CONGRUENCE AND WELL-BEING IN A STUDENT SAMPLE:
AN INVESTIGATION USING THE EXPERIENCE SAMPLING METHOD

by

Jennifer Frood

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Abstract

An undergraduate student sample was used to explore the Experience Sampling Method (ESM) in a study looking at the relationship between person by environment fit (congruence) and well-being. Specifically, does congruence account for well-being above and beyond personality variables or environmental variables on their own? Activities were monitored using the ESM and personality variables were collected using the PRF (Form E). Well-being was measured using the subscales of the General Well-Being Schedule: adjustment well-being, behavioral well-being and a composite total well-being score. Three methods of operationalizing congruence were used; an informed observer method (congruence according to the investigator), an intersubjective method (congruence according to a committee of undergraduate students) and a subject method (congruence according to the subjects themselves). These multiple methods of obtaining congruence were compared and discussed due to the issues surrounding the operationalizing of congruence (i.e. who is best to determine which personality factors “fit” in which environmental conditions). Issues concerning the statistical modeling of congruence and well-being relationships were also investigated. Linear and quadratic models of fit were compared and the theoretical implications are discussed. It was found that the investigator method of coding predicted behavioral well-being as measured by the General Well-Being Schedule but that is was less of a predictor than personality characteristics. Neither the intersubjective or the subjective methods of coding were able to predict well-being.
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Chapter I: Introduction

Our freedom to choose and what we elect to do with our lives can have great impact. The way we choose to structure our lives or, in other words, the environments within which we choose to put ourselves can affect our experiences of the world. The present study is concerned with one area in which the choices that people make and the environments in which they find themselves may affect them in profoundly important ways: well-being. Broadly speaking, the present study was concerned with the relationship between person-environment fit and well-being.

Three main hypotheses were investigated. The first was that person-environment congruence (or the fit between an individual’s personality and the activities in which they engage) would be related to well-being. The second was that congruence would be a better predictor of well-being than either characteristics of the person or characteristics of the environment on their own. This hypothesis follows from the expectation that if congruence is a useful predictor of well-being it must capture the synergistic effect of the person-environment interaction. Lastly, congruence in activities that are defined as leisure activities should be negatively correlated with inappropriate leisure (the Leisure Boredom scale).

As stated above, person-environment fit or congruence, involves an interaction between characteristics of an individual and their perceived environment. Person-environment fit can be construed as a very general reciprocal person-environment framework in terms of personal competence and environmental
Congruence

demand (Moos 1987, Hampton 1991, Csikszentmihalyi & LeFevre 1989, Diener, Larsen & Emmons 1984). Diener, Larsen and Emmons (1984) have put forth two models of this interaction. According to the first model, there is a relationship between personality and the situations people choose to be in. For example, people high in affiliation will choose to be in social situations. According to the second model, when there is congruence between the situation and personality, a person will experience more positive affect. For example, when people high in affiliation are in social situations they will experience positive affect. Choice of situation can result from the environmental pressures on a person, elements of the situation itself or the person themselves. Furthermore, some people may have some situations more available to them regardless of their personality due to such factors as chance, status, or propinquity (Diener, Larsen & Emmons 1984). These relationships between personality and situation can also be characterized as being active or passive. An active view works on the assumption that there is a demand from the environment that the person is required to be competent at to attain congruence. For example, in a social situation a person will be required to have a certain amount of social competence to attain congruence. The passive view assumes that there is an internal need to be fulfilled by the environment. For example, a person high in affiliation needs a social situation to be fulfilled by the environment. The present study is based on the latter view. When there is a “match” between the person and their environment, the person is said to be in congruence with their environment. The concept of congruence has been used to investigate many domains of life such

In order to study the relationship between personality and environmental characteristics, elements of both the person and the environment need to be measured. Researchers can then use correlational and other methods to examine similarities between an individual's personality characteristics as evidenced by their need profile and the profile of their relevant environment (Emmons, Diener and Larsen 1986). Assouline and Meir (1987 as cited in Hampton 1991) conducted a meta analysis of studies concerned with the relationship between personality-environment congruence and well-being, and found a mean congruence-satisfaction correlation of .21. It is generally accepted that congruence is associated with satisfaction while incongruence is associated with dissatisfaction and distress.

Tracey, Sherry and Keitel (1986) suggest that global lack of fit between a person and their environment (incongruence) is more important to general distress than incongruence in an individual domain of a person's life. For example, if a person has a "good fit" in their work domain but a "poor fit" in their home life domain, their general congruence would only be moderate. Ignoring the difference in domains in favor of a global fit would "increase the probability of finding no support for the person-environment fit hypothesis" (Tracy et al. 1986, p. 659). It has also been suggested that if a person is lacking in fit in one area of their life, they can make up for it in another domain. That is, there may be a compensatory function
between the domains, although this has not been largely supported in the literature (Melamed et. al. 1995). However, it is recognized that the different domains do not operate in their own vacuum. To this end, moderate levels of incongruence in several areas of life (i.e. poor fit at work and at home) could be related to greater levels of distress than a substantial incongruence in only one area of life. From this perspective it would be prudent, therefore, to look at different areas of life when exploring congruence to examine the general pattern of congruence or incongruence between personality and environment across a greater scope of domains.

This study focuses on the domains of work and leisure. As stated above, it is hypothesized that perceived freedom is a precursor to congruence, such that congruence will only occur when people are free to chose their environment. This perceived freedom is of double fold importance to this study as it is also important in the distinction between the domains of leisure and work. Leisure, in this study, is defined as an activity that is freely chosen and has elements of high intrinsic motivation. Work, on the other hand, is defined as activities that are not freely chosen and are not high in intrinsic motivation (refer to Figure 1).
These elements of perceived freedom and intrinsic motivation will be discussed in context after an introduction to the relationship between leisure and congruence and some methodological issues.

Leisure and Congruence

Although most people claim to know what leisure is and what it does for us, to define it in words is a much more complicated process. A common objective definition of leisure is that is a relative relationship with work. That is, leisure is what work is not. However, leisure is not simply the antithesis of work. It has an additional unspoken element. “True play” or leisure “is its own reward” (Roberts, 1995). The basic elements of leisure can be described by such terms as enjoyable, relaxing (not stressful), having freedom of choice (control over your own time), intrinsically motivating (doing something for yourself rather than for external rewards), and challenging (personal growth) (Caldwell and Smith, 1988).
In 1987, B. G. Gunter conducted a qualitative study to see what elements were most commonly reported to describe leisure activities as served as the basis for the distinction made above. Subjects were asked to describe their most memorable leisure experience as well as the most common and meaningful type of leisure normally experienced during the course of a day. Based on answers from university students, a composite description of leisure experience was produced. In order of the frequency with which they were mentioned, the following descriptions were used: a sense of separation from the everyday world, perceived freedom of choice in one's actions, a feeling of pleasure, spontaneity (allowing the situation to direct their actions), timelessness, fantasy, a sense of adventure and exploration, and self-realization (identity exploration). This last element has particular meaning to those who are in the process of a role change (e.g., adolescents, new parents, people in post-retirement, students beginning University). Leisure can assist in helping people, through the elements of exploration and self-realization, come to terms with their new role. That is leisure also has an instrumental component to it. For example, new students joining a social club at a new University will be facilitated by the situation to find others like them, to develop their role as a student and explore new interests with the support of others who are like them.

The profile of activities that a person engages in during leisure can be seen as a lifestyle (Caldwell and Smith, 1988), one which may be beneficial to good health. Leisure should be viewed as health promoting via a broad lifestyle rather than a specific health behavior (e.g. taking up jogging) or a cluster of risk behaviors.
(e.g. reducing dietary sodium). That is, leisure is not one specific behavior but rather the way you choose to live your life. Within this context, leisure’s relationship to health (and more specifically, health promotion) becomes much clearer. The idea that there is a relationship between leisure activities and health is not new but there is a trend in the literature to shift away from traditional views of looking at the benefits of leisure activities themselves (e.g. the purely physiological effects), to the underlying reasons for the activity and the purpose it serves. To give some examples of the issues being dealt with in this exploratory trend of looking at the functions of leisure, Iso-Ahola and Weissinger (1991) used the concept of leisure boredom (a tendency to view leisure as boring) to look at the differences between adolescent substance abusers and non-abusers. Kosberg and Garcia (1985) looked at the larger social implications of having people with too much leisure time and not enough leisure skills to deal with the excess time (i.e. the unemployed or the recently retired). Searle, Mahon, Iso-Ahola, Sdrolias and van Dyck (1995) used a leisure education intervention study to look at well-being outcomes. Their study showed significant increases in leisure control, leisure competence, life-satisfaction and a decrease in leisure boredom, from pre to post-intervention. With this in mind, by one argument it is appropriate leisure that is the defining connection between health benefits and leisure. One natural way of defining whether leisure is appropriate or not is to determine if it matches personal characteristics.

Leisure also may contribute to health by providing opportunities for self-determination and perceived freedom. This is important for taking control in ones'
own health care. Increasing self-determination in turn may increase self-efficacy which in turn may increase involvement in one's own health care and thus improve one’s own health (Waller and Bates 1992). In this 1992 study, elderly subjects were looked at with respect to their health locus of control, self-efficacy beliefs, and lifestyle behaviors. Waller and Bates found that healthier elderly people were characterized by an internal health locus of control, high generalized self-efficacy and good health practices. A cycle of good health and well-being has begun. In 1977, Rodin and Langer conducted an intervention study with institutionalized elderly subjects. Participants were given plants to care for which was meant to increase feelings of efficacy. When compared to a control group of patients with no plant to care for, those who were given plants were found to be healthier, more active, more self-initiating and had lower mortality rates.

Leisure also provides the opportunity to do things that are intrinsically rewarding. Intrinsic rewards include things such as; a sense of control, the merging of action and awareness, a loss of self-consciousness and an intense feeling of enjoyment (Csikszentmihalyi as cited in Graef et. al. 1983). Kruglanski (as cited in Graef et. al. 1983) suggests that positive affect accompanies intrinsically rewarding experiences because they represent “the fulfillment of one’s desire” (p. 158). This should leave people happier, with more confidence and more self-fulfilled. It has also been argued that those people who are more likely to use intrinsic motivation cues are more likely to view crisis as challenge and therefore experience less stress and maintain health (Coleman 1993).
As stated above, leisure can have a strong impact on a healthy lifestyle. Evidence has been reported on the impact of leisure congruence (where a person’s personality matches their leisure activity) on health and well-being. Melamed et. al. (1995), explored this concept using professionals (engineers, technicians, physicians, and lawyers) as their participant base. Holland’s typology, used generally for matching people’s skills and vocational choice (Holland 1973 as cited in Melamed et. al., 1995), was used to classify persons and their leisure activities (based on each person’s list of all non-work activities in order of preference), which was then used to obtain a measure of congruence. The outcome variables used were, work-satisfaction, anxiety, burnout, somatic complaints and self-esteem. Leisure congruence was found to predict burnout, somatic complaints, and anxiety, such that greater leisure congruence was related to lower burnout, lower somatic complaints and lower anxiety.

The Melamed et. al. (1995) study looking at leisure-congruence also looked at vocational-congruence and its effects on health and well-being. Work or vocational congruence has been shown to correlate positively with leisure congruence. This may be either because a person’s skills at leisure are extending to their abilities utilized at work and at leisure (as in a person who hikes for leisure and manages an outdoors shop as work) or the reverse where a skill learned in the work place spills over to leisure activities (as when computer skills are learned at work and “surfing the net” for leisure) (Melamed, Meir and Samson 1995). Therefore, as stated before, it makes sense to look at both measures of
congruence. Vocational-congruence was positively correlated with work satisfaction (.36) and self-esteem (.20) and negatively correlated with burnout (-.35), somatic complaints (-.34) and anxiety (-.19).

It was also noted that “congruent leisure activities contributed to well-being mostly in persons with the poorest work fit (and the highest distress)” (Melamed, et. al. 1995 p. 36). This has two possible explanations. One, as was put forth by Melamed, Meir and Samson (1995) and is consistent with other literature on leisure, is that the benefits of leisure on health are greatest in those people with the greatest levels of distress. If a person is stressed because they have low vocational-congruence then leisure-congruence will provide a greater health benefit. The other explanation, may be that needs not fulfilled in vocational roles are fulfilled in leisure roles. Therefore leisure becomes the sole source of their well-being.

Most researchers now converge on the idea that intrinsic motivation (doing something for its own sake) and personal freedom are key elements in what constitutes leisure, yet how they fit into the puzzle of congruence is still an enigma. Methodological issues will be presented first, perceived freedom will be addressed second, and a discussion of intrinsic motivation will follow.

Methodological Issues

With all the elements that are involved in congruence it is necessary to fully explore the state as it unfolds in time. This can be accomplished using a method called the Experience Sampling Method (ESM). The ESM is a relatively new
method that allows researchers to monitor behavior in a natural setting without being intrusive. There is an emphasis on ecological validity of the assessments. It has many advantages over traditional data collection methods. Self-report questionnaires may ask participants to summarize their behavior, or emotions over a long period of time (Stone and Shiffman, 1994). Many of the nuances or microprocesses of life are lost to this kind of questioning. As well, memories are not perfect. They are colored by life experiences, subject to cognitive processes such as priming (when checklists are used) (Alcock, Carment and Sadava, 1994), salience, and reconstruction bias (remembering what should have/wished had occurred) (Stone & Shiffman, 1994).

Using the ESM is relatively simple. A participant is given a cue (such as a pager “beep”, an alarm or an event) that indicates an assessment should be completed at that time. It can be used to gather information as an event occurs, to gain a frequency count of events or to get a general sampling of emotions, events, or thoughts.

The ESM has been used to monitor daily experiences in the elderly (Hnatiuk 1991, Voelkl and Nicholson, 1992), measure intrinsic motivational trends (Graef, et. al., 1983), experiences of freedom (Csikszentmihalyi and Graef, 1980), and optimal experiences of work and leisure (Csikszentmihalyi and LeFevre, 1989). Because most of these elements (intrinsic motivation, freedom, and daily experience) are to be used in the present study, the experience sampling method seems to provide the most useful tools with which to gather the information we are looking for.
This method has also been used to test the theory of leisure congruence (Diener et. al., 1984). It has been hypothesized that when they are given freedom of choice, people will choose to be in situations that are congruent with their personality and will have more positive affect under these circumstances (Diener, Larsen and Emmons, 1984). For example, extroverted people will choose to be in situations where there are other people while introverted people will choose to be in situations that are less social. To examine these ideas, Diener, Larsen and Emmons (1984) had university students monitor their activities using the ESM. Twice a day, for a period of six weeks, a wrist watch alarm would signal a time for the students to record their activity and their mood state. The students were asked to report how happy, depressed, frustrated, satisfied with their day, unhappy, worried, and lonely they were, on a seven-point scale, at the moment the alarm sounded. Two scales were used to characterize their activity. Students checked off a list of activity categories (i.e. whether the activity was social, semisocial, others simply present but with no personal interaction, or alone) and they indicated whether they considered that activity to be recreation or work. The first scale was used as an objective characterization of the activity while the second scale represented the subjective characterization of the activity. Students also indicated whether or not the situation was typical or not typical for them. The personality factors studied were affiliation, autonomy, achievement, play, cognitive structure and order from the Personality Research Form (PRF) (Jackson 1974). Eysenck's extraversion scale (Eysenck and Eysenck, 1968) was also used. Diener et. al. (1984) found that the
PRF achievement scale was significantly positively correlated with the percent of total time spent in work situations ($r=.30$) and significantly negatively correlated with the percent of total time spent in novel situations ($r=-.53$). The PRF order scale was significantly negatively correlated with social situations ($r=-.39$), novel situations ($r=-.58$), and social recreation situations ($r=-.38$). This provides support for the idea that certain personalities are linked more to certain activities than others. Affect scores also showed a trend consistent with the theory that people choose situations that suit their personality and are happier in those situations. For example, those students with extroverted personalities had higher positive affect in social situations. Some correlations were not as high for some congruencies that seem inherently correct (e.g., the affiliation scale was negatively correlated with social situations and recreate social situations, though not statistically significantly). Findings were not as clear as expected; however, given some of the more recent research that includes a measure of perceived freedom, these weak findings can be explained.

**Perceived Freedom**

The above unexpected low correlations may be a result of the lack of freedom students have. As stated before, one of the main elements of leisure is freedom of choice. When people are given freedom of choice, they can be expected to choose to be in situations that are congruent with their personality. If there is no choice then congruence would presumably occur at a chance rate. A study by Hultsman and Black (1989) showed that high school students had the lowest perceived freedom followed by graduate students. Having low perceived
freedom may provide a clue as to why the findings in the study mentioned above were not as strong as they were hypothesized to be.

A later study by Emmons, Diener and Larsen (1986) looked at how situation choice vs. imposed situations affect the relationship between leisure and personality. Again, students were used as subjects. Percentage of total time spent in an activity was correlated with the various personality measures using the same categories as the earlier study but with the added dimension of whether or not activities were freely chosen. Students were asked to rate the extent to which each activity was either chosen or imposed on a 9-point bipolar scale. Any situation that was rated as 4 or less was classified as chosen, any activity that was rated as 6 or more was classified as imposed. Any situation that rated a 5 was excluded from the analysis. Subjects with high extraversion scores spent more time in social activities \( (r=0.40) \) when they were freely chosen than when they were imposed \( (r=-0.35) \). In the Diener et. al. (1984) study, where choice was not a measured dimension, the correlation between extraversion and time spent in social situations was lower \( (r=0.19) \). Freedom is, thus, obviously an important consideration.

At this point it is useful to clarify the distinction between perceived and objective freedom. Objective freedom, in the leisure context, means "the availability of opportunities for choice in the objective leisure setting" (Mannell and Bradley, 1986, p. 228). Perceived freedom would be the opportunities for choice the person perceives in their environment regardless of what is actually occurring. Mannell and Bradley (1986) looked at the effects of objective freedom, locus of control and
leisure experience (operationalized by becoming absorbed in playing a game) in university students. Students were classified as having either an external or an internal locus of control, then exposed to a high or low control situation (whether or not they had to play a game while they waited), that is, objective freedom was in the control of the experimenter. Although both those with internal locus of control and those with external locus of control were exposed to the same conditions, they perceived them differently. An interaction was found between choice and locus of control. Those with external locus of control were less sensitive to the differences between the two control situations (i.e., they reported a smaller difference in perceived freedom across high and low choice situations) while those with an internal locus of control were more sensitive to the change in freedom. It was this perceived freedom that affected their behavior on the activity in the study (whether or not they became absorbed in the game) rather than the objective freedom. That is, it is the perceived freedom of choice that appeared to mediate the impact of objective freedom and locus of control on the quality of their leisure experience.

**Intrinsic Motivation**

The other key concept in leisure is intrinsic motivation. Intrinsic motivation is defined as occurring when “satisfaction arises out of the behavior itself” (Chaplin 1985, p. 239) or as “behavior done solely for the interest and enjoyment inherent in performing a given action” (Reeve 1992, p. 141). It is these elements of intrinsically motivated activity that help to define leisure activities and the experience of them.
Intrinsically motivated activities are qualitatively different from other types of motivation in that the motivation derives from the person themselves based of psychological needs (Reeve 1992). By engaging in a behavior that is intrinsically motivated, a psychological need or a personal need is being fulfilled. It is this element of intrinsic motivation that perhaps is the motivation behind congruence.

People engage in many different activities during the course of a day and that each activity has its own motivational push (i.e., intrinsic or extrinsic, internal or external). Graef et. al. (1983) looked at the trend of intrinsic motivation during the day and the relationship between intrinsic motivation and psychological well-being. Using the ESM, 107 working men and women monitored their activities over a 7-day period. Intrinsic motivation was measured by two questions; why they became involved with the activity (had to, wanted to, nothing else to do) and how involved they were in the activity by indicating the extent to which they ‘wished to be doing something else’. The activity with the highest level of intrinsic motivation was eating, followed by active and passive leisure and socializing. Working at work had the lowest level of intrinsic motivation. The relation of intrinsic motivation to psychological well-being was shown to be very clear in this study: “People consistently rate themselves more happy and less tense as the level of intrinsic motivation increases” (Graef et. al., 1983, p 162).
Leisure Boredom

Another way to examine the health effects of leisure is to look at the inverse of appropriate leisure or leisure congruence. Leisure boredom can be defined as “too much time, and too little to do” (Iso-Ahola and Weissinger, 1990). To look at this construct Iso-Ahola and Weissinger (1990) developed the Leisure Boredom scale in a series of studies. In this series, Iso-Ahola and Weissinger gave students questionnaires that measured intrinsic leisure motivations (the individual tendency toward intrinsic motivation of leisure behavior), leisure satisfaction, and perceived satisfaction with mental and physical health. Just as appropriate leisure is positively correlated with intrinsic motivation (Graef et al., 1983), and better mental and physical health (Melamed, et al., 1995), leisure boredom was negatively correlated with intrinsic leisure motivation (r=-.67), and satisfaction with physical (r=-.23) and mental (r=-.17) health. Although leisure congruence and leisure boredom should theoretically have an inverse relationship, this has not been empirically investigated. Leisure should be optimal to have benefit for the person. That is, there should be a match between available skills and available challenges (Iso-Ahola and Weissinger, 1990) or in other words, congruence between the person and the environment. Glyptis (1983) provided support for this idea in her examination of the unemployed (who, by virtue of their circumstances could be seen as having excess leisure time and not enough challenge or personal resources). Ninety percent of the unemployed in this study reported feelings of depression, boredom, and lethargy.
Kosberg and Garcia (1985) found similar responses attributed to leisure time among the elderly, as well as loneliness and the occurrence of problem drinking. Peterson (1979) noted, "too often the use of alcohol is not the result of emotional illness or psychological stress but merely of increased leisure-time, boredom, and a lack of challenging activities" (p. xv, as cited in Kosberg and Garcia, 1985). In 1991, Iso-Ahola and Crowley compared adolescent substance abusers with a control group of adolescent nonabusers. Both groups were given a leisure boredom scale and data were collected on leisure participation (self-reported frequency on a leisure activity inventory). The results of the comparison on the Leisure Boredom Scale scores indicated that the abusers had a higher tendency to perceive boredom than did the nonabusers. Interestingly, this was not because they had less to do. The abusers, on average, had higher rates of leisure participation than the nonabusers. More importantly, the types of activities they engaged in were different. The abusers were more likely to participate in active activities, such as football, roller-skating, baseball and skateboarding. The nonabusers were more likely to participate in activities such as reading, going to the movies, and tennis. What this means is that abusers were more active and more likely to perceive boredom in their environment. It was hypothesized by Iso-Ahola and Crowley that abusers had a higher level of arousal to meet to achieve optimal levels of arousal, that is they were less likely to find challenge in their environment to match their skill. Or, in terms of the present study, their needs were not being fulfilled by the environment. That is, they were in a state
of incongruence with their environment. Consequently, inappropriate leisure can be linked to decreases in well-being and health.

Having appropriate activity in life, as stated above, should be part of a healthier life-style. Well-being is an indication and a result of a healthy lifestyle. How well-being is measured, however, is not a simple issue. Well-being can mean generally positive feelings such as happiness, peace of mind and an absence of negative feelings such as fear, anxiety and sadness (Reker and Wong, 1984). We can also look at outward measures, such as wealth, success and physical health. However, if a person is dying but has peace of mind and no fear or anxiety, do they have high well-being? Since it is known that a person’s perception is a powerful influence on how they react to the world, it makes more sense to look at the perceptual side of the argument.

**Person by Environmental Fit Issues**

Based on this mass of literature, it becomes clear that there is a relationship between the person and their environment. How this is defined depends on an individual’s theoretical approach to studying human behavior yet it is still based on the same philosophy. For the most part, research converges on the concept that there is an optimal link, match or state of person by environment fit. This concept can be seen as a relationship between opportunities for challenge and extent of personal skills and competencies. Csikszentmihalyi coined the term “flow” to describe this optimal state of balance between challenge and skill. When both
challenge and skill are high, the person experiences “the likelihood of learning new skills and increasing self-esteem and personal complexity” (Csikszentmihalyi and LeFevre 1989, pg. 816) (Figure 2).

Figure 2. Csikszentmihalyi's Model of Flow (taken from Reeve 1992).

Source: Based on Csikszentmihalyi (1975).
According to this perception of person by environmental fit, the better the fit between the person and the environment the more positive the outcome. This linear model is what is commonly assumed in applied congruence literature.

The person by environment concept can also be reinterpreted as a relationship between demands of the person and supply in the environment, whether it is Lewin’s needs and press theory or physiological stimulus needs (temperament or sensation seeking) (Figure 3) or that the environment has challenges that the person can either deal with or not (stimulus and performance efficiency).

**Figure 3.** Relationship between personality and Environment for introverts and extraverts (taken from Reeve 1992)
In this model, the relationship is curvilinear, or quadratic, such that the optimal level of person by environmental fit is moderate rather than high. That is, the relationship resembles an inverted U shape when plotted.

Congruence is similar to the concepts of flow and the relationship between extraversion and level of stimulation in that the outcome is dependent on the success of the fit between the person and the environment they are in. Flow is also similar to the concept of congruence because it involves looking at the match between personal skills and environmental demand. The model of stimulation may seem unrelated, however, if one views the level of stimulation as a challenge presented by the environment, and personality as a measure of personal skill, the two models become closer in conceptualizing a person-environmental fit in the same manner. Congruence is simply a way of looking at this relationship, cutting through the jargon used by specific fields of study to develop a definitive model for person-environment fit that can then be applied to many fields without the need for translation.

If the philosophical basis remains the same, regardless of how person by environment is operationalized, the question then becomes; what level of fit is optimal for a positive outcome, high (linear) or moderate (quadratic).

In the present study, I propose to use this larger idea of person by environment fit and its implications for well-being. The approach used here is that people have specific personal needs and if they put themselves in the environment that will best fulfill those needs, they will thereby achieve congruence.
needs are met often enough, it is hypothesized that well-being will be higher (i.e., congruence should predict well-being). Specifically, it is hypothesized that students with a higher level of congruence will have a high well-being (i.e., they will be correlated) and that this level of congruence will predict well-being over and above personality or environmental characteristics on their own. Methods by which congruence scores are obtained will be looked at in an exploratory manner.

The last hypothesis is based on the research of Iso-Ahola and Weissinger (1990). Specifically, congruence in activities that are defined as leisure activities should be negatively correlated with inappropriate leisure (the Leisure Boredom scale).
Chapter II: Method

Subjects

Subjects were recruited from first and second year psychology courses at the University of Northern British Columbia. Credit was given for participation (4%). Presentations were made to three classes and sign up sheets were left. As well, posters were put up around UNBC.

The sample consisted of 44 undergraduate students, 15 male and 29 female. The age of participants ranged from 18 to 42 years ($X = 20.8$, $SD = 4.78$) with a mode of 19 years. Three outliers appeared with the ages 28, 39, and 42 years. All three outliers were female. One participant was divorced and two were married, the remaining participants were single. The distribution for years of education ranged from 12 to 19 ($X = 13.6$, $SD = 1.55$).

Measures

Demographics

A demographic questionnaire containing items regarding gender, year of birth, marital status, and years of education was used (Appendix A).

Personality Research Form (PRF-E)

The Personality Research Form (Form E) (Jackson 1974) is a 352 item questionnaire used to identify personality characteristics. The PRF-E has the advantage over the other forms of the PRF because it contains all 20 original sub-
scales (abasement, achievement, affiliation, autonomy, change, cognitive structure, defencence, endurance, exhibition, harmavoidance, impulsivity, nurturance, order, play, sentience, social recognition, succorance, understanding) developed by Jackson (1974) but involving the smallest number of questions. It is based on the theory of needs and presses described by Murray (1938) and was chosen for that reason. The underlying theory of congruence is that there is a need that needs to be filled for well-being to occur and there are individual differences in these needs. Approximate time of completion is 45 minutes to 1 hour. The test scores moderately high on split-half reliability testing (.60 to .70) (Kline, 1993).

**Leisure Boredom**

The Leisure Boredom Scale was used to measure leisure dysfunction (Iso-Ahola & Weissinger, 1990) (Appendix B). The scale has 16 items and takes approximately 15 minutes to complete. In a study looking at the reliability and validity of the scale (Iso-Ahola & Weissinger, 1990) Cronbach’s alpha coefficients were high (.85-.88) based on the secondary analysis of three studies. It also correlated negatively with items generally thought of as representing satisfactory leisure (intrinsic motivation, self-esteem and self-as-entertainment).

**General Well-Being Schedule**

The General Well-Being Schedule (GWBS) is a measure of subjective well-being (Appendix C). It is a pencil and paper test consisting of 25 items anchored such that a low score reflects low well-being and a high score reflects high well-
being. Internal consistency coefficients for men and women range from .91-.95 (Fazio, 1977). There are two subscales of the schedule that were used in this study, an adjustment measure and a behavioral measure, as well as a composite score of the these two subscales that represents total well-being. The GWBS was chosen because it is related to health but does not ask specific health questions. For example, the GWBS adjustment subscale asks “how much energy, pep, vitality have you felt? (During the past month)” rather than containing medical jargon that may confuse the test taker. The GWBS behavioral subscale asks questions like “Do you discuss your problems with any members of your family or friends?”. The GWBS would seem to be an advantageous measure of well-being for the purposes of the present study because it captures the essence of the general changes that may occur with a healthier lifestyle rather than asking, for example, how many colds the person has had in the past month. Items can be grouped on six aspects of well-being: health worry, energy level, satisfying and interesting life, depressed-cheerful mood, emotional-behavioral control and relaxed versus tense-anxious. These aspects provide a holistic assessment of well-being.

Health Form

The Health Questionnaire (Appendix D) included a medical history checklist, a symptom checklist for the duration of the past week, alcohol consumption question section and a section asking about activity level for the past week that can be used to indicate metabolic output.
Procedure

Subjects participated in squads of fourteen to fifteen. Group 1 participated at the end of October, 1996, group 2 participated during the beginning of November, 1996 and group 3 participated during the end of November 1996.

When recruited, participants were invited to an initial meeting, during which they were asked to complete the demographics questionnaire, the PRF-E, and the Leisure Boredom scale. Participants were then instructed in the monitoring procedure. They were told that they would be paged 4 times a day at random between the hours of 10am and 10pm and that each page signaled a time to fill out a page in the questionnaire booklet. Participants were actually paged at random within set time frames (10am.-1pm., 1pm.-4pm., 4pm.-7pm., 7pm.-10pm.). There was one page per window at random. This routine continued daily for seven days ensuring that all the days of the week were represented.

A booklet containing 28 questionnaires (Appendix E), eight questions plus the date, day and time was given to each participant. The first question asked the participant to identify the activity he or she was engaged in at the time the pager beeped (i.e. answer the question “What are you doing?”). The next two questions asked about the social environment in which the activity had taking place (i.e. “Who are you with” and “Where are you?”). The next three questions were meant to identify the level of intrinsic motivation and perceived freedom surrounding the activity in question (i.e. “Why are you doing what you are doing?”, “Do you wish you
were doing something else?", and "How much freedom do you feel you have in choosing this activity?") on a five point Likert-type scale. Question 7 was a boredom measure, asking how bored the person was in that activity. Question 8 was a one question form of congruence asking whether the activity suited their personality. Questions 7 and 8 were also 5 point Likert-type scales.

At the end of the ESM Questionnaire was a drug use questionnaire. Participants were asked to record any prescription or over-the-counter drug they use on a regular basis and the frequency of use. In particular, we were looking for psychotropic drugs that might be used as a behavioral proxy of well-being.

Seven days later, participants from each group met again, the pagers and ESM questionnaires were gathered and the second battery of questionnaires was given out. This second battery included the General Well-Being Schedule and the Health Form. Participants were then given credit forms and thanked for their participation.

Chapter III: Results

Variables

Leisure and Work

Activities were divided into work and leisure based on their perceived freedom ratings and intrinsic motivation ratings, for each activity, given in the ESM questionnaire. Activities were considered leisure if they were rated as being freely chosen and intrinsically motivating. For an activity to be interpreted as being freely

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1 The drug use questionnaire was eliminated from the analyses because of poor response.
chosen, a rating of 4 or 5 on the Likert-type scale (above some to complete freedom) was required. For an activity to be considered high in intrinsic motivation, the activity had to be rated as “wanting to” do the activity and that the participant did not “wish to be doing something else” (refer to Appendix E) (Graef et. al. 1983).

Activities were considered work if they were rated as not being freely chosen and low in intrinsic motivation. If an activity was rated as a 1 or 2 on the freedom questionnaire (no freedom to a little freedom) then it was considered not freely chosen. Low intrinsic motivation was defined by ratings indicating that the subjects were very much wishing they were doing something else and they were engaged in the activity because they had to be. Note that this way of dividing activities results in lost data. An activity that is not leisure does not mean that it is work. Any ratings that were in the middle, for example a freedom rating of 3 (some freedom), were not used. Any intrinsic motivation rating that was not clearly high or low was also excluded from the data.

**Congruence**

Coding for the congruence score (i.e. matching the activity with the personality) was done by five undergraduates and, in a separate process, by the investigator. A list of activities was developed based on the results of the ESM questionnaires. This list of 106 activities was presented to the coders as well as a list of the personality characteristics of the PRF-E. Coders were then told “Your task is to decide which activities are suited to a person scoring high on each personality
characteristic” (Appendix F). Each activity could be matched with one or more personality characteristic to capture the full scope of the activity. When a majority of the coding participants indicated a match between an activity and a personality characteristic it was adopted as a match for the purposes of this study. In previous research in this area, coding for a match has been done by either one person (usually the experimenter) or by a committee of people working with the experimenter (usually not from the sample being explored) (Diener, Larsen & Emmons 1984; Melamed, Meir & Samson 1995). By using representatives of the population being explored (i.e. undergraduates) to complete the coding, it was hoped that a more accurate picture of the matches would be made. When the coders and the participants providing the list of activities are from the same sampling population, the coders are more likely to engage in the same behaviors as the participants and will, presumably, have information regarding the activity, that a person not from the same sampling population would not have (i.e. the motivations for engaging in the behavior).

These matches were used by the researcher to obtain a congruence score. Each activity listed in the ESM questionnaire was checked against which personality characteristics the committee indicated it matched (refer to Table 1).
Table 1.
Sample matches

<table>
<thead>
<tr>
<th>Activity</th>
<th>Matches as made by the committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>in class</td>
<td>cognitive structure, understanding *</td>
</tr>
<tr>
<td>in class</td>
<td>cognitive structure, understanding</td>
</tr>
<tr>
<td>eating dinner</td>
<td>sentience</td>
</tr>
<tr>
<td>cleaning the house</td>
<td>order</td>
</tr>
<tr>
<td>shopping</td>
<td>no match</td>
</tr>
<tr>
<td>watching movie in theater</td>
<td>sentience</td>
</tr>
<tr>
<td>driving</td>
<td>autonomy</td>
</tr>
<tr>
<td>getting a massage</td>
<td>succorance</td>
</tr>
<tr>
<td>doing laundry</td>
<td>order</td>
</tr>
<tr>
<td>shopping</td>
<td>no match</td>
</tr>
<tr>
<td>doing laundry</td>
<td>order</td>
</tr>
<tr>
<td>reading a magazine</td>
<td>understanding</td>
</tr>
<tr>
<td>at the dentist</td>
<td>succorance</td>
</tr>
<tr>
<td>in class</td>
<td>cognitive structure, understanding</td>
</tr>
<tr>
<td>talking to friends</td>
<td>affiliation, succorance</td>
</tr>
<tr>
<td>watching tv</td>
<td>play</td>
</tr>
<tr>
<td>listening to music</td>
<td>sentience</td>
</tr>
<tr>
<td>waiting for class to start</td>
<td>no match</td>
</tr>
<tr>
<td>homework</td>
<td>cognitive structure, achievement, understanding, endurance</td>
</tr>
</tbody>
</table>

*Note: terms are PRF defined traits. See text for details.
The personality characteristics that were matched to the activity were given a tally mark. These tally marks were added up for each personality characteristic. Because each activity could be matched with more than one personality characteristic, the number of tally marks was used as the denominator rather than the number of activities recorded. The tally marks for each personality characteristic were then divided by the total number of tally marks recorded to achieve a percentage of activities for each personality characteristic (refer to Table 2).

These percentages were then correlated with the T-scores of the PRF-E and multiplied by 100 to achieve a whole number. This number was then the congruence score (refer to table 3).

The correlation calculated for each study participant formed the scores representing the dependent variable, congruence.
Table 2.

Sample coding (based on matches in Table 1)

<table>
<thead>
<tr>
<th>Coding</th>
<th>Committee</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abasement</td>
<td>/</td>
<td>0</td>
</tr>
<tr>
<td>Achievement</td>
<td>/</td>
<td>4.4</td>
</tr>
<tr>
<td>Affiliation</td>
<td>/</td>
<td>4.4</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Autonomy</td>
<td>/</td>
<td>4.4</td>
</tr>
<tr>
<td>Change</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Cognitive Structure</td>
<td>///</td>
<td>17.4</td>
</tr>
<tr>
<td>Defendence</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Dominance</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Endurance</td>
<td>/</td>
<td>4.4</td>
</tr>
<tr>
<td>Exhibition</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Harmavoidance</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Impulsivity</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Nurturance</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Order</td>
<td>///</td>
<td>13.0</td>
</tr>
<tr>
<td>Play</td>
<td>/</td>
<td>4.3</td>
</tr>
<tr>
<td>Sentience</td>
<td>///</td>
<td>13.0</td>
</tr>
<tr>
<td>Social recognition</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Succorance</td>
<td>///</td>
<td>13.0</td>
</tr>
<tr>
<td>Understanding</td>
<td>//////</td>
<td>21.7</td>
</tr>
</tbody>
</table>

Total 23 100

Note: A score sheet similar to this was used to calculate congruence for each participant.
### Table 3.

Calculation of congruence score

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>T-score (PRF-E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abasement</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Achievement</td>
<td>4.4</td>
<td>47</td>
</tr>
<tr>
<td>Affiliation</td>
<td>4.4</td>
<td>45</td>
</tr>
<tr>
<td>Aggression</td>
<td>0</td>
<td>58</td>
</tr>
<tr>
<td>Autonomy</td>
<td>4.4</td>
<td>72</td>
</tr>
<tr>
<td>Change</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Cognitive Structure</td>
<td>17.4</td>
<td>40</td>
</tr>
<tr>
<td>Defendence</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>Dominance</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td>Endurance</td>
<td>4.4</td>
<td>46</td>
</tr>
<tr>
<td>Exhibition</td>
<td>0</td>
<td>52</td>
</tr>
<tr>
<td>Harmavoidance</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Impulsivity</td>
<td>0</td>
<td>66</td>
</tr>
<tr>
<td>Nurturance</td>
<td>0</td>
<td>53</td>
</tr>
<tr>
<td>Order</td>
<td>13.0</td>
<td>33</td>
</tr>
<tr>
<td>Play</td>
<td>4.3</td>
<td>60</td>
</tr>
<tr>
<td>Sentience</td>
<td>13.0</td>
<td>55</td>
</tr>
<tr>
<td>Social recognition</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Succourance</td>
<td>13.0</td>
<td>37</td>
</tr>
<tr>
<td>Understanding</td>
<td>21.7</td>
<td>47</td>
</tr>
</tbody>
</table>

\[ r_{xy}(100) = -35.06 \]

Note: X represents the % of activities coded to each personality characteristics, Y represents the T-scores from the PRF-E
Coding by the investigator was done in exactly the same fashion. The only difference is that the matches were obtained using the investigator's opinions as to what would be a match and what would not be a match based on educated knowledge of personality factors and personal knowledge of motivations for engaging in each activity.

General congruence (CONINV\(^2\)), the congruence calculated by the investigator's coding scheme, (\(n = 44\)) and CONCOMM, (the congruence calculated by the committee coding scheme, \(n = 44\)) was calculated on all activities regardless of the domain (work or leisure) in which they naturally exist.

Work congruence (WCONINV, WCONCOMM) was calculated on all activities that were rated as work activities as stated previously. However, because of the low sample size on this variable (\(n = 26\) in WCONCOMM and \(n = 29\) in WCONINV), this variable was excluded from any further analyses.

Leisure congruence (LCONINV, LCONCOMM) was calculated on all activities that were rated as leisure activities as stated previously, (\(n = 44\) and \(42\) respectively).

**Descriptive Statistics**

**Health Form Data**

Thirty-eight participants of the total forty-four participants reported that they had been known to use alcohol. Reported number of drinks per week ranged from 0

\(^2\) The suffixes COMM (for committee) and INV (for investigator) always represent the coding schema as described here.
to 30 with a mean of 5.45 and a standard deviation of 6.39. There were two outliers on the high end of reported drinks per week. Reported drinks per day ranged from 0 to 5 with a mean of .72 and a standard deviation of 1.12. There was one outlier on the high end of reported drinks per day.

Descriptive statistics for the other variables are presented in Tables 4 and 5. Intercorrelations of main variables are provided in Table 6.

No gender differences were found for any of the variables.
### Table 4.

Definition of Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONINV</td>
<td>Congruence scores calculated using the coding scheme created by the investigator</td>
</tr>
<tr>
<td>CONCOMM</td>
<td>Congruence scores calculated using the coding scheme created by committee</td>
</tr>
<tr>
<td>MEANSUIT</td>
<td>The average congruence as rated per activity by the participant</td>
</tr>
<tr>
<td>WCONINV</td>
<td>Investigator congruence scores for those activities designated as work activities</td>
</tr>
<tr>
<td>WCONCOMM</td>
<td>Committee congruence for those activities designated as work activities</td>
</tr>
<tr>
<td>LCONINV</td>
<td>Investigator congruence scores for those activities designated as leisure activities</td>
</tr>
<tr>
<td>LCONCOMM</td>
<td>Committee congruence scores for those activities designated as leisure activities</td>
</tr>
<tr>
<td>TIMELEIS</td>
<td>% of time spent in leisure activities</td>
</tr>
<tr>
<td>TIMWORK</td>
<td>% of time spent in work activities</td>
</tr>
<tr>
<td>HIINTRIN</td>
<td>% of time spent in high intrinsic situations</td>
</tr>
<tr>
<td>LOWINTRI</td>
<td>% of time spent in low intrinsic situations</td>
</tr>
<tr>
<td>HIFREE</td>
<td>% of time spent in high freedom situations</td>
</tr>
<tr>
<td>LOWFREE</td>
<td>% of time spent in low freedom situations</td>
</tr>
<tr>
<td>LBSCALE</td>
<td>Score on the leisure boredom scale - higher score means higher tendency to perceive leisure as boredom</td>
</tr>
</tbody>
</table>
Table 4 (cont.).

Definition of Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWBSADJ</td>
<td>Adjustment score for the General Well-Being Schedule - higher score reflects a higher well-being</td>
</tr>
<tr>
<td>GWBSBEH</td>
<td>Behavioral score for the General Well-Being Schedule</td>
</tr>
<tr>
<td>GWBSTOT</td>
<td>Additive combination of the adjustment and behavioral components on the General Well-Being Schedule</td>
</tr>
<tr>
<td>METRATE</td>
<td>Metabolic rate for the week being monitored</td>
</tr>
<tr>
<td>STOT</td>
<td>Total number of symptoms endorsed from the checklist</td>
</tr>
<tr>
<td>MCHTOT</td>
<td>Total number of symptoms endorsed from the checklist</td>
</tr>
</tbody>
</table>
Table 5.
Summary of Descriptive Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>X</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONINV</td>
<td>44</td>
<td>-8.59</td>
<td>27.22</td>
<td>-52.09</td>
<td>59.39</td>
</tr>
<tr>
<td>CONCOMM</td>
<td>44</td>
<td>1.69</td>
<td>25.56</td>
<td>-52.42</td>
<td>37.83</td>
</tr>
<tr>
<td>MEANSUIT</td>
<td>44</td>
<td>3.57</td>
<td>.519</td>
<td>2.53</td>
<td>4.52</td>
</tr>
<tr>
<td>LCONINV</td>
<td>44</td>
<td>8.48</td>
<td>21.17</td>
<td>-39.49</td>
<td>44.87</td>
</tr>
<tr>
<td>LCONCOMM</td>
<td>42</td>
<td>10.98</td>
<td>24.58</td>
<td>-47.27</td>
<td>46.34</td>
</tr>
<tr>
<td>WCONINV</td>
<td>29</td>
<td>-8.59</td>
<td>27.22</td>
<td>-52.09</td>
<td>59.39</td>
</tr>
<tr>
<td>WCONCOMM</td>
<td>26</td>
<td>-3.56</td>
<td>28.68</td>
<td>-49.36</td>
<td>48.12</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIMELEIS</td>
<td>44</td>
<td>34.26</td>
<td>14.39</td>
<td>6.7</td>
<td>77.3</td>
</tr>
<tr>
<td>TIMEWORK</td>
<td>44</td>
<td>8.53</td>
<td>8.57</td>
<td>0</td>
<td>33.3</td>
</tr>
<tr>
<td>HIINTRIN</td>
<td>44</td>
<td>36.61</td>
<td>13.99</td>
<td>6.7</td>
<td>77.3</td>
</tr>
<tr>
<td>LOWINTRI</td>
<td>44</td>
<td>13.1</td>
<td>10.67</td>
<td>0</td>
<td>47.4</td>
</tr>
<tr>
<td>HIFREE</td>
<td>44</td>
<td>64.63</td>
<td>18.28</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>LOWFREE</td>
<td>44</td>
<td>17.21</td>
<td>13.04</td>
<td>0</td>
<td>57.9</td>
</tr>
<tr>
<td>Well-Being</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWBSADJ</td>
<td>43</td>
<td>63.88</td>
<td>14.68</td>
<td>30</td>
<td>91</td>
</tr>
<tr>
<td>GWBSBEH</td>
<td>43</td>
<td>36.28</td>
<td>3.65</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>GWBSTOT</td>
<td>43</td>
<td>100.16</td>
<td>16.39</td>
<td>55</td>
<td>128</td>
</tr>
</tbody>
</table>
### Table 5 (Cont.).

Summary of Descriptive Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>X</th>
<th>SD</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Form</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>METRATE</td>
<td>44</td>
<td>2891.44</td>
<td>3080.89</td>
<td>0</td>
<td>12949.05</td>
</tr>
<tr>
<td>STOT</td>
<td>44</td>
<td>1.34</td>
<td>1.26</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MCHTOT</td>
<td>44</td>
<td>1.23</td>
<td>1.1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Leisure Boredom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LBSCALE</td>
<td>43</td>
<td>32.77</td>
<td>7.91</td>
<td>16</td>
<td>56</td>
</tr>
</tbody>
</table>
Table 6.

Intercorrelations of main variables.

<table>
<thead>
<tr>
<th></th>
<th>CONCOMM</th>
<th>CONINV</th>
<th>MEANsuit</th>
<th>GWBSADJ</th>
<th>GWBSBEH</th>
<th>GWBSTOT</th>
<th>LBScale</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONCOMM</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONINV</td>
<td>.627**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEANsuit</td>
<td>.298*</td>
<td>.151</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWBSADJ</td>
<td>-.002</td>
<td>-.137</td>
<td>.063</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWBSBEH</td>
<td>-.181</td>
<td>-.399**</td>
<td>.200</td>
<td>.377*</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GWBSTOT</td>
<td>-.044</td>
<td>-.214</td>
<td>.102</td>
<td>.977**</td>
<td>.567**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>LBScale</td>
<td>-.125</td>
<td>-.152</td>
<td>.125</td>
<td>-.311</td>
<td>.126</td>
<td>-.248</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p < .05

** p < .01
Analyses

Analyses were organized around the main study hypotheses, which were as follows:

Hypothesis 1: Congruence will be a better predictor of well-being than either personality characteristics or environmental characteristics on their own.

Hypothesis 2: Congruence will be positively correlated with well-being. To test this hypothesis, correlational analysis was conducted between congruence scores and three GWBS scores. These analyses were done for both those activities defined as work and leisure divided as stated above.

Hypothesis 3: Leisure congruence and leisure boredom will be inversely related. A correlational analysis was done between leisure congruence scores and leisure boredom scores.

Hypothesis 1

Hypothesis 1 stated that congruence would be a predictor of well-being over and above personality characteristics or environmental characteristics on their own. Multiple regressions were run to ensure that congruence (Tables 9, 10, 13, 14, 18, 19), personality characteristics (Tables 7, 11, 16) and environmental characteristics (Tables 8, 12, 17) predict well-being on their own before entering them into a hierarchical regression (Table 15).

The personality characteristics used in this analysis were harmavoidance, affiliation and aggression because, in a preliminary analysis, they were significantly
correlated with at least two of the measures of well-being. The amount of time spent in work and the amount of time spent in leisure were used as the environmental predictors.

Results of this analysis indicated, contrary to expectation, that personality characteristics were a stronger predictor of well-being than either environment or congruence on both adjusted and total well-being scores. Harmavoidance and aggression, $E (3,40) = 5.87, p = .002$ predicted adjustment well-being better than environmental factors, $E (2,41) = 1.85, \text{ns}$, or congruence alone, $E (2,41) = .481, \text{ns}$. This is echoed in the prediction of total general well-being where harmavoidance, aggression and affiliation $E (3,40) = 6.96, p = .0007$ predicted well-being better than environmental factors, $E (2,41) = 1.34, \text{ns}$ or congruence alone, $E (2,41) = .989, \text{ns}$. In the prediction of behavioral well-being, congruence was a significant predictor, $E (2,41) = 3.81, p = .03$ but was less of a predictor than affiliation, $E (3,40) = 3.38, p = .027$. 
Table 7.
Summary of Multiple Regression for Personality Variables Predicting Adjustment Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmavoidance</td>
<td>-.53</td>
<td>.22</td>
<td>-.33*</td>
</tr>
<tr>
<td>Aggression</td>
<td>-.63</td>
<td>.23</td>
<td>-.37*</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.33</td>
<td>.21</td>
<td>.22</td>
</tr>
</tbody>
</table>

Note. $R^2 = .31$.

* $p < .05$. 
Table 8.
Summary of Multiple Regression for Environmental Variables Predicting
Adjustment Well-being \( (N = 44) \)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent in work</td>
<td>.21</td>
<td>.26</td>
<td>.12</td>
</tr>
<tr>
<td>Time spent in leisure</td>
<td>.29</td>
<td>.15</td>
<td>.29</td>
</tr>
</tbody>
</table>

Note. \( R^2 = .08 \).

* \( p < .05 \)
Table 9.
Summary of Multiple Regression for Leisure Congruence Coding Predicting Adjustment Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure Congruence (Invest.)</td>
<td>-.02</td>
<td>.16</td>
<td>-.02</td>
</tr>
<tr>
<td>Leisure Congruence (Comm.)</td>
<td>.07</td>
<td>.14</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. $R^2 = .01$

* $p < .05$
Table 10.
Summary of Multiple Regression for Congruence Coding Predicting Adjustment Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence (Invest.)</td>
<td>-.11</td>
<td>.11</td>
<td>-.20</td>
</tr>
<tr>
<td>Congruence (Comm.)</td>
<td>.08</td>
<td>.11</td>
<td>.14</td>
</tr>
</tbody>
</table>

Note. $R^2 = .02$

* $p < .05$
Table 11.

Summary of Multiple Regression for Personality Variables Predicting Behavioral Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmavoidance</td>
<td>-.07</td>
<td>.06</td>
<td>-.18</td>
</tr>
<tr>
<td>Aggression</td>
<td>-.08</td>
<td>.06</td>
<td>-.18</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.13</td>
<td>.05</td>
<td>.35*</td>
</tr>
</tbody>
</table>

Note. $R^2 = .20$

* $p < .05$. 
Table 12.
Summary of Multiple Regression for Environmental Variables Predicting Behavioral Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent in work activities</td>
<td>.05</td>
<td>.07</td>
<td>.11</td>
</tr>
<tr>
<td>Time spent in leisure activities</td>
<td>-.02</td>
<td>.04</td>
<td>-.09</td>
</tr>
</tbody>
</table>

Note. $R^2 = .02$

* p < .05
Table 13.
Summary of Multiple Regression for Leisure Congruence Coding Predicting Behavioral Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure Congruence (Invest.)</td>
<td>-.02</td>
<td>.04</td>
<td>-.12</td>
</tr>
<tr>
<td>Leisure Congruence (Comm.)</td>
<td>.003</td>
<td>.03</td>
<td>.02</td>
</tr>
</tbody>
</table>

Note. R² = .01

* p < .05
Table 14.
Summary of Multiple Regression for Congruence Coding Predicting Behavioral Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence (Invest.)</td>
<td>-.06</td>
<td>.02</td>
<td>-.47*</td>
</tr>
<tr>
<td>Congruence (Comm.)</td>
<td>.02</td>
<td>.03</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. $R^2 = .16$

* p < .05
Table 15.
Summary of Hierarchical Regression for All (Congruence) Variables Predicting Behavioral Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td>.14</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.14</td>
<td>.06</td>
<td>.37*</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td>.31</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.16</td>
<td>.05</td>
<td>.42*</td>
<td></td>
</tr>
<tr>
<td>Congruence (Invest.)</td>
<td>-.05</td>
<td>.02</td>
<td>-.35*</td>
<td></td>
</tr>
<tr>
<td>Congruence (Comm.)</td>
<td>-.01</td>
<td>.03</td>
<td>-.09</td>
<td></td>
</tr>
</tbody>
</table>

Note. Δ R² is significant, F (2,40) = 4.927, p < .05.

* p < .05.
Table 16.
Summary of Multiple Regression for Personality Variables Predicting
Total Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmavoidance</td>
<td>-.61</td>
<td>.24</td>
<td>-.34*</td>
</tr>
<tr>
<td>Aggression</td>
<td>-.71</td>
<td>.24</td>
<td>-.37*</td>
</tr>
<tr>
<td>Affiliation</td>
<td>.47</td>
<td>.22</td>
<td>.27*</td>
</tr>
</tbody>
</table>

* *p < .05.

Note. $R^2 = .34.$
### Table 17.
Summary of Multiple Regression for Environmental Variables Predicting Total Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time spent in work situations</td>
<td>.26</td>
<td>.29</td>
<td>.14</td>
</tr>
<tr>
<td>Time spent in leisure situations</td>
<td>.27</td>
<td>.17</td>
<td>.24</td>
</tr>
</tbody>
</table>

**Note.** $R^2 = .06$.

* $p < .05$
Table 18.
Summary of Multiple Regression for Leisure Congruence Coding Predicting Total Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leisure Congruence (Invest.)</td>
<td>-.04</td>
<td>.18</td>
<td>-.05</td>
</tr>
<tr>
<td>Leisure Congruence (Comm.)</td>
<td>.07</td>
<td>.15</td>
<td>.11</td>
</tr>
</tbody>
</table>

Note. $R^2 = .007$

* $p < .05$
Table 19.
Summary of Multiple Regression for Congruence Coding Predicting
Total Well-being (N = 44)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence (Invest.)</td>
<td>-.17</td>
<td>.12</td>
<td>-.28</td>
</tr>
<tr>
<td>Congruence (Comm.)</td>
<td>.10</td>
<td>.13</td>
<td>.15</td>
</tr>
</tbody>
</table>

Note. $R^2 = .05$

* $p < .05$
Hypothesis 2

Hypothesis 2 stated that congruence would be positively correlated with well-being. This analysis was done for all three types of congruence, general, leisure, and work.

Correlations were not significant for general congruence and adjustment well-being or for general congruence and total well-being. However, the correlation between behavioral well-being and general congruence was significant. This negative relationship is the opposite of what was found by Melamed et. al. (1995), in that Melamed et. al. found that negative outcomes (burnout, somatic complaints and anxiety) were negatively related to congruence and positive outcomes (self-esteem) were positively related to congruence.

To explore possibilities as to what might be happening some further analyses were run. There were two extreme scores in the GWBSBEH variable. These scores were extremely low but not to the point of becoming outliers as defined by SPSS's boxplots. When these two scores were removed, correlations decreased indicating that these extremely low score may have been responsible for increasing the correlations. These two scores were removed for this analysis only.

A median split of the data based on the GWBSBEH scores was performed and the correlations were conducted again. The median score for GWBSBEH was 37. Those subjects with a score of 37 were filtered out for ease of split.
In the group with lower behavioral well-being scores (i.e. under 37) (n = 18) CONINV was significantly correlated with GWBSBEH, r = -.605, p = .008.

This negative relationship between CONINV and GWBSBEH did not appear in the group with the higher behavioral well-being scores (n = 19), r = .119, ns nor was any other relationship statistically significant (i.e. GWBSADJ or GWBSTOT).

Neither LCONINV nor LCONCOMM showed any relationship to the three measurements of well-being.

**Fit Options**

In order to make sense of this negative correlation in subjects with low well-being, I returned to the original theories of person by environment fit. The fit between person and environmental factors can be seen as either a linear or a quadratic relationship.

Given that there was a negative correlation in those participants with low well-being and no statistically significant relationship between congruence and well-being in those participants with high well-being, a linear model seems inappropriate. The alternative model in the literature, the quadratic model, was reconsidered with the proviso that the population in this study is homogeneous in nature (i.e., students with high freedom scores and in good health). Specifically, what may be happening is that only part of the theoretical curve is being represented (refer to Figure 4).
Figure 4. Hypothetical relationship between congruence and well-being

Note: The solid line represents data found in this study while the dotted line represents data extrapolated from person-environment fit theory.

To test out this idea and because the linear model cannot efficiently explain the differences in well-being to our satisfaction as well as the possibility mentioned above, a quadratic model was fit and compared. Three quadratic models were run and compared to their linear counterparts. The informed observer (investigator) congruence coding was the independent and the three forms of well-being, adjustment (Figure 5), behavioral (Figure 6) and total (Figure 7) formed the dependent variables.
Figure 5. Visual Comparison of the Linear and Quadratic Models of Person by Environment Fit on Adjustment Well-Being

Figure 6. A Visual Comparison of the Linear and Quadratic Models of Person by Environment Fit on Behavioral Well-Being
Figure 7. A Visual Comparison of the Linear and Quadratic Models of Person by Environment Fit on Total Well-Being

The quadratic model consistently accounted for more variation than the linear model (Table 20). As with the linear models, the informed observer congruence coding was statistically significant only on the behavioral measure of well-being.
Table 20.
Summary of Comparison Between Linear and Quadratic Models of Person by Environment Fit (N = 44)

<table>
<thead>
<tr>
<th></th>
<th>Linear</th>
<th>Quadratic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustment Well-Being</td>
<td>$R^2 = .012$</td>
<td>$R^2 = .043$</td>
</tr>
<tr>
<td>Behavioral Well-Being</td>
<td>$R^2 = .156^*$</td>
<td>$R^2 = .242^*$</td>
</tr>
<tr>
<td>Total Well-Being</td>
<td>$R^2 = .034$</td>
<td>$R^2 = .084$</td>
</tr>
</tbody>
</table>

* Significant $F$ value, $p < .001$
Hypothesis 3

Hypothesis 3 stated that leisure congruence and leisure boredom would be inversely related. No statistically significant correlations were found between leisure congruence (of either coding method) and leisure boredom scores.

Iso-Ahola and Weissinger (1990) contend that leisure boredom is positively correlated with intrinsic motivation. To test this issue, Leisure Boredom scores were correlated with the per person mean score of intrinsic motivation, $r = .14$, ns.

Issues in Operationalizing Congruence

A question that came up in the analyses of these data is, what is the best approach for determining when a person is in congruence with their environment? There are three approaches that can be taken; an intersubjective (have a coding committee), a subjective (having the person rate how congruent they are in a situation) and an “informed observer” approach (having an experimenter with knowledge of the theory coding). Regressions were run, using measures of the above conceptual variables (CONINV, CONCOMM and a mean per person rating of how suitable the activities are to their personality MEANSUIT) to predict the three different measures of well-being. Table 21 present the $R^2$ results of these analyses. The only coding system that significantly accounted for variance in well-being was the informed observer method accounting for behavioral well-being, $R^2 = .156$. The informed observer approach consistently predicted better than the committee approach or the subjective approach overall. This may provide support for the
method used by previous research, an informed observer, rather than my attempt at an intersubjective method.
Table 21.
Summary of $R^2$ comparisons of Different Congruence Coding Methods

<table>
<thead>
<tr>
<th></th>
<th>GWBSADJ</th>
<th>GWBSBEH</th>
<th>GWBSTOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congruence (Invest.)</td>
<td>.012</td>
<td>.156*</td>
<td>.034</td>
</tr>
<tr>
<td>Congruence (Comm.)</td>
<td>.0003</td>
<td>.032</td>
<td>.0005</td>
</tr>
<tr>
<td>Congruence (Subjective)</td>
<td>.010</td>
<td>.041</td>
<td>.018</td>
</tr>
</tbody>
</table>

*p < .01
Chapter IV: Discussion

In summary, contrary to expectation, personality factors were better predictors of well-being than either congruence or environmental factors. Specifically, aggression and harmavoidance best predicted general adjustment well-being in a negative direction, affiliation best predicted behavioral well-being in a positive direction, and aggression and harm avoidance negatively predicted total well-being, while affiliation positively predicted total well-being. The only situation in which congruence significantly predicted well-being was when the informed observer congruence coding strategy was used to predict behavioral well-being, though even in this situation, personality variables still predicted better than congruence. Although general congruence was not significantly related to well-being as a whole, as seen by the correlations, a relationship appeared in those with lower well-being that did not appear in those with higher well-being. As well, the theoretically inverse relationship suggested between leisure congruence and leisure boredom did not appear, nor did the contention that leisure boredom was related to intrinsic motivation.

There are two possible explanations for these findings: either there is no relationship between congruence and well-being, or the method or the analysis was inadequate to detect the relationship. Given that the relationship between personality and environment has become a large area of study and that a
relationship has been detected using other methodology it seems more likely the avenue worth pursuing is the later explanations.

In the literature, methods for operationalizing congruence are diverse. In Diener, Larsen and Emmons 1984 study, activities used to produce a congruence score were gathered using the ESM then categorized into activity groups such as; work, social activities, recreate, novel activities, or typical activities. These groups of activities were then looked at in relation to personality characteristics to achieve a congruence score. The method used in the current study was modeled after Melamed, Meir and Samson’s 1995 study (i.e. assigning an individual activity to a personality characteristic), although in that study, Holland’s typology was used rather than the PRF as was used in the Diener, Larsen and Emmons (1984) study and the current study.

Therefore, the current study method is a combination of both the Diener, Larsen and Emmons (1984) study and the Melamed, Meir and Samson (1995) study. In the opinion of this investigator, our unexpected findings may have to do with the depth of congruence scoring. That is, does congruence exist at the level of the individual activity or is it at a more general level, such as groups of activities. Although the findings here are unexpected, they are not invalid, but rather an exploration of the parameters of congruence. The depth of congruence and operationalization are but two of the issues that were raised in this study.

Issues of how best to operationalize congruence were raised and led to a comparison between intersubjective (coding done by committee), subjective
(participants rating their own level of congruence) and informed observer (coding done by the researcher) approaches. The informed observer approach was the only congruence score to predict behavioral adjustments of well-being. This approach consistently predicted well-being better than committee or subjective ratings. The tendency of this methodological approach to predict better may suggesting that operationalizing congruence may be a balance between having a sound knowledge of the theory and being an outside observer to the participant. That is, when a committee does the coding, they may think about why they would be engaging in the activity, while the person rating their own suitable activities may not be sufficiently sensitive or insightful to know why they are engaging in the activity. The researcher, on the other hand is more neutral, and overlook specific personal issues in favor of a more general match. Because the theory is based on the concept of personal needs, why a person engages in an activity or how they perceive the need fulfillment of the activity becomes an important factor. This study worked on the basis that need fulfillment is immediate from the environment, however, temporal proximity of the final need fulfillment, or goal, might be an important aspect to look at. For example, in the situation where the personality characteristic is a high achievement orientation and the activity (or environment) is attending a lecture, one person might see the lecture as a place to learn so they can achieve in school (an immediate fulfillment), whereas another person might view being in lecture as a hoop they have to jump through to get a degree so they can achieve in the job market (a distant fulfillment).
Methodology aside, the negative relationship found consistently throughout these analyses is of interest itself. In some theories of person by environment fit, the relationship is hypothesized to be not a linear relationship but a curvilinear one, specifically, a Yerkes-Dodson type inverted U curve. According to this conceptualization, there is an optimal level of fit and negative outcomes would result from being at either end of the relevant continuum. Applied to the current study, it is possible that a person with a very low person by environment fit would be overchallenged by the environment and a person with a very high fit would be underchallenged by the environment. Consequently it might be predicted that people with intermediate degrees of fit would show the most optimal outcomes. This interpretation would in fact predict a quadratic relationship between congruence and well-being.

This quadratic modeling is talked about in theory but is not usually implemented in practice. One reason this might be is whether congruence is operationalized as a perfect fit or an optimal fit. That is, is perfect congruence best (i.e., high fit), or is optimal fit or balance (i.e., a moderate congruence) best for a positive outcome?

It is for this reason that a quadratic solution was investigated in the present data set. A comparison between the previously found linear relationship between congruence as coded by the investigator and the behavioral well-being scores and a quadratic relationship on the same variables supported the theory. Caution must be taken in interpreting these results. There was relatively low variability in some of the
well-being scales, in particular, the behavioral well-being scale. This could be due to two factors; either the participants in this study were generally healthy and happy students or there are problems with the General Well-Being Schedule. Given that the General Well-Being Schedule consistently produced unexpected results (particularly with the behavioral well-being scale), and the fact that there was negative skew to the behavioral well-being distribution that was not consistent with the other two scales of well-being (adjustment and total) there is reason to question its utility and other psychometric properties.

The other point of interest in regard to this measure is that the only scale that was significantly predicted by congruence was the "harder" behavioral well-being measure. Conceptually, congruence has a "soft" effect on well-being. That is to say, congruence won't cure or cause cancer but rather may affect things like symptom reporting or react with the immune system in the same manner as stress would. The behavioral measure of well-being asks questions like "Have you ever been a patient in a mental hospital?" while the adjustment measure of well-being asks questions like "Have you been waking up fresh and rested?". By viewing congruence as a "soft" effect it would make theoretical sense that congruence be more related to adjustment factors rather than behavioral factors; although conceptually long term effects of having a misfit could eventually led to behavioral problems. Therefore, this difference between linear and quadratic findings could be a statistical artifact. However given the theoretical basis, it is worth pursuing with a different measure of well-being and/or a more diverse population.
Assuming the quadratic model is appropriate, ironically it would appear that the optimal level of congruence to achieve an outcome of high well-being would be no congruence, or a congruence score that is around zero. As stated in the introduction, congruence can be seen as a balancing act between personal skill and environmental challenge, where the amount of challenge is not overbearing (too high) or boring (too low). Applying this to the quadratic model and the resulting suggestion that the optimal level of congruence might be around zero, a moderate level of fit (the congruence scores range from -52.09 to 59.39 with an average of -8.59, therefore zero would be a moderate score) would allow for a “balance” between challenge and skill. If a person has challenge they don’t have the skills to handle, for example a first year student taking a third year course without the required prerequisites, or if a person has excess skills to handle the challenges, for example, a senior student taking a first year course, then a poor outcome would be expected. An optimal fit on the other hand would be a first year student being challenged by their course work and having the skills to accomplish the work.

How this issue of optimal and nonoptimal fit affects health has some interesting components. Perhaps by constantly having challenge in one’s life, new coping skills are learned (thereby reducing the stress in the environment by developing skills to deal with the environment), or the challenge is required for personal growth.

Perhaps one way around this interpretation problem is to get corroborating evidence using other methods. A leisure education intervention done with an elderly
sample, who met the criteria of experiencing problems which reduced or eliminated their participating in leisure activities, was conducted by Searle, Mahon, Iso-Ahola, Sdrolias and van Dyck (1995). This intervention was meant to increase their skill at fulfilling their needs in the face of unstable leisure opportunities due to changing physical (i.e. illness, disability) and social (i.e. death of friends, loss of job) barriers.

Participants spent an average of 17 weeks in the program. Sessions included topics such as; "Why you do what you do", "Can you do it?", "What else is there?", and personal and community resources. After the program was completed, there were increases in perceived leisure competence, life satisfaction, and lower Leisure Boredom scale scores.

Although this study did not look at congruence specifically, the elements of what they were trying to do (increase skill to match the new environmental challenges), are the corner stones to congruence. A similar study, using congruence as a main measurement would be a way on circumventing the methodological problems with correlational or other linear model analyses.

Somewhere in the course of research, an aspect of the person by environment theory was lost by the statistically challenged while the statistically enlightened took it to new esoteric heights. For most researchers, theory was given up for the societal rule of parsimony, more is better, and the researchers rule of parsimony, linear is best. However, people are not simple, nor should we expect the study of them to be. Something is lost in the simple linear model of person by environment fit, that is, a state of perfection can stagnate a person.
Although, the comparison between linear and quadratic models was not the goal of this study, and indeed perhaps because it was not, the issue is ideally raised here. Perhaps the linear and quadratic models are related to the aforementioned issue of depth of congruence, in that linear models are best suited to the general, grouped activity congruence while quadratic models are best suited to the individual activity congruence. Whatever the case may be, it only highlights the issue that theory must not be shadowed or held back by the standard conventions of what is easiest to analyze is good enough.
References


Appendix A
Demographics Questionnaire
Demographics

Gender

M    F

Year of Birth

Marital Status

1. Married
2. Single
3. Divorced
4. Widow/Widower

Please circle the highest level of education achieved. (In years)

1  2  3  4  5  6  7  8  9  10  11  12
13  14  15  16  17  18  19  20+
Appendix B
Leisure Boredom Scale
Leisure Boredom Scale

**INSTRUCTIONS:** The statements listed below are intended to find out how you feel about your leisure time. Just respond to each item as it applies to your leisure time. By "leisure time" we mean non-work hours in your day.

Please respond to each of the 16 statements. You do this by circling the number that shows how much you agree or disagree with the statement. For example, by circling a 5, you are showing that you strongly agree with the statement as it applies to your leisure time.

<table>
<thead>
<tr>
<th>1 = strongly disagree</th>
<th>2 = disagree</th>
<th>3 = neutral</th>
<th>4 = agree</th>
<th>5 = strongly agree</th>
</tr>
</thead>
</table>

1. For me, leisure time just drag on and on. 5 4 3 2 1
2. During my leisure time, I become highly involved in what I do. 5 4 3 2 1
3. Leisure time is boring. 5 4 3 2 1
4. If I could retire now with a comfortable income, I would have plenty of exciting things to do for the rest of my life. 5 4 3 2 1
5. During my leisure time, I feel like I am just "spinning my wheels". 5 4 3 2 1
6. In my leisure time, I usually don't like what I am doing but I don't know what else to do.

7. Leisure time gets me aroused and going.

8. Leisure experiences are an important part of my quality of life.

9. I am excited about leisure time.

10. In my leisure time, I want to do something but I don't know what I want to do.

11. I waste too much of my leisure time sleeping.

12. I like to try new leisure activities that I have never tried before.

13. I am very active during my leisure time.

14. Leisure time activities do not excite me.

15. I do not have much leisure skills.

16. During my leisure time, I almost always have something to do.
Appendix C
General Well-Being Schedule
General Well-Being Schedule (GWBS)

This section of the study contains questions about how you feel and how things have been going with you. For each question, circle the answer which applies to you.

<table>
<thead>
<tr>
<th>Question</th>
<th>Answers</th>
</tr>
</thead>
</table>
| 1. How have you been feeling in general? *(During the past month)*                                                                       | 1. In excellent spirits  
2. In very good spirits  
3. In good spirits  
4. I have been up and down in spirits a lot  
5. In low spirits mostly  
6. In very low spirits |
| 2. Have you been bothered by nervousness or your “nerves”? *(During the past month)*                                                      | 1. Extremely so -- to the point where I could not work or take care of things  
2. Very much so  
3. Quite a bit  
4. Some -- enough to bother me  
5. A little  
6. Not at all |
| 3. Have you been in firm control of your behavior, thoughts, emotions OR feelings? *(During the past month)*                             | 1. Yes, definitely so  
2. Yes, for the most part  
3. Generally so  
4. Not too well  
5. No, and I am somewhat disturbed  
6. No, and I am very disturbed |
| 4. Have you felt so sad, discouraged, hopeless or had so many problems that you wondered if anything was worthwhile? *(During the past month)*    | 1. Extremely so -- to the point that I have just about given up  
2. Very much so  
3. Quite a bit  
4. Some -- enough to bother me  
5. A little bit  
6. Not at all |
| 5. Have you been under or felt you were under any strain, stress, or pressure? *(During the past month)*                                | 1. Yes -- almost more than I could bear or stand  
2. Yes -- quite a bit of pressure  
3. Yes -- some - more than usual  
4. Yes -- some - but about usual  
5. Yes -- a little  
6. Not at all |
6. How happy, satisfied, or pleased have you been with your personal life? *(During the past month)*

1. Extremely happy -- could not have been more satisfying or pleased
2. Very happy
3. Fairly happy
4. Satisfied -- pleased
5. Somewhat dissatisfied
6. Very dissatisfied

7. Have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, feel, or of you memory? *(During the past month)*

1. Not at all
2. Only a little
3. Some -- but not enough to be concerned or worried about
4. Some and I have been a little concerned
5. Some and I am quite concerned
6. Yes, very much so and I am very concerned

8. Have you been anxious, worried, or upset? *(During the past month)*

1. Extremely so -- to the point of being sick
2. Very much so
3. Quite a bit
4. Some -- enough to bother me
5. A little bit
6. Not at all

9. Have you been waking up fresh and rested? *(During the past month)*

1. Every day
2. Most every day
3. Fairly often
4. Less than half the time
5. Rarely
6. None of the time

10. Have you been bothered by any illness, bodily disorder, pains, or fears about your health? *(During the past month)*

1. All the time
2. Most of the time
3. A good bit of the time
4. Some of the time
5. A little of the time
6. None of the time

11. Has your daily life been full of things that were interesting to you? *(During the past month)*

1. All the time
2. Most of the time
3. A good bit of the time
4. Some of the time
5. A little of the time
6. None of the time
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 12. Have you felt down-hearted and blue? (During the past month)         | 1. All the time  
2. Most of the time  
3. A good bit of the time  
4. Some of the time  
5. A little of the time  
6. None of the time |
| 13. Have you been feeling emotionally stable and sure of yourself? (During the past month) | 1. All the time  
2. Most of the time  
3. A good bit of the time  
4. Some of the time  
5. A little of the time  
6. None of the time |
| 14. Have you felt tired, worn-out, used-up, or exhausted? (During the past month) | 1. All the time  
2. Most of the time  
3. A good bit of the time  
4. Some of the time  
5. A little of the time  
6. None of the time |
| 15. How concerned or worried about your health have you been? (During the past month) | For each of the four scales below, note that the words at each end of the 0 to 10 scale describe opposite feelings. Circle any number which seems closest to how you have generally felt During the past month. |
| 16. How relaxed or tense have you been? (During the past month)          | 0 1 2 3 4 5 6 7 8 9 10  
Not concerned  
Very concerned at all  
Very relaxed  
Very tense |
| 17. How much energy, pep, vitality have you felt? (During the past month)  | 0 1 2 3 4 5 6 7 8 9 10  
No energy  
AT ALL, listless  
ENERGETIC, dynamic |
| 18. How depressed or cheerful have you been? (During the past month)      | 0 1 2 3 4 5 6 7 8 9 10  
Very depressed  
Very cheerful |
<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
</table>
| 19. Have you had severe enough personal, emotional, behavioral, or mental problems that you felt you needed help *During the past year?* | 1. Yes, and I did seek professional help  
2. Yes, but I did not seek professional help  
3. I have had (or have now) severe personal problems, but have not felt I needed professional help  
4. I have had very few personal problems of any serious concern  
5. I have not been bothered at all by personal problems during the past year |
| 20. Have you ever felt that you were going to have, or were close to having, a nervous breakdown? | 1. Yes -- during the past year  
2. Yes -- more that a year ago  
3. No |
| 21. Have you ever had a nervous breakdown?                              | 1. Yes -- during the past year  
2. Yes -- more that a year ago  
3. No |
| 22. Have you ever been a patient (or outpatient) at a mental hospital, a mental health ward of a hospital, or a mental health clinic, for any personal, emotional, behavioral, or mental problems? | 1. Yes -- during the past year  
2. Yes -- more that a year ago  
3. No |
| 23. Have you ever seen a psychiatrist, psychologist, or psychoanalyst about any personal, emotional, behavior, or mental problem concerning yourself? | 1. Yes -- during the past year  
2. Yes -- more that a year ago  
3. No |
24. Have you talked with or had any connection with any of the following about some personal, emotional, behavior, mental problem, worries or "nerves" Concerning Yourself During the past year?

<table>
<thead>
<tr>
<th>Option</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Regular medical doctor (except for definite physical conditions or routine check-ups)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>b. Brain or nerve specialist</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>c. Nurse (except for routine medical conditions)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>d. Lawyer (except for routine legal services)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>e. Police (except for simple traffic violations)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>f. Clergyman, minister, priest, rabbi, etc.</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>g. Marriage Counselor</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>h. Social Worker</td>
<td>Yes - What kind?</td>
<td>No</td>
</tr>
<tr>
<td>i. Other Formal Assistance</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

25. Do you discuss your problems with any members of your family or friends?

1. Yes -- and it helps a lot
2. Yes -- and it helps some
3. Yes -- but it does not help at all
4. No - I do not have anyone I can talk with about my problems
5. No - no one cares to hear about my problems
6. No - I do not care to talk about my problems with anyone
7. No - I do not have any problems
Appendix D
Health Questionnaire
Health Form

Medical History Checklist:

Please review each of the following items and place a check mark beside any that you have experienced (to your knowledge):

1. Rheumatic Fever  ( )
2. Heart Murmur  ( )
3. High Blood Pressure  ( )
4. High Cholesterol  ( )
5. Heart Attack  ( )
6. Diabetes (diet or insulin)  ( )
7. Epilepsy  ( )
8. Varicose Veins  ( )
9. Disease of Arteries  ( )
10. Emphysema, Pneumonia, Asthma, Bronchitis  ( )
11. Back Injury  ( )
12. Drug Reaction  ( )
13. Nervous or Psychiatric Difficulty  ( )
14. Other  (Describe on back)  ( )

Symptoms:

Indicate below whether you have experienced any of the following symptoms in the last week.

1. Irregular heart beat  ( )
2. Chest Pain  ( )
3. Shortness of breath  ( )
4. Persistent cough  ( )
5. Wheezing (asthma)  ( )
6. Fatigue  ( )
7. Cough up blood  ( )
8. Back pain/injury  ( )
9. Leg pain/injury  ( )
10. Dizziness  ( )
Alcohol Consumption:

Have you been known to consume alcohol on occasion?

Yes_______   No________

One standard unit of alcohol would be equivalent to 1 bottle of beer, or one small glass of wine, or 1 oz. of hard liquor.

On average, how many such standard units of alcohol would you consume?

________ per week

How many drinks (standard units) do you have on an average day?

________ per day
Activity Level:

During the last week how many times did you do any of the following exercises, sports or recreational activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Times in the last week</th>
<th>How much time did you spend on each occasion?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking (including to and from school/work)</td>
<td></td>
<td>1-15, 16-30, 31-60, &gt;60 minutes</td>
</tr>
<tr>
<td>Jogging or running</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calisthenics/Aerobics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycling (including to and from school/work)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skating/Inline skating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skiing (downhill, X-country )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racquet Sports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E
Experience Sampling Questionnaire
Instructions for the use of the pager and questionnaire booklet.

Please carry booklet and pager with you wherever you go. The pager will “beep” four times a day at random. When you hear a “beep”, please turn to the next empty questionnaire. At the top of the questionnaire, where indicated, please fill in the time, day of the week and date. In the space where it asks you what you are doing, simply write down what you were doing when you heard the “beep”. Please be as specific as possible. Next, answer the questions that follow by circling your answer. Remember, for confidentiality purposes, do not put your name on your booklet. At the end of the booklet is a comment sheet. This is meant to get your feedback on what you did or didn’t like about the pager method or project as a whole.

If you have any problems you can leave a message for the Leisure and Well-Being project at 562-8775 and a member of the project staff will contact you.
Please circle or write in your response

Date ________________

Day ________________

Time ________________

1. What are you doing? ________________________________

2. Who are you with?
   1. Family  2. Friends  3. Alone  4. Other (specify) _________

3. Where are you?
   1. Public  2. Home  3. Other (specify) _________

4. Why are you doing what you are doing?
   1. Have to  2. Nothing else to do  3. Want to

5. Do you wish you were doing something else?
   1. Not at all  2. Somewhat  3. Very Much

6. How much freedom do you feel you have in choosing this activity?
   1  2  3  4  5
   no freedom a little freedom some freedom a lot of freedom complete freedom

7. How bored are you right now?
   1  2  3  4  5
   very bored quite bored somewhat bored a little bored not bored at all

8. Does this activity suit your personality?
   1  2  3  4  5
   not at all a little somewhat quite a bit very much
Appendix F
Congruence Coding Material
Dear Volunteer;

Thank you very much for your assistance. The purpose of this exercise is to create a coding scheme for matching activities with personality characteristics.

On the cards in your package are a variety of activities. On the sheets are columns headed with personality characteristics and their descriptions taken from Jackson’s (1984) Personality Research Form manual.

Your task is to decide which activities are suited to a person scoring high on each personality characteristic. For example, an activity such as visiting might match with a high score on Affiliation whereas an activity such as child care might match with a high score on Nurturance. Remember, all personality characteristic descriptions represent high scores on that characteristic.

You may assign each activity to more than one personality characteristic in order to accurately represent each activity but please try to be concise.

Each activity has a number associated with it as printed on the sheet. Please write the number of the activity in the column or columns of personality characteristics as you feel they match.

The purpose of this study is to give you as many options as possible; therefore, no prescreening of characteristics or activities was done. Some activities may not be suitably matched with any personality characteristics and some personality characteristics will not be used but try to use as many as possible. If you feel the activity is uncodable simply set the card aside and do not code it at all.

If you feel that any activities have been left out, simply write them in the column/columns where you think they would fit in.

Thank you,

Jennifer Frood
Activity List

1. Doing Personal Care for self
2. Receiving Medical Care
3. Having Meal at Home
4. Going to a cafe, bar, society, dancing
5. Sleeping, Resting
6. Driving
7. Preparing meals
8. Cleaning up after meals
9. Vacuuming/clearing up
10. Writing a letter/E-mail
11. Doing the Wash
12. Doing Personal Care for others
13. Caring for Pets
14. Shopping for Groceries
15. Visits to bank/post-office/town hall
16. Watching sports matches
17. Participating in sports matches
18. Having Meal away from Home
19. Going to a cinema, theater, or concert hall
20. Cleaning the house
21. Attending a party or reception
22. Visiting a sick person
23. Walking/jogging
24. Cycling
25. Artistic Creations
26. Playing with a home computer
27. Playing a board/card game
28. Watching TV
29. Reading for pleasure
30. Talking on the Telephone
31. Shopping for personal belongings
32. Idle, doing nothing
33. Riding Public Transportation
34. Visiting with Friends
35. Visiting with Family
36. Looking for a place to live
37. Making Travel Arrangements
38. Moving Furniture
39. Observing a moment of silence at Remembrance Day
40. Shopping for Presents
41. Playing Video Games
42. Snowboarding
43. Smoking a cigar
44. Receiving messages
45. Organizing personal activities
46. Dealing with Customers
47. Photography (taking pictures, developing film, etc.)
48. “Hanging out”
49. Fighting with significant other
50. Entertaining others
51. Dying hair
52. Drinking alcohol
53. Intimate Activities (kissing, having intercourse)
54. Fund Raising
55. Getting lost
56. Gossiping
57. Attending a lecture
58. Laughing
59. Listening to music
60. Looking at photographs
61. Being driven by others
62. Working with children
63. Waiting
64. Working out in a gym
65. Looking for employment
66. Baking
67. Administrative task for work
68. Helping parents
69. Running errands for self
70. Studying
71. Tai Chi
72. Volunteering work
73. Voting
74. Talking to Professor
75. Attending Church
76. Attending a staff meeting
77. Rock Climbing
78. Crying
79. Working in a restaurant
80. Working in a pharmacy
81. Working for a student organization
82. Working in a fitness center
83. Working on a computer
84. Writing an exam
85. Writing an essay
86. Yard work
87. Talking to roommates
88. Car maintenance
89. Doing Martial Arts
90. Music Rehearsal
91. Renovating house
92. Doing research for paper
93. Working for a newspaper
94. Fixing computers
95. Working on a group project for school
96. Meditating
97. Being sick
98. Smoking
99. Attending Fraternity activities
100. Working in a retail environment
101. Car maintenance
102. Driving others
103. Having Personal Care done by others
104. Making a tape/recording music
105. Taking others out for dinner
106. Helping others with academic work
Abasement: Shows a high degree of humility; accepts blame and criticism even when not deserved; willing to accept an inferior position; tends to be self-effacing.

Achievement: Aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; willing to put forth effort to attain excellence.

Affiliation: Enjoys being with friends and people in general; accepts people readily; makes efforts to win friendships and maintains associations with people.
Aggression: Enjoys combat and argument; easily annoyed; sometimes willing to hurt people to get own way; may seek to “get even” with people perceived as causing harm.

Autonomy: Tries to break away from restraint, confinement or restrictions of any kind; enjoys being unattached, free, not being tied to people, places or obligations; may be rebellious when faced with restraints.

Change: Likes new and different experiences; dislikes routine and avoids it; may readily change opinions or values in different circumstances; adapts readily to changes in environment.
**Cognitive Structure:** Does not like ambiguity or uncertainty in information; wants all questions answered completely; desires to make decisions based upon definite knowledge, rather than upon guesses or probabilities.

**Defendence:** Ready to defend self against real or imagined harm from other people; takes offense easily; does not accept criticism readily.

**Dominance:** Attempts to control environment, and to influence or direct other people; expresses opinions forcefully; enjoys the role or leader and may assume it spontaneously.
Endurance: Willing to work long hours; doesn't give up quickly on a problem; persevering, even in the face of great difficulty; patient and unrelenting in work habits.

Exhibition: Wants to be the center of attention; enjoys having an audience; engages in behavior which wins the notice of others; may enjoy being dramatic or witty.

Harmavoidance: Does not enjoy exciting activities, especially if danger is involved; avoids risk of bodily harm; seeks to maximize personal safety.
Impulsivity: Tends to act on the “spur of the moment” and without deliberation; gives vent readily to feelings and wishes; speaks freely; may be volatile in emotional expression.

Nurturance: Gives sympathy and comfort; assists others whenever possible, interested in caring for children, the disabled, or the infirm; offers a “helping hand” to those in need; readily performs favors for others.

Order: Concerned with keeping personal effects and surroundings neat and organized; dislikes clutter, confusion, lack of organization; interested in developing methods for keeping materials methodically organized.
Play: Does many things “just for fun”; spends a good deal of time participating in games, sports, social activities, and other amusements; enjoys jokes and funny stories; maintains a light-hearted, easy-going attitude toward life.

Sentience: Notices smells, sounds, tastes, and the way things feel; remembers these sensations and believes that they are an important part of life; is sensitive to many forms of experience; may maintain an essentially hedonistic or aesthetic view of life.

Social Recognition: Desires to be held in high esteem by acquaintances; concern about reputation and what other people think, works for the approval and recognition of others.
Succorance: Frequently seeks the sympathy, protection, love, advice, and reassurance of other people; may feel insecure or helpless without such support; confides difficulties readily to a receptive person.

Understanding: Wants to understand many areas of knowledge; values synthesis of ideas, verifiable generalizations, logical thought, particularly when directed at satisfying intellectual curiosity.