfaction with regard to issues concerning the US government, democracy, and other political or technological realities.

Predictors of Life Satisfaction with Personal Development

Personal development incorporated one's expectations for the future, accomplishments in the past, and education. Unfortunately, there are no other empirical studies that predict life satisfaction with personal development. Hence, I am unable to contrast the results of my study with previous ones.

With respect to the effects of education on personal development, if one has higher education, he/she would likely be more satisfied with his/her personal development. Educational experiences might help individuals to become more confident and to seek out more opportunities in the future. Assuming that more education leads to better jobs, it is notable that job satisfaction had the strongest influence of all continuous predictors. Thus, the content of personal development is inextricably related to career development. Commonly, more educated people get paid better, achieve more promotions, and anticipate more promising careers in the future. It follows that these

people exhibit greater satisfaction with personal development, and my data bears out these conjectures. Leisure satisfaction followed job satisfaction as second most likely to impact an individual's personal development. America is a country that emphasizes leisure and outdoor recreation. Based on the USA's National Survey on Recreation and the Environment (NSRE) (2000-2001), outdoor recreation continues to be enormously popular across American society, with 97% of Americans aged 16 years or older reporting participation to some extent in outdoor recreation during any given year (Cordell et al., 2005). Pleasure and satisfaction from these leisure and recreation experiences may provide confidence and skills that translate to their professional development, as well. Americans are often proud of themselves and self-satisfied with past achievements in leisure and recreation activities.

Future Studies

I recommend four ways to deepen and broaden the current research's methods, analysis, and results. .

1. Use a Larger and Random Sample

This sample is restricted to western Pennsylvania and cannot responsibly generalized to the entire American population. Since about two decades ago, there has not been a single study focused on people's life satisfaction across the United States. A

larger sample could help researchers generalize the results to the entire country and investigate how Americans perceive their quality of life, not to mention broadening the scope of the regional comparisons touched upon here.

2. Use Different Measuring Scales

The scales adopted in this study were created a long time ago. Some of them may not be suitable for contemporary research. New scales should be applied to obtain a better fit. For example, the reliability of certain component analysis indices is relatively low. Tellingly, the original recreation satisfaction scale was not even included in the analysis because it did not have desirable validity.

3. Probe Life Satisfaction Further

Life satisfaction may be reconsidered in two ways. One is to divide life satisfaction into different and specific subdomains as I did in this study using PCA (three components were generated). There are other means to dissect the general life satisfaction into detailed parts. More analysis could be implemented by relating more socio-demographic variables and other interesting variables to subdomains of life satisfaction. For example, marital status, employment status of both husband and wife, and reasons to relocate should be included in future studies. The data reported here lacks the information to explain the results. In particular, it is hard to draw meaningful conclusions without

knowing how people value the three components of life satisfaction, what causes them to relocate, what the most important factors when considering relocation are, and, perhaps, which lifestyle (urban, suburban, or rural) one prefers.

Another perspective would be to focus on global life satisfaction rather than multidimensional research. An exploratory test with the data from the present study shows that job satisfaction, leisure satisfaction, community interpersonal and economic satisfaction, degree of belief in government interference, belief in improved standard of living, belief in technology advances solving overpopulation problems, and age account for about 46.8% of variation in changes of global life satisfaction. Prospective studies may show more about global life satisfaction by adopting distinct scales.

4. Use Different Statistical Tools

I applied PCA, CFA, reliability analysis, correlation analysis, regression analysis, and ANCOVA to analyze the data and fulfill my research purpose. If new scales were adopted, as suggested in point one, I would consider another method to reduce variable dimensions, such as cluster analysis. Furthermore, Structural Equation Modeling (SEM) might also be used to probe the various interrelationships among these scales.

Conclusions

The present study shows that specification of different domains of life satisfaction is necessary since some factors may not affect a global subjective assessment of life satisfaction but only certain domains of life satisfaction (e.g., living conditions). According to my results, this implies that research on life satisfaction in the U.S. should be more detailed and includes more variables. For different domains of life, the predictors may be different. Therefore, it is important to identify valid predictors so that life satisfaction can be analyzed meaningfully.

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Appendix A

MACHINIST and TOOLMAKER QUESTIONNAIRE
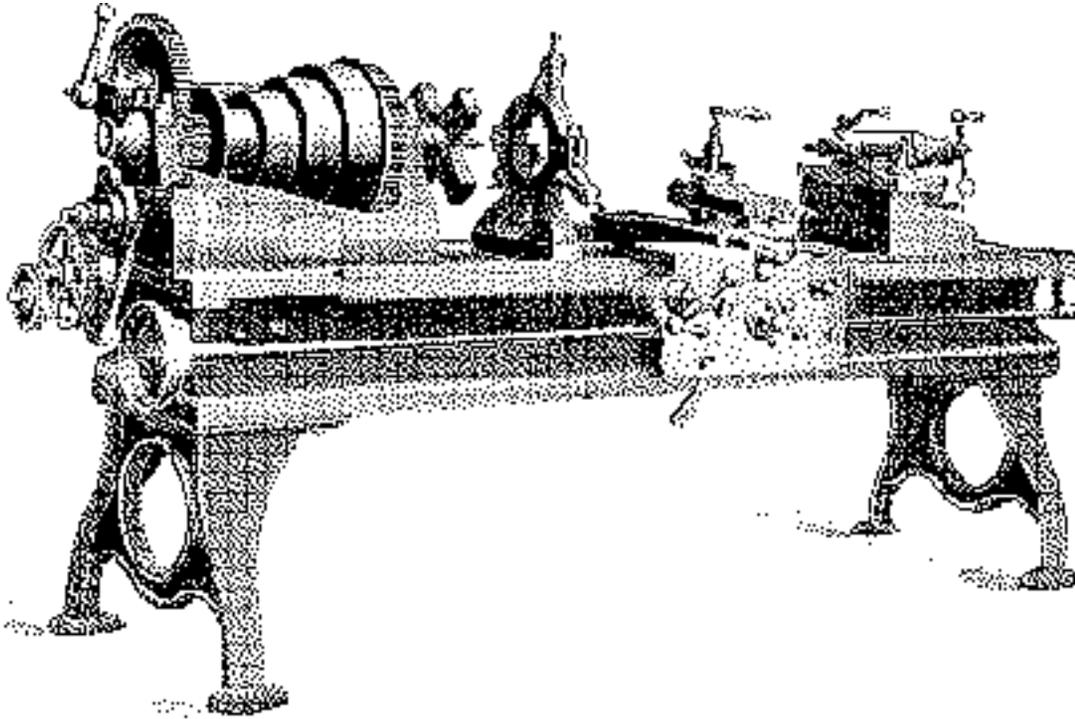
ALL INFORMATION COLLECTED WILL BE KEPT

ABSOLUTELY CONFIDENTIAL

Your responses will be held in strict confidence.

No individual data will be released to anyone.

Completed questionnaires should be returned in

the enclosed, stamped, self-addressed envelope.

Please respond to each statement according to the directions provided above each section. There are several sections and despite the similarity of some statements it is very important that you respond to each and every statement. Only then can we include your opinions in the final analysis. This is not a test and there are no right or wrong answers, so please respond as honestly and accurately as you can.

How do you feel about where you presently live?

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each question about where you now live by circling one of the numbers opposite each item.*

1 = Very Dissatisfied

2 = Dissatisfied

3 = Not Sure

4 = Satisfied

5 = Very Satisfied

1.	As a place to raise a family	1	2	3	4	5
2.	As a place with adequate medical and health facilities	1	2	3	4	5
3.	Quality of schools and other educational facilities	1	2	3	4	5
4.	Availability of good jobs for young people	1	2	3	4	5
5.	Opportunity for earning a liveable income	1	2	3	4	5
6.	Availability of suitable housing	1	2	3	4	5
7.	Adequacy of law enforcement	1	2	3	4	5
8.	Access to outdoors and wide-open spaces	1	2	3	4	5
9.	Absence of a polluted environment	1	2	3	4	5
10.	Quality of religious life	1	2	3	4	5
11.	Friendliness of the people	1	2	3	4	5
12.	In general, how satisfied are you with where you live?	1	2	3	4	5

How do you feel about the environment?

*Please read the following statements about the environment and indicate how strongly you **agree** or **disagree** with each by circling one of the numbers opposite each item.*

1 = Strongly Disagree
2 = Disagree
3 = Not Sure
4 = Agree
5 = Strongly Agree

1.	We are approaching the limit of the number of people the earth can support.	1	2	3	4	5
2.	The balance of nature is very delicate and easily upset.	1	2	3	4	5
3.	People have the right to modify the natural environment to suit their needs.	1	2	3	4	5
4.	Humans were created to rule over the rest of nature.	1	2	3	4	5
5.	When people interfere with nature it often produces disastrous consequences.	1	2	3	4	5
6.	Plants and animals exist primarily to be used by humans.	1	2	3	4	5
7.	To maintain a healthy economy we will have to develop a "steady state" economy where industrial growth is controlled.	1	2	3	4	5
8.	People must live in harmony with nature in order to survive.	1	2	3	4	5
9.	The earth is like a spaceship with only limited room and resources.	1	2	3	4	5
10.	People need not adapt to the natural environment because they can remake it to suit their needs.	1	2	3	4	5
11.	There are limits to growth beyond which our industrialized society cannot expand.	1	2	3	4	5
12.	Humans are severely abusing the environment.	1	2	3	4	5

How do you feel about various aspects of your life at the present time?

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each by circling one of the numbers opposite the item.*

1 = Very Dissatisfied

2 = Dissatisfied

3 = Not Sure

4 = Satisfied

5 = Very Satisfied

1.	The house that you live in	1	2	3	4	5
2.	The local district that you live in	1	2	3	4	5
3.	The standard of living	1	2	3	4	5
4.	The way you spend your leisure time	1	2	3	4	5
5.	Your present state of health	1	2	3	4	5
6.	The education you have received	1	2	3	4	5
7.	What you are accomplishing in life	1	2	3	4	5
8.	What the future seems to hold for you	1	2	3	4	5
9.	Your social life	1	2	3	4	5
10.	Your recreation	1	2	3	4	5
11.	Your family	1	2	3	4	5
12.	The present federal government	1	2	3	4	5
13.	Freedom and democracy in the United States today	1	2	3	4	5
14.	The state of law and order in the United States today	1	2	3	4	5
15.	The moral standards and values in the United States today	1	2	3	4	5
16.	The United States' reputation in the world today	1	2	3	4	5
17.	Taking everything together, your life as a whole these days	1	2	3	4	5

What outdoor recreation activities do you enjoy?

Please circle the number opposite the activities that apply to you. Circle only those activities you do regularly within season.

1.	Fishing	9. Camping	17. Team sports (i.e. Softball or Baseball)
2.	Hunting	10. Canoeing	18. River Rafting
3.	Four-wheel driving	11. Skiing	19. Bicycling
4.	Hiking	12. Snowmobiling	20. Archery
5.	Power Boating	13. Motorcycling	21. Swimming
6.	Birdwatching	14. Tennis or Racquetball	22. Golf
7.	Cross-country Skiing	15. Sightseeing	23. Sailing
8.	Horseback riding	16. Shooting	24. Hang Gliding

Please list any additional outdoor recreation activities in which you participate. _____

_____

What is your favorite outdoor recreation activity? _____

How do you feel about your recreation these days?

1 = Almost never true

Please read the following items and circle the response that is most accurate for you.

2 = Seldom true

3 = Sometimes true

4 = Often true

5 = Almost always true

1.	My recreation activities are very interesting to me.	1	2	3	4	5
2.	My recreation activities give me self-confidence.	1	2	3	4	5
3.	My recreation activities give me a sense of accomplishment.	1	2	3	4	5
4.	I use many different skills and abilities in my recreation activities.	1	2	3	4	5
5.	My recreation activities increase my knowledge about things around me.	1	2	3	4	5
6.	My recreation activities provide opportunities to try new things.	1	2	3	4	5
7.	My recreation activities help me to learn about myself.	1	2	3	4	5
8.	My recreation activities help me to learn about other people.	1	2	3	4	5
9.	I have social interaction with others through recreation activities.	1	2	3	4	5
10.	My recreation activities have helped me to develop close relationships with others.	1	2	3	4	5
11.	The people I meet in my recreation activities are friendly.	1	2	3	4	5
12.	I associate with people in my free time who enjoy doing recreation activities a great deal.	1	2	3	4	5
13.	My recreation activities help me to relax.	1	2	3	4	5
14.	My recreation activities help relieve stress.	1	2	3	4	5
15.	My recreation activities contribute to my emotional well-being.	1	2	3	4	5
16.	I engage in recreation activities simply because I like doing them.	1	2	3	4	5
17.	My recreation activities are physically challenging.	1	2	3	4	5
18.	I do recreation activities that develop my physical fitness.	1	2	3	4	5
19.	I do recreation activities that restore me physically.	1	2	3	4	5
20.	My recreation activities help me to stay healthy.	1	2	3	4	5

What type of games do you like to play?

1 = *Very Low*   interest and involvement

2 = *Low*   interest and involvement

Please read each item and circle the response that best describes   3 = *Medium*   interest and involvement

your level of interest and involvement.   4 = *High* interest and involvement

5 = *Very High*   interest and involvement

1. How interested and involved are you in playing games of physical skill? (These are games such archery, target shooting, horseshoes, or certain track and field events.)	1 2 3 4 5
2. How interested and involved are you in playing games of physical skill and strategy? (These are games such as tennis, basketball, football, softball, or pool.)	1 2 3 4 5
3. How interested and involved are you in playing games of pure strategy? (These are games such chess, checkers, Go, or Othello.)	1 2 3 4 5
4. How interested and involved are you in playing games of strategy and chance? (These are games such as poker, bridge, backgammon, Risk, Scrabble, or Monopoly.)	1 2 3 4 5
5. How interested and involved are you in playing games of pure chance? (These are games such a lottery, bingo, or coin matching.)	1 2 3 4 5

What is your favorite game (activity with winners and losers) to play at the present time? _____

How do you feel about your job these days?

1 = Very Dissatisfied

2 = Dissatisfied

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each*   3 = Not Sure

by circling one of the numbers opposite the item.   4 = Satisfied

5 = Very satisfied

1.	The physical work conditions	1	2	3	4	5
2.	The freedom to choose your own method of working	1	2	3	4	5
3.	Your fellow workers	1	2	3	4	5
4.	The recognition you get for good work	1	2	3	4	5
5.	Your immediate boss	1	2	3	4	5
6.	The amount of responsibility you are given	1	2	3	4	5
7.	Your rate of pay	1	2	3	4	5
8.	The opportunuity to use your abilities	1	2	3	4	5
9.	Industrial relations between management and workers in your company	1	2	3	4	5
10.	Your chance for promotion	1	2	3	4	5
11.	The way your company is managed	1	2	3	4	5
12.	The attention paid to suggestions you make	1	2	3	4	5
13.	Your hours of work	1	2	3	4	5
14.	The amount of variety in your job	1	2	3	4	5
15.	Your job security	1	2	3	4	5
16.	The opportunity to do a whole and complete piece of work	1	2	3	4	5
17.	The feeling of doing something which is not trivial, but really worthwhile	1	2	3	4	5
18.	Taking everything into consideration, how do feel about your job as a whole	1	2	3	4	5

What kinds of machines do you run at work and how do you use your time?

*Consider the three machines (Example: Bridgeport Series I vertical mill with digital readout) that you use most often on the job, and **estimate** the percentage of your time at work, when you are actually making a product, that you spend running each machine.*

1.   What brand and type of machine do you use most often to do your work?

Machine

_____ % of working hours running this machine   _____ %

2.   What brand and type of machine do you use second most often to do your work? (Leave this blank if you run only one machine.)

Machine

_____ % of working hours running this machine   _____ %

3.   What brand and type of machine do you use third most often to do your work? (Leave this blank if you run only two machines.)

Machine

_____ % of working hours running this machine   _____ %

4.   About what percent of your time do you spend operating machines other than those that you have listed above?   _____ %

5.   About what percent of your time do you spend doing things other than actually operating machines, such as set

ups, hand finishing, design, training,

supervision, and so on?   _____ %

THE TOTAL FOR QUESTIONS 1, 2, 3, 4, AND 5 SHOULD EQUAL   100 %

How do you feel about certain social, political, and economic issues
in the United States at the present time?

1 = Strongly Disagree

Please read the following items and indicate how strongly you agree or disagree with each   2 = Disagree

by circling one of the numbers opposite the item.   3 = Not Sure

4 = Agree

5 = Strongly Agree

1.	There should be more government regulation of business.	1	2	3	4	5
2.	Property owners have an inherent right to use their land as they see fit.	1	2	3	4	5
3.	If you start trying to change things very much you usually make them worse.	1	2	3	4	5
4.	Most problems can be solved by applying more technology.	1	2	3	4	5
5.	It is often necessary to restrict the rights of individuals for the good of society.	1	2	3	4	5
6.	Regulation of business by government usually does more harm than good.	1	2	3	4	5
7.	Economic growth improves the quality of life of all citizens in the United States.	1	2	3	4	5
8.	Americans are going to have to drastically reduce their level of consumption over the next few years.	1	2	3	4	5
9.	We should know if something will work before taking a chance on it.	1	2	3	4	5
10.	We cannot keep counting on science and technology to solve mankind's problems.	1	2	3	4	5
11.	Government restrictions on the use of private property are necessary in order to insure that the land will not be permanently harmed.	1	2	3	4	5
12.	In order to solve some of society's problems it will be necessary to place restrictions on individuals' behavior.	1	2	3	4	5
13.	The American people would be better off if the nation's economy stopped gowing so fast.	1	2	3	4	5
14.	The standard of living for the average American will continue to improve for the forseeable future.	1	2	3	4	5
15.	Americans can expect that their quality of life will be better in the future.	1	2	3	4	5
16.	Rapid economic growth often creates more problems than benefits.	1	2	3	4	5
17.	Machines have thrown too many people out of work.	1	2	3	4	5
18.	Automation creates better working conditions.	1	2	3	4	5
19.	Technological advances will eventually solve the overpopulation problem.	1	2	3	4	5
20.	Technology has made life too complicated.	1	2	3	4	5

21.	Handmade things are better than machine-made things.	1	2	3	4	5
22.	Machines have made life easier.	1	2	3	4	5
23.	It would be nice if we could stop building so many factories and go back to nature.	1	2	3	4	5
24.	The pace of modern life does not allow enough time for people to relate to each other.	1	2	3	4	5
25.	Computers make business and government more efficient.	1	2	3	4	5
26.	Technology does more harm than good.	1	2	3	4	5
27.	The quality of life is better in the country than in the city.	1	2	3	4	5
28.	People today have become too dependent on machines.	1	2	3	4	5

Finally, we would like to know some specific things about you and your job.

Is your work mostly product line or job shop and what type of machines do you use?

1.About what percent of your work time is spent doing: Product line work   _____ %

Job-shop work   _____ %

Total   100   %

2.About what percentage of your work time is spent on: CNC machines   _____ %

Manually controlled machines   _____ %

Other automatic machines _____ %

Total   100   %

What is your employment history?

1. What is your present job title or position?   _____

2. Name of your present employer or company name?   _____

3. How long have you worked with your present employer?   _____   Years

5. How long have you worked in the machine-tool or tool and die industry? _____   Years

6. How long have you worked in the industry in western Pennsylvania?   _____   Years

7. How many different companies have you worked for in this industry?   _____

How much formal education have you had? *(Please circle one category below.)*

1 =	1-8 years	6 =	Some College
2 =	9-11 years	7 =	College Graduate
3 =	High School Graduate	8 =	Some Graduate Study
4 =	Some Vo-Tech.	9 =	Graduate Degree

5 = Vo-Tech. Graduate

Background Information

1. Age _____ Years

2.Gender *(Please circle one)*   1 = Male   2 = Female

3.Annual Income *(Please circle one)*   1 =   00,000 - $14,999 3 = $25,000 - $34,999

                    2 = $15,000 - $24,999 4 = $35,000 +

4. Where do you live? *(If you live in a community, name the town, or city.)*

(If you live in a rural area, name the region.)   _____

5. What is your ZIP code? _____

6.The place where you now live can best be described as: 1 = Rural or Farm

(Circle one)   2 = Small Town

        3 = Suburb

        4 = Small City (like Butler or Meadville)

        5 = Large City (like Pittsburgh)

7.When growing up (5 - 18 years of age) the area where you lived

can best be described as: 1 = Rural or Farm

(Circle one)   2 = Small Town

        3 = Suburb

4 = Small City (like Butler or Meadville)

5 = Large City (like Pittsburgh)

8. All persons participating in this study are eligible for one of several cash participation awards. Names of those who will receive awards of either $200, $100, $50, or $10 will be selected randomly from a list of everyone who completes and returns this questionnaire. If you would like to be included in the draw, please provide us with your name and phone number so we can contact you if you are selected to receive one of the awards. Please be assured that all information that you provide will be kept absolutely confidential. If you do not wish to be considered for one of the participation awards, there is no need to include your name and phone number but please complete and return the questionnaire as your responses are very important to the success of this study.

Name _____ Phone Number _____

Please feel free to make any comments below about this questionnaire or about anything else that you feel is relevant to this study.

Thank you for your help!

Appendix B

NONMACHINISTS QUESTIONNAIRE

Western Pennsylvania

Quality of Life Survey

University Center for Social and Urban Research

The University of Pittsburgh

Pittsburgh, PA 15260

ALL INFORMATION COLLECTED WILL BE KEPT

ABSOLUTELY CONFIDENTIAL

Your responses will be held in strict confidence.

No information about individuals will be released to anyone.

Completed questionnaires should be returned in

the enclosed, stamped, self-addressed envelope.

Please respond to each statement according to the directions provided above each section. There are several

sections and despite the similarity of some statements it is very important that you respond to each and every statement.

Only then can we include your opinions in the final analysis. This is not a test and there are no right or wrong answers, so please respond as honestly and accurately as you can.

How do you feel about the place where you presently live?

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each question about where you now live by circling one of the numbers opposite each item.*

1 = Very Dissatisfied
2 = Dissatisfied
3 = Not Sure
4 = Satisfied
5 = Very Satisfied

1.	As a place to raise a family	1	2	3	4	5
2.	As a place with adequate medical and health facilities	1	2	3	4	5
3.	Quality of schools and other educational facilities	1	2	3	4	5
4.	Availability of good jobs for young people	1	2	3	4	5
5.	Opportunity for earning a liveable income	1	2	3	4	5
6.	Availability of suitable housing	1	2	3	4	5
7.	Adequacy of law enforcement	1	2	3	4	5
8.	Access to outdoors and wide-open spaces	1	2	3	4	5
9.	Absence of a polluted environment	1	2	3	4	5
10.	Quality of religious life	1	2	3	4	5
11.	Friendliness of the people	1	2	3	4	5
12.	In general, how satisfied are you with where you live?	1	2	3	4	5

1. What is your ZIP code? _____

2. The place where you now live can best be described as:

(Circle one)

1 = Rural or Farm

2 = Small Town

3 = Suburb

4 = Small City (like Butler or New Castle)

5 = Large City (like Pittsburgh or Erie)

3. When growing up (5 - 18 years of age) the area where you lived can best be described as:

(Circle one)

1 = Rural or Farm

2 = Small Town

3 = Suburb

4 = Small City (like Butler or New Castle)

5 = Large City (like Pittsburgh or Erie)

How do you feel about your job?

1 = Very Dissatisfied

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each*

2 = Dissatisfied

by circling one of the numbers opposite the item. If you are not employed outside your home, please do

3 = Not Sure

not complete this section of the survey.

4 = Satisfied

5 = Very satisfied

1.	The physical work conditions	1	2	3	4	5
2.	The freedom to choose your own method of working	1	2	3	4	5
3.	Your fellow workers	1	2	3	4	5
4.	The recognition you get for good work	1	2	3	4	5
5.	Your immediate boss	1	2	3	4	5
6.	The amount of responsibility you are given	1	2	3	4	5
7.	Your rate of pay	1	2	3	4	5
8.	The opportunuity to use your abilities	1	2	3	4	5
9.	Industrial relations between management and workers in your company	1	2	3	4	5
10.	Your chance for promotion	1	2	3	4	5
11.	The way your company is managed	1	2	3	4	5
12.	The attention paid to suggestions you make	1	2	3	4	5
13.	Your hours of work	1	2	3	4	5
14.	The amount of variety in your job	1	2	3	4	5
15.	Your job security	1	2	3	4	5
16.	The opportunity to do a whole and complete piece of work	1	2	3	4	5
17.	The feeling of doing something which is not trivial, but really worthwhile	1	2	3	4	5
18.	Taking everything into consideration, how do feel about your job as a whole	1	2	3	4	5

What is your employment history?

1. What is your present job title or position? Please give as exact a title as possible, such as accountant, machinist, auto mechanic, carpenter, secretary-clerk, hair dresser, high school teacher, truck driver, home maker, and so on. If you are unemployed, please indicate "unemployed."

    _____

2. How long have you been involved in this line of work?   _____   Years

3. How long have you worked with your present employer?   _____   Years

4. Are you a union member?   _____ Yes   _____ No

5. The location of your workplace can best be described as:

    (Circle one)

    1 = Rural or Farm

    2 = Small Town

    3 = Suburb

    4 = Small City (like Butler or New Castle)

    5 = Large City (like Pittsburgh or Erie)

How do you feel about the following aspects of your life at the present time?

*Please read the following items and indicate how **satisfied** or **dissatisfied** you are with each by circling one of the numbers opposite the item.*

1 = Very Dissatisfied

2 = Dissatisfied

3 = Not Sure

4 = Satisfied

5 = Very Satisfied

1.	The house that you live in	1	2	3	4	5
2.	The local district that you live in	1	2	3	4	5
3.	The standard of living	1	2	3	4	5
4.	The way you spend your leisure time	1	2	3	4	5
5.	Your present state of health	1	2	3	4	5
6.	The education you have received	1	2	3	4	5
7.	What you are accomplishing in life	1	2	3	4	5
8.	What the future seems to hold for you	1	2	3	4	5
9.	Your social life	1	2	3	4	5
10.	Your recreation	1	2	3	4	5
11.	Your family	1	2	3	4	5
12.	The present federal government	1	2	3	4	5
13.	Freedom and democracy in the United States today	1	2	3	4	5
14.	The state of law and order in the United States today	1	2	3	4	5
15.	The moral standards and values in the United States today	1	2	3	4	5
16.	The United States' reputation in the world today	1	2	3	4	5
17.	Taking everything together, your life as a whole these days	1	2	3	4	5

What outdoor recreation activities do you enjoy?

Please circle the number opposite the activities that apply to you. Circle only those activities you do regularly within season.

1.		Fishing	9.	Camping	17.	Team sports (i.e. Softball or Baseball)
2.		Hunting	10.	Canoeing	18.	River Rafting
3.		Four-wheel driving	11.	Skiing	19.	Bicycling
4.		Hiking	12.	Snowmobiling	20.	Archery
5.		Power Boating	13.	Motorcycling	21.	Swimming
6.		Birdwatching	14.	Tennis or Racquetball 22.		Golf
7.		Cross-country Skiing	15.	Sightseeing	23.	Sailing
8.		Horseback riding	16.	Shooting	24.	Hang Gliding

Please list any additional outdoor recreation activities in which you participate. _____

_____

What is your favorite outdoor recreation activity? _____

How do you feel about your recreational activities?

1 = Almost never true

2 = Seldom true

Please read the following items and circle the response that is most accurate for you.

3 = Sometimes true

4 = Often true

5 = Almost always true

1.	My recreation activities are very interesting to me.	1	2	3	4	5
2.	My recreation activities give me self-confidence.	1	2	3	4	5
3.	My recreation activities give me a sense of accomplishment.	1	2	3	4	5
4.	I use many different skills and abilities in my recreation activities.	1	2	3	4	5
5.	My recreation activities increase my knowledge about things around me.	1	2	3	4	5
6.	My recreation activities provide opportunities to try new things.	1	2	3	4	5
7.	My recreation activities help me to learn about myself.	1	2	3	4	5
8.	My recreation activities help me to learn about other people.	1	2	3	4	5
9.	I have social interaction with others through recreation activities.	1	2	3	4	5
10.	My recreation activities have helped me to develop close relationships with others.	1	2	3	4	5
11.	The people I meet in my recreation activities are friendly.	1	2	3	4	5
12.	I associate with people in my free time who enjoy doing recreation activities a great deal.	1	2	3	4	5
13.	My recreation activities help me to relax.	1	2	3	4	5
14.	My recreation activities help relieve stress.	1	2	3	4	5
15.	My recreation activities contribute to my emotional well-being.	1	2	3	4	5
16.	I engage in recreation activities simply because I like doing them.	1	2	3	4	5
17.	My recreation activities are physically challenging.	1	2	3	4	5
18.	I do recreation activities that develop my physical fitness.	1	2	3	4	5
19.	I do recreation activities that restore me physically.	1	2	3	4	5
20.	My recreation activities help me to stay healthy.	1	2	3	4	5

How do you feel about certain social, political, and economic issues in the United States at the present time?

Please read the following items and indicate how strongly you agree or disagree with each by circling one of the numbers opposite the item.

1 = Strongly Disagree

2 = Disagree

3 = Not Sure

4 = Agree

5 = Strongly Agree

1.	There should be more government regulation of business.	1	2	3	4	5
2.	Property owners have an inherent right to use their land as they see fit.	1	2	3	4	5
3.	If you start trying to change things very much you usually make them worse.	1	2	3	4	5
4.	Most problems can be solved by applying more technology.	1	2	3	4	5
5.	It is often necessary to restrict the rights of individuals for the good of society.	1	2	3	4	5
6.	Regulation of business by government usually does more harm than good.	1	2	3	4	5
7.	Economic growth improves the quality of life of all citizens in the United States.	1	2	3	4	5
8.	Americans are going to have to drastically reduce their level of consumption over the next few years.	1	2	3	4	5
9.	We should know if something will work before taking a chance on it.	1	2	3	4	5
10.	We cannot keep counting on science and technology to solve mankind's problems.	1	2	3	4	5
11.	Government restrictions on the use of private property are necessary in order to insure that the land will not be permanently harmed.	1	2	3	4	5
12.	In order to solve some of society's problems it will be necessary to place restrictions on individuals' behavior.	1	2	3	4	5
13.	The American people would be better off if the nation's economy stopped gowing so fast.	1	2	3	4	5
14.	The standard of living for the average American will continue to improve for the forseeable future.	1	2	3	4	5
15.	Americans can expect that their quality of life will be better in the future.	1	2	3	4	5
16.	Rapid economic growth often creates more problems than benefits.	1	2	3	4	5
17.	Machines have thrown too many people out of work.	1	2	3	4	5
18.	Automation creates better working conditions.	1	2	3	4	5
19.	Technological advances will eventually solve the overpopulation problem.	1	2	3	4	5
20.	Technology has made life too complicated.	1	2	3	4	5

21.	Handmade things are better than machine-made things.	1	2	3	4	5
22.	Machines have made life easier.	1	2	3	4	5
23.	It would be nice if we could stop building so many factories and go back to nature.	1	2	3	4	5
24.	The pace of modern life does not allow enough time for people to relate to each other.	1	2	3	4	5
25.	Computers make business and government more efficient.	1	2	3	4	5
26.	Technology does more harm than good.	1	2	3	4	5
27.	The quality of life is better in the country than in the city.	1	2	3	4	5
28.	People today have become too dependent on machines.	1	2	3	4	5

Please provide some personal information about yourself:

Background Information:

1. Your Age: _____ Years

2. Gender *(Please circle one)*   1 = Male   2 = Female

3. Annual Income *(Please circle one)*   1 =   00,000 - $14,999 3 = $25,000 - $34,999

                                               2 = $15,000 - $24,999 4 = $35,000 - $44,999

                                               5 = $45,000 - $54,999 6 = more than $55,000

How much formal education have you had? *(Please circle one category below.)*

1	=	1-8 years	6	=	Some College
2	=	9-11 years	7	=	College Graduate
3	=	High School Graduate	8	=	Some Graduate Study
4	=	Some Vocational-Technical Training	9	=	Graduate Degree
5	=	Vocational-Technical Graduate			

Please feel free to make any comments below about this questionnaire or about anything else that you feel is relevant to this study.

Thank you for providing your information!

Appendix C

SAS SYNTAX OF PROC MIXED

PROC MIXED Syntax

```
title 'Life Satisfaction with Living Conditions for the Employed';
libname spsdat spss 'F:\Dissertation\Data\Employed.por';
*libname spsdat spss 'E:\Dissertation\Data\Male machinists.por';
libname dta 'F:\Dissertation\Data';
*libname dta 'E:\Dissertation\Data';
data dta.employed; set spsdat.employed;
run;
/*proc contents data=dta.employed;
run;*/
proc mixed data=dta.employed;
class regionno regionbe;
model LifeS4= regionno regionbe LS*regionno CS1*regionno CS2*regionno JS*regionno age*regionno
              LS*regionbe CS1*regionbe CS2*regionbe JS*regionbe age*regionbe /noint;
contrast 'regionnow slopes are all equal for LS' LS*regionno 1 -1 0, LS*regionno 1 0 -1;
contrast 'regionnow slopes are all equal for CS1' CS1*regionno 1 -1 0, CS1*regionno 1 0 -1;
contrast 'regionnow slopes are all equal for CS2' CS2*regionno 1 -1 0, CS2*regionno 1 0 -1;
contrast 'regionnow slopes are all equal for JS' JS*regionno 1 -1 0, JS*regionno 1 0 -1;
contrast 'regionnow slopes are all equal for age' age*regionno 1 -1 0, age*regionno 1 0 -1;

contrast 'regionbefore slopes are all equal for LS' LS*regionbe 1 -1 0, LS*regionbe 1 0 -1;
contrast 'regionbefore slopes are all equal for CS1' CS1*regionbe 1 -1 0, CS1*regionbe 1 0 -1;
contrast 'regionbefore slopes are all equal for CS2' CS2*regionbe 1 -1 0, CS2*regionbe 1 0 -1;
contrast 'regionbefore slopes are all equal for JS' JS*regionbe 1 -1 0, JS*regionbe 1 0 -1;
```

```
contrast 'regionbefore slopes are all equal for age' age*regionbe 1 -1 0, age*regionbe 1 0 -1;
run;
proc mixed data=dta.employed;
class regionno regionbe;
model LifeS4= regionno regionbe LS CS1 CS2 JS age/ solution;
lsmeans regionno regionbe/pdiff adjust=tukey;
run;
```

VITA

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EDUCATION

The Pennsylvania State University
Ph.D   Recreation, Park, and Tourism Management (Aug 2008)

Master of Applied Statistics   Statistics (2006)

M.S   Leisure Studies (2004)

Southwestern University of Finance and Economics (SWUFE)
B.B.A.   Business Administration in Tourism and Travel Industry (2002)
                                 Chengdu, China   Distinguished Honor (top 0.01%)

RESEARCH EXPERIENCE

Research Assistant   2004-2007
Department of Recreation, Park, and Tourism Management
The Pennsylvania State University
- Coordinated the cross-national and longitudinal (seven-year) study of leisure and youth development funded by NIH. Cooperated with researchers from six countries to create a database, analyze data, and interpret results
- Created the matrices of multi-variable comparisons of free time use in youth in the very first cross-national study of Europe, America, Africa, and South America regarding the change of their self-determination process in leisure after a special leisure program was applied to teenagers in these countries
- Analyzed data of Fijian tourism study by implementing cultural consensus analysis and Principal Component Analysis in SPSS
- Co-authored a paper concerning rural Fijian highlanders' perceptions about the place they live

PROFESSIONAL EXPERIENCE

Research Analyst   Summer 2007
Research and Development for Personal Insurance
The Travelers Companies, Inc.

Consultant   Spring 2005
Statistical Consulting Center, The Pennsylvania State University

SKILLS

Fluent at English and a native speaker of Mandarin
Proficient at MS Office system, SAS, SPSS, Splus, and MINITAB