

AN ABSTRACT OF THE THESIS OF

James Joseph Ponzetti, Jr. for the degree of Master of Science
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Title: The Interrelationships Between Loneliness, Locus of Control
and Academic Achievement in Selected College Students at
Oregon State University

Abstract approved:

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The purpose of this study was to investigate the interrelationships between loneliness, college academic achievement, and locus of control. The sample consisted of 97 subjects who were randomly selected from those students living in the residence hall system at Oregon State University.

Five null hypotheses were tested:

1. There is no relationship between one's degree of loneliness and academic achievement in college students.
2. There is no relationship between one's degree of loneliness and one's locus of control orientation in college students.
3. There is no relationship between one's locus of control orientation and academic achievement in college students.
4. There is no difference between one's degree of loneliness and one's academic year.
5. There is no difference between one's degree of loneliness and one's sex.

 The Bradley Loneliness scale and Levenson Control scale were

administered by the author to each subject individually. A Pearson product-moment correlation and Partial correlation were employed to analyze the first three null hypotheses. The fourth hypothesis was analyzed by a fixed one-way analysis of variance, and the fifth hypothesis utilized a T-test to determine if a significant difference existed or not.

The first null hypothesis was the only hypothesis which was rejected ($r = -.199$, $p = .05$), thereby confirming the relationship between loneliness and college academic achievement. No other statistically significant results were found. Suggestions for further experimentation in this area were made.

The Interrelationships Between Loneliness, Locus of
Control, and Academic Achievement in Selected
College Students at Oregon State University

by

James Joseph Ponzetti, Jr.

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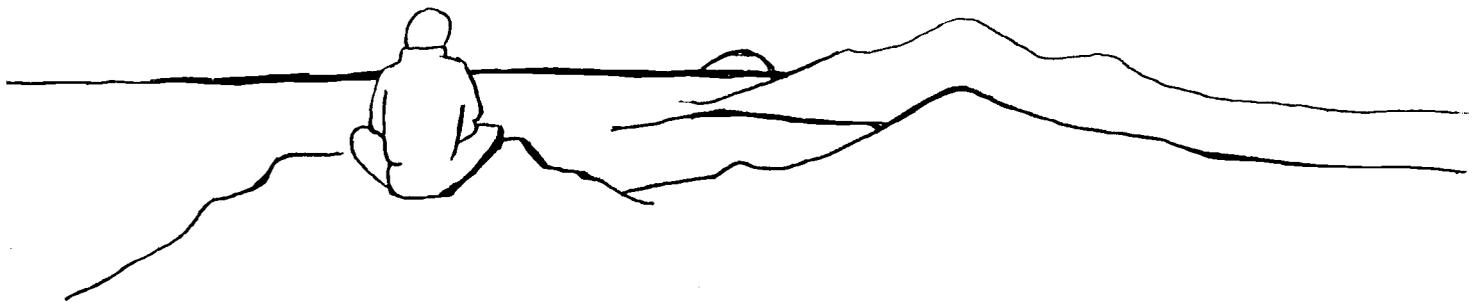
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It is appropriate that I first extend a sincere note of thanks to all who have reached out and touched my life, making it not only a tear, but a smile.

I am grateful to Dr. Gerald Becker for his guidance--he always seemed to know just how much to push. I am also very thankful to Jim Montague for his invaluable assistance, and Ed Bryan and David Stephen for their support and encouragement.

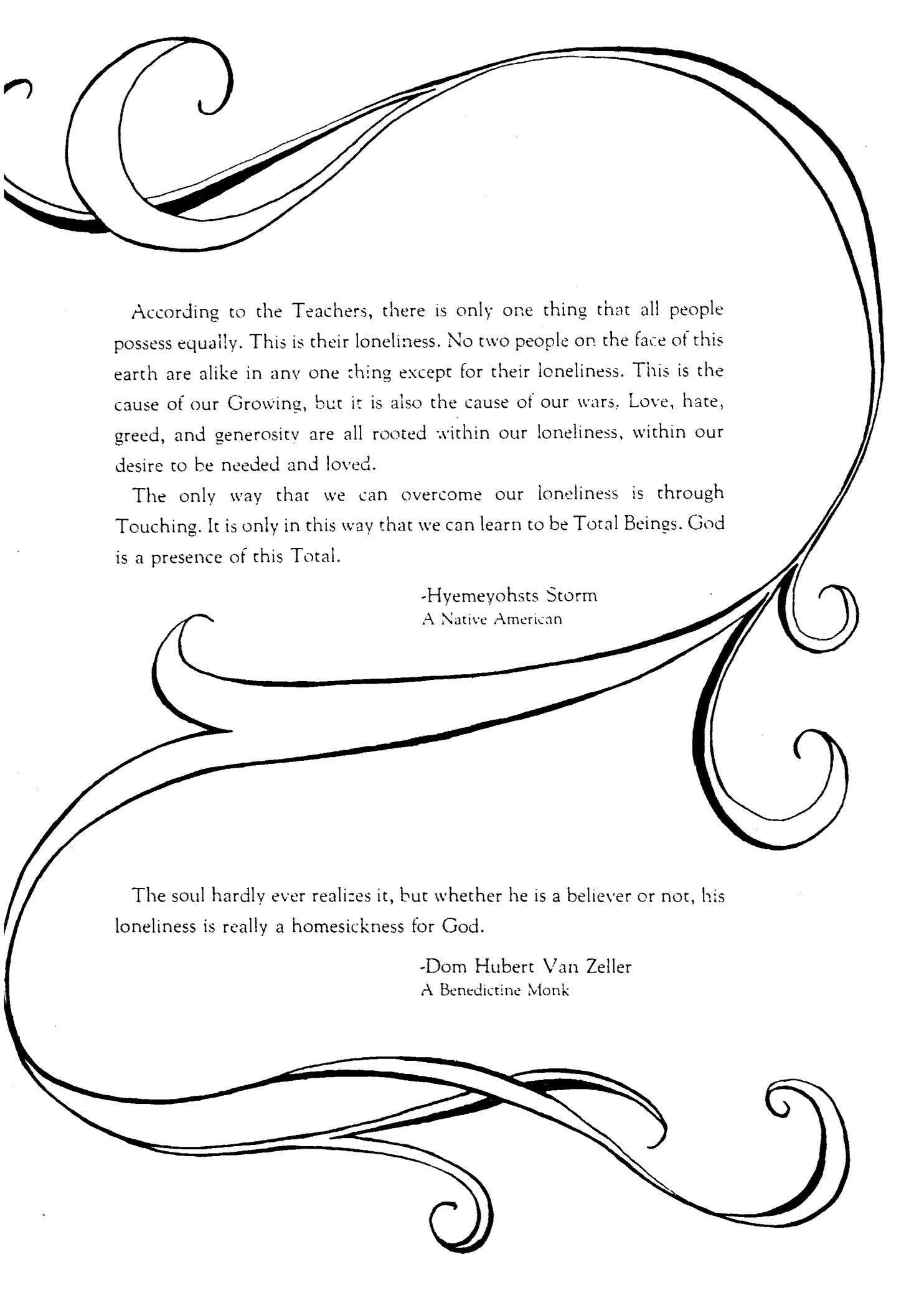
I owe a special word of thanks to Rev. Paul Peri, whose concern and patience proved to be the impetus for the completion of this thesis.

But, in the end, I am indebted to my mother and father who may not always understand my ventures, but, nonetheless, remain interested in listening to me ramble on about them!!



I beseech you, punish me not with your hard thoughts, wherein I confess me much guilty to deny so fair and excellent ladies anything. But let your fair eyes and gentle wishes go with me to my trial; wherein if I be foil'd, there is but one sham'd that was never gracious; if kill'd, but one dead that is willing to be so. I shall do my friends no wrong, for I have none to lament me; the world no injury, for in it I have nothing. Only in the world I fill up a place, which may better supplied when I have made it empty.

--Shakespeare, *As You Like It*
(Act I, Scene ii)

A large, elegant decorative flourish in black ink, consisting of multiple overlapping, flowing lines that curve and swirl across the page, framing the text.

According to the Teachers, there is only one thing that all people possess equally. This is their loneliness. No two people on the face of this earth are alike in any one thing except for their loneliness. This is the cause of our Growing, but it is also the cause of our wars. Love, hate, greed, and generosity are all rooted within our loneliness, within our desire to be needed and loved.

The only way that we can overcome our loneliness is through Touching. It is only in this way that we can learn to be Total Beings. God is a presence of this Total.

-Hyemeyohsts Storm
A Native American

The soul hardly ever realizes it, but whether he is a believer or not, his loneliness is really a homesickness for God.

-Dom Hubert Van Zeller
A Benedictine Monk

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The Interrelationships Between Loneliness, Locus of Control, and Academic Achievement in Selected College Students at Oregon State University

Chapter I

INTRODUCTION

The deepest experience the soul can know--the birth of a baby, the prolonged illness or death of a loved relative, the tortuous pain or the isolation of disease, the creation of a poem, a painting, a symphony, the grief of a fire, a flood, an accident --each in its own way touches upon the roots of loneliness. In all these experiences we must perforce go alone.

Clark E. Moustakas, Loneliness (p. 34).

On one level, the level of our individual person, perhaps we are all too aware of the sense of loneliness which Moustakas describes. Yet on another level, the level of empirics, what do we as professional educators and counselors know of loneliness? To be sure we all have dealings with those students who can be described as restless, aimless, anxious, and oversensitive, but often we fail to recognize that these symptoms are the possible symptoms of loneliness.

In his book, Reaching Out, Professor Henri Nouwen (1975) writes:

Loneliness is one of the most universal sources of human suffering today. Psychiatrists and clinical psychologists speak about it as the most frequently expressed complaint and the root not only of an increasing number of suicides but also of alcoholism, drug use, and different psychosomatic symptoms (p. 15).

Zick Rubin (1979) points out similar concerns:

Although loneliness is a psychological state, its links to physical ailments and even suicide have been demonstrated regularly in case reports. In a society with little neighborhood stability and steadily increasing rates of family dissolution, there is reason to believe that the problem of loneliness will get worse before it gets better (p. 85).

One need only turn to the media to observe the pervasiveness of loneliness in our society, especially among the young. Given this widespread influence of loneliness upon the lives of young people in our society, it would seem that educators and others should have more solid data with respect to the impact of loneliness on students.

Problem Statement

The problem of loneliness and the student is one which is almost a vicious circle. Major changes in life often disrupt steady-going social relationships and can lead to feelings of loneliness (Cutrona, Russell & Peplau, 1979). Leaving familiar surroundings for college can be said to be one such disruptive change which produces those intense feelings of loneliness, as Aaron Beck and Jeffrey Young (1978) say:

College students may be especially prone to psychological problems because they encounter so many new situations that potentially can be misperceived. They experience simultaneously all the transitions that are major stresses in adulthood: all at once, they lose family, friends, and familiar surroundings, with college supplying no ready-made substitutes (p. 85).

What the student wants and needs is interpersonal relationships, as Chickering (1969) has noted, but the stressfulness of the situation

often leads to forming friendships which lack the required depth to satisfy the loneliness itself (Rubinstein, Shaver & Peplau, 1969).

Douvan and Adelsin (1966) have told us that entering college students are at similar stages in the life cycle. The thrust of this study, however, is to investigate whether loneliness is related to the outcome of a student's college years. Specifically, this study is concerned with the interrelationships between loneliness, college academic achievement, and whom the student perceives as controlling his or her life.¹

Importance of Study

The importance of this study is to be found in the mandate of the university to educate the entire person; that is to say, not only an education in terms of the cognitive domain but also an education in terms of the emotions, the personality, the affective domain. Frederick Coons (1970), describing this lack in a university education, writes:

The university focuses the majority of its efforts on expanding the cerebrum, and expends minimal effort on developing the sensitivity and awareness of feelings so necessary to truly human relationships (p. 538).

And Thomas Cottle (1974) agrees, for he writes in Interchange:

Enhancing students' psychological development is typically not in line with the states careers or scholarly concerns of most faculty members . . . the psychological well-being of students has often been assiduously avoided by faculty members (p. 31).

The emphasis of higher education seems to be "product" rather

¹This notion of perceiving one as controlling or being controlled is what is meant by "locus of control."

than "person"-oriented; that is to say, involvement with the affective concerns of students is not viewed as productive in terms of academic advancement. However, what the university seems to forget is that the same mind that deals with the cognitive and rational processes must also deal with irrational, emotional, and socio-psychological issues (Cottle, 1973). It is due to this concern that colleges should reconsider their role, in order to promote an atmosphere which will recognize the personal experiences of the students as well as their intelligence.

Definition of Terms

Loneliness

The phenomenon of loneliness is a difficult one to study empirically and define concisely for two basic reasons. The first stems from a seemingly intolerant public attitude toward the expression of feelings of loneliness. Professor William Sadler (1975) put it quite succinctly when he wrote:

. . . The general attitude of the public . . . sees loneliness as a symptom of a weak character. The result is one tends to downplay the impact it has in one's life, or even to deny that it has any significance at all (p. 60).

Edward Wakin (1978) agrees:

Loneliness has come to be regarded as a social disease, a form of psychological leprosy. It's an awkward subject to raise and an embarrassing feeling to admit. That makes it difficult to ask for help and even more difficult to give it. We prefer to repress memories of our lonely experiences, and we find it hard to sympathize with the lonely. It's easier to blame them for loneliness (p. 12).

And, in the preface of Loneliness: A New Study, the Women's Group on Public Welfare (1972) in Great Britain elaborate still further, saying:

An admission of loneliness is seen by many as an admission of failure. Loneliness is bad. . . . Loneliness still carries a stigma, and the lonely are often told they are being self-pitying and introspective. . . . (preface).

As these citations point out the current public attitude is not a permissive one toward those engulfed by feelings of loneliness.

The second reason loneliness is difficult to study is the fact that often loneliness is confused with alienation, aloneness, isolation, or solitariness; they do not, however, necessarily describe the same experience. Until recently this ambivalence in terminology provided educators and counselors little assistance in understanding the nature of loneliness.

Though loneliness is becoming a problem of enormous proportions, surprisingly little solid data has been accumulated which would permit investigators to be more precise in defining it. There is something unique or different about each person's experience of loneliness. This may account for the lack of an exact definition.

Harry Stack Sullivan (1953) formulated the first concise definition in his book, The Interpersonal Theory of Psychiatry:

Loneliness. . . is the exceedingly unpleasant and driving experience connected with inadequate discharge of the need for human intimacy, for interpersonal intimacy (p. 290).

William Sadler (1974) defines loneliness as:

. . . a felt perception of oneself as estranged from significant others, from community, and sometimes from the sources of community. The feelings of loneliness vary; it cannot be reduced to a certain kind of feeling any more than love can (p. 259).

Robert Weiss (1973), in Loneliness: The Experience of Emotional and Social Isolation, provided the impetus for modern loneliness research. He describes loneliness as a "deficit condition, a response to the absence of specific relational provisions (p. 227), and Ignacio Götz (1974) views loneliness as "a lasting feeling of distress or sadness caused by, or implied by, separation, whether physical or mental, whether caused by others or inflicted by oneself upon oneself (p. 291).

For the purpose of this study, however, Rosalee Bradley's (1969) definition of loneliness will be used. She defines loneliness as follows:

(1) discrepancies between the behavioral role an individual portrays and his inner experiences; (2) feelings of a lack of purpose or meaning in life; (3) feelings of a lack of highly personalized relationships in one's life; and (4) a personal need for and absence of physical closeness and contact with others (p. 21).

Locus of Control

The concept of locus of control derives from social learning theory (Rotter, 1954). Those who are internally motivated (e.g., possess an internal locus of control) believe that positive and/or negative events are contingent upon one's own actions, and are thereby under personal control. Externally motivated people (e.g., those with an external locus of control), on the other hand, perceive that the results of a situation are controlled by external forces, such as "powerful

others"²--luck, fate, or chance--and are thereby unrelated to one's own behavior.

Hanna Levenson's breakdown (Internal, Powerful Others, and Chance) will serve to define one's control orientation for this study (Levenson, 1972). Levenson reconceptualized Rotter's locus of control construct on the rationale that people who believe that chance or luck controls their destiny would behave and think differently from people who perceive the events of their lives as controlled by powerful others.

Academic Achievement

Academic achievement is defined by the cumulative grade point average³ of each respective subject.

The Objectives

The objectives of this study are as follows:

1. To determine the relationships between loneliness and academic achievement in college students.
2. To determine the relationships between loneliness and locus of control in college students.
3. To reexamine the locus of control-academic achievement relationship in college students.
4. To determine the difference between loneliness and academic year in college students.

²Anyone perceived as having a certain control or undue influence over one's self.

³The weights 4, 3, 2, 1 and 0 for the grades of A, B, C, D and F, respectively.

5. To determine the difference between loneliness and sex in college students.

Organization of Thesis

In this chapter, the writer has stated the problem to be considered as the relationship of loneliness to college students' academic achievement. It has been pointed out that such feelings of loneliness can promote a decrease in academic achievement among students. If this is the case, it is important to reconsider the mandate of the university to educate the entire person. The importance of this study points to the need of colleges to focus their attention on the psychological as well as the intellectual make-up of its students.

Chapter II is a brief review of the pertinent literature which provides a rationale for this study. It shows the need for further empirical data concerning loneliness and academic achievement. The third variable, locus of control, is incorporated to review its relationship to loneliness and academic achievement.

In Chapter III the design of the study is set forth. Also the procedures used in this study are discussed, and further information regarding the population of the study, the research instruments, and the statistical techniques. Chapter IV reports the results of the study and finally the conclusions and implications are discussed in Chapter V.

CHAPTER II

THE RELATED RESEARCH

Loneliness

Terri Schultz (1976), in her work Bittersweet: Surviving and Growing from Loneliness, contends that: "People who say they are never lonely are simply not in touch with their feelings, or unwilling to give in to them" (p. 3). To be human is to experience loneliness at some time (Burton, 1961; Hendrix, 1971; D'Abov, 1972; Kennedy, 1973; Weiss, 1973; Potthoff, 1976; Rubinstein, Shaver & Peplau, 1979). Yet, the reluctance with which people discuss loneliness, much less attest to ever having been lonely, testifies to the pain associated with this emotion. Freida Fromm-Reichmann (1959) says that loneliness is "such a painful, frightening experience that people will do practically everything to avoid it" (p. 1). Undoubtedly loneliness can have significant personal and social consequences. Clinical evidence indicates that feelings of loneliness which are left unresolved can induce depression, various psychosomatic difficulties, and even suicide (Rosenbaum & Rosenbaum, 1973; Lynch, 1976).

Because loneliness is so powerful and the consequences of not coping with it effectively can be so destructive, it is extremely important to understand not only its dynamics but also some of its major causes. There does not seem to be any consensus, however, regarding the exact origination of the state of loneliness. Rubinstein, Shaver & Peplau (1979) report:

Almost everyone is lonely sometimes, but this common feeling arises not from a person's circumstance, but from how he decides to interpret his situation (p. 58).

On the other hand, Suzanne Gordon (1976) indicates that the . . .

lonely person does not have a choice. He or she does not choose to be lonely; rather that loneliness is felt as an imposition from outside, over whose comings and goings there is no control (p. 41).

Schultz (1976) sees the integration of these two positions as the answer:

Loneliness can be triggered by something internal, from within our heads, or by something external, from people we are near or situations we are in (p. 10).

Whatever its origin, loneliness is an unmistakable reality which must be confronted by young and old alike.

Beck and Young (1978) have discussed how the loss of social support systems promotes loneliness in young adults:

Many high school students have a circle of friends to 'party' with; a good friend to confide in; a parent to turn to in times of crisis; and an intimate boyfriend or girlfriend to love. When they enter college, these supports are gone and freshmen have to develop new relationships as substitutes. This may take months or even years, and during the process, students almost inevitably experience loneliness (p. 86).

Theologian Harvey Potthoff (1976) reaffirms these ideas:

At the heart of young adulthood is the search for basic identifications around which life can unfold and mature. These identifications are frequently,

if not usually, found through choices and decisions which are made during this period . . . loneliness varies from person to person in early adulthood. When it goes deep and poses a truly major problem (and my own belief is that this is often the case), it can most often be traced to disappointments, failures, and frustrations in establishing some of the basic identifications of which we have spoken (pp. 39-40).

Similarly, Cottle (1974) emphasizes the predominance of loneliness in college students:

While some students wake each morning praising the new-found freedom of universities, others tremble at the thought that they might not be able to muster the strength to carry them through today and tomorrow. Other students find ways of avoiding the depression and loneliness. . . . Still others, feeling guilt as well as loneliness and fright, collapse (p. 35).

And, finally, the Women's Group on Public Welfare in Great Britain addressed this concern in 1972:

Rediscovering their identity in an adult world presents a particular problem with some college students, and they may find themselves in a situation where they need to withdraw and reconsider the whole direction of their life, its goals and values. This state may be accompanied by feelings of doubt, confusion, and anxiety (p. 20)

As one encounters the collegiate environment, feelings of loneliness may intensify. Such intensity does not necessarily mean disruption in other areas of life, but it often does, including the cognitive.

Research studies done in recent years have permitted investigators to be more precise in pointing to some of the causes of loneliness. Sadler (1975) theorizes both external and internal causes in explaining loneliness:

Some aspects of loneliness can be traced to personality features. . . . But personal troubles often come from outside, even though the individual experiences them as very private and intimately his own. This sociological analysis helps to get us beyond a narrow psychological and everyday notion that somehow an individual is at fault when he is feeling lonely (p. 65).

Moreover, Rubinstein, Shaver & Peplau (1979) have been involved in studying the causal attributions which college students feel are important in explaining their loneliness, and have found that these attributions can be arranged along three dimensions:

Locus of causality ('Am I to blame for my loneliness, or is it something in my environment?'); stability over time ('Is my loneliness transitory, or is it likely to be permanent?'); and controllability ('Is there anything I can do about being lonely, or is it out of my hands?') (p. 63).

Most causes of loneliness, however, are related in some manner to the resolution of social and interpersonal skills which are developing during early adulthood. Chickering (1969) has noted the importance of achieving this social and interpersonal competence. This can be a formidable task, especially for those who enter colleges because of their instability with their new environments. The prominence of loneliness in new students has been documented, yet these feelings seem to decrease once relationships are established (Woulff, 1976; Ross, 1979).

The empirical data concerning the prevalence of loneliness specifically in residence halls is not clear. Sadler (1974) accuses the physical structure of residence halls of propagating feelings of loneliness:

Another cause of loneliness is a built-in feature of domiciles designed to accommodate large numbers of people. University dormitories provide places to work and sleep, but often little space left over to encourage conversation or the acquaintance process (p. 274).

On the other hand, Abraham Ross (1979) has shown that,

Loneliness was related to residence in that students living in dormitories were least lonely, students living at home with their parents were next least lonely, and off-campus students were most lonely (p. 4).

The discussion is complicated further if one considers the research of Cutrona, Russell & Peplau (1979) which has shown that success in overcoming feelings of loneliness is not related to whether the students reside in a group setting, such as a dormitory.

Questions concerning the relationships between feelings of loneliness and one's sex remain to be answered definitively. Thomas Kubistant (1977) observed that there seems to be innate sex differences that influence loneliness. On the other hand, Woulff (1975), Mishara (1974), and Loucks (1974) all found no sex differences. Cecilia Solano (1980) reported that sex differences appeared using one psychological scale, and did not appear on another.

The problem remains complex and multi-faceted. One must be able to confront one's sense of loneliness if it is to be overcome (Moustakas, 1961; Mijuskovic, 1977). The engagement in activities does not resolve feelings of loneliness by itself (Portnoff, 1976). Communication with others is highly effective, however, in alleviating one's lonely condition (Buhler, 1969). The process of resolution must

begin with the person's decision to accept responsibility for easing his or her loneliness.

Locus of Control

Julian Rotter (1966) is responsible for the theory of internal-external locus of control that has become a valuable means of explaining academic and social motivation. No one person is completely internal or completely external. The locus of control orientation which is operative in a particular situation is a function of both specific expectancy for that type of situation and generalized expectancy for all situations (Rotter, 1975). The relative importance of each depends on the amount of experience the individual has had in the particular situation. The prediction of behavior (achievement) depends not only upon expectancies and reinforcements, but also upon the psychological situation. As people mature and increase their experiential base, there is an accompanying increase in their feelings that events are under their control, and a decrease in the generalized view that events are a product of chance (Lichenstein & Keutzer, 1967; Penk, 1969; Rotter, 1971; Finch, Pezzuti & Nelson, 1975). In other words, as one grows older, one moves toward internality. However, the locus of control construct may be recognized and measured to a degree in people of all ages. With this premise in mind, it follows that if an internal sense of control was related to loneliness in a negative manner, then maturity would not only bring with it an increase in internality but a subsequent decrease in loneliness. Research seems to support this idea (Knipscher, 1975; Rubin, 1979; Rubinstein, Shaver & Peplau, 1974).

College students, however, have actually become more external in their control orientation since the early sixties according to some research (Rotter, 1971; Schneider, 1971; Phares, 1976).

An internal locus of control has been shown to be related to a closer preferred distance to others (Tolor, 1970; Duke & Nowicki, 1972; Duke & Mullens, 1973) and greater popularity (Nowicki & Roundtree, 1971; Brown, 1972; Kruger, 1973; Nowicki & Blumberg, 1975). Proximity to others and popularity can be definite resources in fostering communication, and building relationships, which help alleviate feelings of loneliness. Yet, explicit research on loneliness and locus of control has been almost nonexistent. Nerviano and Gross (1976) studying male alcoholics reported that locus of control and loneliness were not correlated.

It has also been observed that internally motivated people acquire more information pertaining to their own situation, and use it more effectively in pursuing their personal goals (Davis & Phares, 1967; Phares, 1968; Wolfe, 1972). Phares, Ritchie & Davis (1968) conclude that internals are more willing than externals to remedy personality problems. Those who possess an internal sense of control not only show more initiative and effort in controlling their environment, but also control their own impulses better than an externally oriented individual (Gore & Rotter, 1963; Phares, 1965; Strickland, 1965; James, Woodruff & Werner, 1965; Davis & Phares, 1967; Jones & Shranger, 1968; Joe, 1971; Brown & Strickland, 1972). Therefore, if one's personal goal becomes the alleviation of loneliness, it makes sense that an internally motivated individual would acquire more information concerning his or her

condition and thereby become more active in its resolution.

Many investigations support a relationship between internal control and academic achievement (Coleman et al., 1966; Lao, 1970; Powell, 1971; Brown & Strickland, 1972; White & Howard, 1972; Foster & Grade, 1973; Prociuk & Breen, 1975; Otten, 1977). This relationship does not seem to be completely understood, however, since other studies report there is no significant relationship (Gold, 1968; Hjelle, 1970; Wolk & DuCette, 1971; Warehime, 1972).

Studies indicate that an individual's study habits are an important factor in the locus of control-academic achievement relationship (Bass, Ollendick & Vuchinich, 1974; Prociuk & Breen, 1974). Burdt, Palisi & Ruzicka (1975) tell us that high concern in a personal area frequently interferes with productive study habits and attitudes. Loneliness usually fosters such personal concern (Fromm-Reichmann, 1959; Moustakas, 1961; Gotesky, 1965; Mijuskovic, 1977) and thereby might be a mitigating factor in the locus of control-academic achievement relationship.

Summary

A review of the literature dealing with loneliness and locus of control seems to purport that the two are unrelated. Yet, if one's personal goal becomes the alleviation of loneliness, then it seems plausible that one's control orientation could play an integral role. Loneliness becomes a need, rather than a condition (Burton, 1961) as a result of one's intense commitment to resolve these feelings of marginality. One continually strives to avoid facing his or her loneliness

whenever it is present. It is predicted that these two constructs are related since the internally oriented individual would acquire more information and exercise an active dimension in resolving his or her loneliness (in comparison with externally oriented people).

Thus, if loneliness is related to academic achievement in a negative manner, and internality is considered desirable for academic achievement and resolution of loneliness, then students could be counseled toward internality (Majumber et al., 1973; Whyte, 1977).

Research results are not consistent, however, and additional studies, especially as related to loneliness and locus of control in college students, need to be initiated.

CHAPTER III

DESIGN OF THE STUDY

Hypotheses

The present study was designed to determine the interrelationships between three dependent variables: loneliness, academic achievement and locus of control in college students.

The results of the study determined the retention or rejection of the following null hypotheses:

1. There is no relationship between one's degree of loneliness and academic achievement in college students.
2. There is no relationship between one's degree of loneliness and one's locus of control orientation in college students.
3. There is no relationship between one's locus of control orientation and academic achievement in college students.
4. There is no difference between one's degree of loneliness and one's academic year.
5. There is no difference between one's degree of loneliness and one's sex.

The study sample was randomly selected from those students living in the residence hall system at Oregon State University. One hundred forty-five residents were contacted initially by letter outlining the research project and requesting their involvement. The writer called each resident to ask his or her assistance the week after the letters had been distributed. If the resident agreed to participate, an appointment was then set up.

Population of the Study

All of the 97 subjects (51 males and 46 females) were undergraduates at Oregon State University and were within the 17 to 26-year-old age range. All subjects were volunteers. The subjects were tested individually.

Research Instruments

Two instruments were involved in the collection of data. The Levenson Control scales (Levenson, 1972) and a modified version of the Bradley Loneliness scale⁴ (Bradley, 1969) were administered to all subjects. Both instruments involve equidistant interval scales. All the data for this study was collected from each subject in one session.

The Bradley Loneliness scale (LS) consists of thirty-eight items in a Likert format. The LS was derived from sentence completion and peak experiences responses by subjects in a preliminary study by Bradley as well as statements constructed by Bradley in lieu of her operational definition. The items were internally consistent. The LS seemed to demonstrate reasonable reliability and also validity against the MMPI.

In taking the LS, subjects were asked to answer each statement as it applied to them. The answer format was a six-point continuum with "rarely or almost never true for me" (-3) and "true for me all or most

⁴The only modifications made were the deletion of question #24 from the original scale and the negation of question #4. Analysis of variance of the modified version confirmed the retention of high test reliability with a reliability coefficient of .919 (Hoyt & Stunkard, 1952). See Appendix C for ANOVA table.

of the time" (+3). The score of the Bradley Loneliness scale was a sum of the coded answers. High scores on the measure indicate greater loneliness.

The Internal, Powerful Others, and Chance scales (IPC) each consist of eight items in a Likert format. They are comprised of several items adapted from Rotter's I-E Control scale and a set of statements written specifically for the new scales. All statements were phrased in the first person. Each subject is scored on each of three scales. The "I" scale measures the extent to which a person believes he has control over his life (e.g., "Whether or not I get to be a leader depends mostly on my ability"); the "P" scale deals with powerful others (e.g., "I feel like what happens in my life is mostly determined by powerful people"); and the "C" scale is concerned with chance (e.g., "To a great extent my life is controlled by accidental happenings"). Pretesting indicated that the IPC scales had a high internal consistency and were not correlated with a measure of social desirability.

In taking the IPC, subjects were asked the extent to which they agreed or disagreed with each of twenty-four statements. The answer choices ranged from "disagree strongly" to "agree strongly." "Disagree strongly" answers were coded as -3 and "agree strongly" as +3. The scores are then obtained by summing the appropriate questions pertaining to each control orientation (e.g., I, P, or C). A high sub-scale score corresponds to a high belief in that particular orientation. A low-scale score indicates that a person has a low expectation of being controlled by that source (i.e., chance, powerful others, or himself) (refer to Appendix A and B for sample Research Instrument scales).

Academic achievement was measured by the grade point average of each respective subject. Grade point average is an equidistant interval scale. Each subject was asked to report their cumulative grade point average.⁵

All tests were administered and collected by the writer during the month of January. All subjects were given the Bradley Loneliness scale first. Once the Loneliness scale was completed, each subject was given the Levenson Control scale. The task took approximately twenty minutes.

Statistical Techniques

The following statistical techniques were employed to test for significance. A significance level of .05 was selected to determine the retention or rejection of the null hypotheses.

The Pearson product-moment correlation (Courtney & Sedgwick, 1974) was employed in the statistical treatment of the first three null hypotheses. The "r" values were computed and interpreted in terms of the following: direction of relationship, strength of relationship, and percentage of commonality.

⁵To check the accuracy of the self-reported grade point average, 13% of our original sample was randomly selected. These subjects were then contacted and asked to sign a waiver to permit the registrar to release their official grade point average to the author. A T-test was employed to test the following hypothesis:

H_0 : There is no difference between self-reported GPA and official grade point average.

H_a : There is a difference between self-reported GPA and official grade point average.

The null hypothesis was retained ($t = 1.714$, $df = 12$).

To determine what proportion of the variance in academic achievement could be accounted for, a multiple regression analysis (Kim & Kohouty, 1975) was performed in which the variables locus of control and loneliness were entered in a stepwise fashion.

Employing the stepwise regression analysis, it was possible to determine which predictor variable accounted for the greatest proportion of the variance in achievement, that is, which variable best predicted achievement. Given that the amount of variance accounted for by any given variable was dependent upon its effect and importance, such an analysis permitted an evaluation of the relationship among loneliness, locus of control, and academic performance.

The partial correlational technique (Downie & Heath, 1959) was employed to investigate the interrelationships between the three dependent variables.

A fixed one-way analysis of variance (Courtney & Sedgwick, 1974) was employed in the statistical treatment of the fourth null hypothesis.

The T-test (Courtney & Sedgwick, 1974) was utilized to determine the difference between sexes and the degree of loneliness.

CHAPTER IV

RESULTS

This study was designed to investigate the interrelationships between loneliness, locus of control, and academic achievement of college students living in residence halls.

The null hypotheses tested were:

1. There is no relationship between one's degree of loneliness and academic achievement in college students.
2. There is no relationship between one's degree of loneliness and one's locus of control orientation in college students.
3. There is no relationship between one's locus of control orientation and academic achievement in college students.
4. There is no difference between one's degree of loneliness and one's academic year.
5. There is no difference between one's degree of loneliness and one's sex.

The Findings

Loneliness was related to academic achievement ($r_{97} = -.199$, $p = .05$). The percentage of commonality was 3.96%. The first null hypothesis was rejected, but it was a weak relationship. There was no significant relationship between one's locus of control orientation and either loneliness or academic achievement. The second and third null hypotheses were retained.

Table 1: Pearson Correlation Coefficients for Relationships Between Loneliness, Locus of Control, and Academic Achievement

	<u>Loneliness</u>	<u>Locus of Control</u>	<u>Academic Achievement</u>
Loneliness	1.0	-.0436 p = .672	-.1993* p = .050
Locus of Control	-0.0436 p = .672	1.0	+0.0312 p = .762
Academic Achievement	-.1993* p = .050	+0.0312 p = .762	1.0
*If $p \leq .05$ the relationship is statistically significant; if not the relationship is not significant.			

Given the amount of variance accounted for, and the negative relationship between loneliness and academic achievement, it seems reasonable to conclude that loneliness affects academic achievement, albeit not the strongest predictive variable.

The variance which can be accounted for by loneliness was 3.97%.

Table 2: ANOVA Table for Simple Regression for Academic Achievement with Loneliness

Source of Variation	df	SS	MS	R ²
Regression	1	1.12296	1.12296	.03970
Error	95	27.16209	0.28592	
Total	96	28.28505		

The addition of the locus of control variable increased the variance accounted for to 4.02%.

Table 3: ANOVA Table for Multiple Regression for Academic Achievement with Loneliness and Locus of Control				
Source of Variation	df	SS	MS	R ²
Regression	2	1.13731	.56866	.04021
Error	94	27.14774	.28881	
Total	96	28.28505		

Locus of control by itself accounted for .097% of the variance.

Table 4: ANOVA Table for Simple Regression for Academic Achievement with Locus of Control				
Source of Variation	df	SS	MS	R ²
Regression	1	.02744	.02744	.00097
Error	95	28.25761	.29776	
Total	96	28.28505		

All three partial order correlations were not significant. It was also noted that in correlating the interrelationships of the three variables, the partial "r", when compared to the Pearson "r", was

weaker. It can be concluded that the three variables are not significantly related.

Table 5: Partial Correlation Coefficients for Interrelationships Between Loneliness, Locus of Control, and Academic Achievement					
	Locus of Control		Loneliness		Loneliness
Academic Achievement	$+0.0230$ $p = .824$	Academic Achievement	$-.1982$ $p = .053$	Locus of Control	$-.0381$ $p = .712$
	Loneliness partialled out		Locus of Control partialled out		Academic Achievement partialled out

There was no significant difference between academic year and one's degree of loneliness. The fourth null hypothesis was retained.

Table 6: ANOVA Comparison for Loneliness by Academic Year					
Source of Variation	df	SS	MS	F	
Between Groups	3	1128.6637	376.2212	.682	N.S.
Within Groups	93	51274.9652	551.3437		
Total	96	52403.6289			

There was no significant difference between loneliness and sex. The fifth null hypothesis was retained.

<u>Table 7: T-test Comparison for Loneliness by Sex</u>					
	Number of Cases	Mean	Standard Deviation	T Value	p
<u>Loneliness</u>					
- male	51	88.6471	22.210	1.60	.112
- female	46	81.0870	24.202		

N.S.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The data analyzed in the present study confirm the complexity of the relationship between academic achievement and loneliness. More specifically, the only significant relationship uncovered by this research is between loneliness and academic achievement. This is a seemingly weak relationship. Its significance can probably be attributed to the large sample size which makes it possible to detect statistically smaller differences. However, it is a significant relationship thereby confirming a correlation between a student's degree of loneliness and his or her academic achievement. This relationship is a negative one; that is to say, students having higher measured loneliness exhibited lower academic achievement. This corroborates previous research which points to a negative relationship between academic achievement and social relationships (O'Shea, 1969). These studies and this research seem to be measuring similar psychological conditions, in that the lack of social relationships can be one of the major causes of loneliness.

Although this study supports the writer's predictions, the relative strength of the relationship was disappointing. The regression analysis provides further information, however, which confirms the fact that loneliness has some predictive value, albeit weak, on one's academic achievement. This was particularly interesting since loneliness proved to be a much better predictor of academic achievement

than locus of control. This conclusion helps clarify the on-going discussion in the literature concerning the relationship between locus of control and academic achievement in college students.

Further statistical techniques were used to examine the lack of a relationship between academic achievement and locus of control.⁶ The result of this analysis was unexpected. It showed that the students had an overwhelming sense of internal control. This points to the reverse of earlier research.⁷ It is beyond the scope of this thesis to explain why this occurred, yet several suggestions may be put forth. First, the type of institution--that is, liberal arts or technico-scientific--and the relative size of the institution may have some effect on students' perceptions of control. Next, the location of the institution, rural or urban, and geographical locals--e.g., California, Iowa, or North Carolina--may hold some of the answers. Another reason may simply be that college students have shifted their control orientation, for whatever reasons, since the earlier research was completed. The results of this study when viewed alongside the discrepancies in previous research raised serious questions regarding the practical applicability of the locus of control construct. It seems to be a helpful theoretical model, but empirical studies have produced inconsistent results utilizing scales which were

⁶An analysis of variance was performed to determine if a difference existed between one's locus of control orientation and academic achievement. This analysis proved not to be significant. A possible reason for this lack of a relationship was the high number of students with an internal sense of control (see Appendix D).

⁷See above, p. 15.

developed to measure it. Subsequent research is needed if this problem is to be clearly understood.

This study verifies the work of Nerviano and Gross (1976) which reports that locus of control and loneliness are not correlated. It seems that loneliness is a condition which may occur regardless of one's sense of control. Whether a person controls the events of his or her life, the pains of loneliness may still be encountered. This substantiates Sadler's (1974) theory that loneliness is "something that unexpectedly happens to us" (p. 272), that is to say, one has little if any control over it. Although this is not a commonly held view, its feasibility seems more plausible if this research is any indication. Further study on this point is also warranted.

The initial prediction for a relationship between locus of control and loneliness was based on the direct relationships each had with other personality characteristics. For instance, internally motivated people are reported to deal with anxiety more effectively (Butterfield, 1964; Feather, 1967; Watson, 1967; Platt, 1968; Ray, 1968; Hountras, 1970; Joe, 1971; Strassberg, 1973; Himle, 1975; Donovan, 1976), and since loneliness is oftentimes accompanied by such feelings of anxiousness (Moustakas, 1961; Bradley, 1969; Weiss, 1973; Gaev, 1976; Schultz, 1976), it seems to follow that an internal locus of control orientation might assist one in dealing with his or her feelings of loneliness. Likewise, the most significant factor in resolving loneliness is self-esteem (Cutrona, Russell & Peplau, 1979) and, accordingly, internally oriented individuals possess a more positive view of themselves (Ziller et al., 1969; Fitch, 1970; Epstein

& Komorita, 1971; Fish & Karabenick, 1971; O'Leary et al., 1974; Gordon, 1977). Once again, then, it was supposed the two constructs would be related. Even though this investigation failed to find such a relationship, it does imply the problem of measuring such personality characteristics as separate entities. By no means are such variables as locus of control orientation or feelings of loneliness distinct within an individual. Once these variables are isolated in order to study them empirically, their full impact on the person may be diluted. In other words, such factors of one's personality may not be as problematic by themselves, but, in conjunction with one another, they may manifest their presence, which has heretofore gone unnoticed.

The interrelationships between the three dependent variables--loneliness, locus of control, and academic achievement--were not found to be significant. In fact, the relationships between these variables were actually weakened by the addition of a third variable. This makes sense, however, if one considers the nonsignificant Pearson correlations. It may be that the possible relationships between the three constructs are much more complex than the linear relationships implied by such correlational techniques.

The attempts to determine a difference in one's degree of loneliness and academic year proved not to be significant. Earlier studies have noted that new students exhibited a higher degree of loneliness.⁸ Three distinct possibilities may account for this discrepancy.

⁸See above, p. 12.

First, it has been shown that residence hall students exhibit the lowest incidence of loneliness in comparison to other college students.⁹ The organization of a residence hall may provide the potential for social relationships and interpersonal activities regardless of class standing. Given this and the use of residence hall students in this study, the distinctions between loneliness and academic year are not as obvious, if they exist at all. Further studies might utilize students residing in living groups other than residence halls to check for possible differences in terms of their degree of loneliness and academic year.

Another possibility may be the time of year this study was completed. Since the data for this research was gathered during the winter term, most new students already had had some time to establish social relationships. Longitudinal research focusing on the relationships between loneliness, class standing, and academic achievement would be beneficial in clarifying this question.

And finally, the third possibility revolves around the stressful environment which universities often produce. If the amount of stress perceived by the students is high and consistent throughout their college career, this may promote a heightened vulnerability to loneliness. Subsequent research might include students who have already left the university, as well as those who remain, to compare their degree of loneliness, class standing, and academic achievement in order to clarify the relationship of feelings of loneliness to academic achievement.

⁹See above, p. 13.

The nonsignificant results found between sex and loneliness are supported in previous research. Loneliness does not manifest itself any more in males than females. This finding is not overwhelmingly significant statistically, however, and several studies have observed young adult males tend to be more lonely than do females. The results of this study are not conclusive enough, however, to deny this possibility, but only point to the need for further empirical study.

The results of this research have raised several questions for the author regarding student retention even though the findings were not conclusive enough to support such implications. Research reports that approximately 40 percent of those students entering college never complete work toward an undergraduate degree (Skaling, 1971; Astin, 1972; Bayer, 1973). The possibility of the relationship between academic achievement and loneliness (or any other psychological factors) partially accounting for this attrition rate is worth considering. If a student encounters feelings of loneliness and his or her academic achievement decreases accordingly, this student may feel unable to handle college work and withdraw from the university. This may have been prevented if the student received counseling earlier. Therefore, the area of student services and programming may play an important role in that it might increase academic achievement, and thereby reduce the number of students who withdraw from school.

The problem of loneliness and its effects on college students remains complex, and cannot be classified into nice, narrow categories. The conclusions of this study do not point to a strong relationship

between loneliness and academic achievement, yet, as has been suggested, longitudinal studies might reveal a stronger relationship.

Recommendations

In summary, this research suggests the need for further experimentation concerning loneliness in college students. The replication of the present study with the following modifications may prove helpful. First, the expansion of the study sample by incorporating college students from different universities in various geographical areas residing in diverse living group settings may assist researchers in determining the strength of the relationship of loneliness on academic achievement. Second, the collection of data in a longitudinal manner in order to note any differences in intensity of loneliness during particularly stressful times of the academic year. And finally the deletion of the locus of control construct since it was not shown to be related to either the feelings of loneliness or academic achievement of college students in this research.

The amount of descriptive research concerning loneliness continues to accumulate, yet the study of loneliness in a systematic manner is just beginning. Obviously, the quality of future research will depend in part on the adequacy of the instruments used to measure loneliness. In completing this study the author faced certain questions regarding the adequacy and appropriateness of utilizing only psychometric scales to measure loneliness in college students. Recently several scales have been developed which address such methodological concerns, yet conceptual issues are also important. Further

research should clarify such conceptual issues as to whether it is more appropriate to identify the constituent causes of loneliness and then specifically measure them or develop a comprehensive or general measure of loneliness. One must also address the validity of such loneliness scales with specific sub-groups of the population since loneliness may be the result of different antecedents depending on personal needs. The addition of interviewing techniques to supplement the loneliness scales may assist researchers in understanding the case differences and similarities of loneliness. Similar concerns stem from the scales used to measure locus of control. The methodological concerns question the practicality of such a construct with college students, and certain conceptual concerns point to the possibility of specific mediating variables modifying the relationship between locus of control and academic achievement.

The main recommendations of this study center around the need for further descriptive and experimental research. Specifically, further research is needed in exploring: (1) the replication of the present study correlating only two variables at a time; (2) the practicality of the locus of control construct, as measured by psychometric scales, with college students; (3) the effects of external variables, such as geographical location or size of academic institution, on the student's locus of control orientation; (4) the addition of interviewing techniques to empirical results obtained from psychometric scales; (5) the differences between measuring specific antecedents of loneliness and measuring loneliness in general; and (6) the prevalence of loneliness in one sex as opposed to the other.

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APPENDICES

Appendix A

BRADLEY LONELINESS SCALE

CODE: _____ AGE: _____
 PARTICIPATION DATE: _____ SEX: M F
 CUMULATIVE G.P.A.: _____ YEAR: FR SO JR SR

I N S T R U C T I O N S

- A. Answer each question as it *applies to you only*; do not compare yourself to others.
- B. Answer each question by circling one number in the six-position answer column. Notice that the first or lefthand side is titled "Rarely or Almost Never True for Me" and the righthand side is titled "True for Me All or Most of the Time." To answer each question, circle one of the six numbers which most closely approaches your feelings.
- C. Be sure to answer each question. There is no time limit, but work quickly. There is no right or wrong answer. It is *YOUR FEELINGS THAT ARE IMPORTANT*.

	Rarely or almost never true for me			True for me all or most of the time		
1. It is hard for me to get out of bed and face the prospects the day holds.	-3	-2	-1	+1	+2	+3
2. I feel like I am worthless.	-3	-2	-1	+1	+2	+3
3. There is no one with whom to share my happy and sad moments.	-3	-2	-1	+1	+2	+3
4. I have no friends who understand me.	-3	-2	-1	+1	+2	+3
5. Riding in a crowded elevator bothers me.	-3	-2	-1	+1	+2	+3
6. I feel bored.	-3	-2	-1	+1	+2	+3
7. I feel that no one cares about me.	-3	-2	-1	+1	+2	+3
8. I have no one to depend upon but myself.	-3	-2	-1	+1	+2	+3
9. I need someone to talk to about my problems and there is no one there.	-3	-2	-1	+1	+2	+3
10. I feel like I don't have a friend in the world.	-3	-2	-1	+1	+2	+3
11. I am afraid of being different than other people.	-3	-2	-1	+1	+2	+3
12. I feel very empty inside.	-3	-2	-1	+1	+2	+3
13. I am embarrassed to show fear or pain.	-3	-2	-1	+1	+2	+3
14. People do not seem to notice I am around.	-3	-2	-1	+1	+2	+3
15. I worry about the impression I make on others.	-3	-2	-1	+1	+2	+3

Continued (Appendix A)

16. I cannot discuss my problems with anyone.	-3	-2	-1	+1	+2	+3
17. I know that life is worthwhile.	-3	-2	-1	+1	+2	+3
18. I feel sort of like a "hollow shell."	-3	-2	-1	+1	+2	+3
19. I believe that no one cares what happens to me.	-3	-2	-1	+1	+2	+3
20. I wonder if I can ever really love another person.	-3	-2	-1	+1	+2	+3
21. People enjoy my company.	-3	-2	-1	+1	+2	+3
22. People do not like me.	-3	-2	-1	+1	+2	+3
23. I think for myself.	-3	-2	-1	+1	+2	+3
24. I feel like I don't have a world of my own.	-3	-2	-1	+1	+2	+3
25. My mind works in an orderly manner.	-3	-2	-1	+1	+2	+3
26. I feel that others in a group are happier than I am.	-3	-2	-1	+1	+2	+3
27. People would think I was foolish if they really knew me.	-3	-2	-1	+1	+2	+3
28. Memories of past friends and happy times I have spent with them are sad.	-3	-2	-1	+1	+2	+3
29. I feel isolated from human contact--like I'm on the outside looking in.	-3	-2	-1	+1	+2	+3
30. I feel terrible when I know someone is watching me.	-3	-2	-1	+1	+2	+3
31. My conduct is controlled by the behaviors of those about me.	-3	-2	-1	+1	+2	+3
32. When I am in a group, I feel like a small fish in a large fishbowl.	-3	-2	-1	+1	+2	+3
33. I am afraid of people not liking me.	-3	-2	-1	+1	+2	+3
34. When I am around a group, I don't feel like I belong.	-3	-2	-1	+1	+2	+3
35. Most any time I would rather sit and daydream than do anything else.	-3	-2	-1	+1	+2	+3
36. I feel free to just be myself around other people.	-3	-2	-1	+1	+2	+3
37. Even when I am with people I feel lonely much of the time.	-3	-2	-1	+1	+2	+3

* * * *

This scale is taken from R. Bradley, Measuring Loneliness. Unpublished doctoral dissertation, Washington State University, 1969.

Appendix B

LEVENSON CONTROL SCALE

NAME: _____ PARTICIPATION DATE: _____

ATTITUDE STATEMENT SURVEY

Directions: Below is a series of attitude statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. We are interested in the extent to which you agree or disagree with such matters of opinion.

Read each statement carefully. Then indicate the extent to which you agree or disagree by circling the number of following each statement. The numbers and their meaning are indicated below:

If you disagree strongly -- circle -3 // If you agree slightly -- circle +1

If you disagree somewhat -- circle -2 // If you agree somewhat -- circle +2

If you disagree slightly -- circle -1 // If you agree strongly -- circle +3

First impressions are usually best in such matters. Reach each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number following the statement. *Give your opinion on every statement.*

If you find that the numbers to be used in answering do not adequately indicate your own opinion, use the one which is *closest* to the way you feel.

- =====
- | | | | | | | |
|--|----|----|----|----|----|----|
| 1. Whether or not I get to be a leader depends mostly on my ability. | -3 | -2 | -1 | +1 | +2 | +3 |
| 2. To a great extent my life is controlled by accidental happenings. | -3 | -2 | -1 | +1 | +2 | +3 |
| 3. People like myself feel that the people in power mostly determine what will happen in the lives of people like me. | -3 | -2 | -1 | +1 | +2 | +3 |
| 4. Whether or not I get into a car accident depends mostly on how good a driver I am. | -3 | -2 | -1 | +1 | +2 | +3 |
| 5. When I make plans, I am almost certain to make them work. | -3 | -2 | -1 | +1 | +2 | +3 |
| 6. Often there is no chance of protecting personal interests from bad luck happenings. | -3 | -2 | -1 | +1 | +2 | +3 |
| 7. When I get what I want, it's usually because I'm lucky. | -3 | -2 | -1 | +1 | +2 | +3 |
| 8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power. | -3 | -2 | -1 | +1 | +2 | +3 |
| 9. How many friends I have depends on how nice a person I am. | -3 | -2 | -1 | +1 | +2 | +3 |
| 10. I have often found that what is going to happen will happen. | -3 | -2 | -1 | +1 | +2 | +3 |

Continued (Appendix B)

11. My life is chiefly controlled by powerful others.	-3	-2	-1	+1	+2	+3
12. Whether or not I get into a car accident is mostly a matter of luck.	-3	-2	-1	+1	+2	+3
13. Persons like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	-3	-2	-1	+1	+2	+3
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	-3	-2	-1	+1	+2	+3
15. Getting what I want requires pleasing those people above me.	-3	-2	-1	+1	+2	+3
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	-3	-2	-1	+1	+2	+3
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.	-3	-2	-1	+1	+2	+3
18. I can pretty much determine what will happen in my life.	-3	-2	-1	+1	+2	+3
19. I am usually able to protect my personal interests.	-3	-2	-1	+1	+2	+3
20. Whether or not I get into a car accident depends mostly on the other driver.	-3	-2	-1	+1	+2	+3
21. When I get what I want, it's usually because I worked hard for it.	-3	-2	-1	+1	+2	+3
22. In order to have my plans work. I make sure that they fit in with the desires of people who have power over me.	-3	-2	-1	+1	+2	+3
23. My life is determined by my own actions.	-3	-2	-1	+1	+2	+3
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.	-3	-2	-1	+1	+2	+3

* * * *

The scale is taken from H. Levenson, Locus of Control and Other Cognitive Correlates of Involvement in Anti-Pollution Activities. Unpublished doctoral dissertation, Claremont Graduate School, 1972.

APPENDIX C

Analysis of Variance to Check Internal Reliability of Modified Loneliness Scales

Source of Variation	df	SS	MS	
Among individuals	36	1478.208	14.931	A'
Among items	99	1037.364	28.816	B'
Residual	3564	4296.582	1.206	C'
Total	3699	6812.152		

From article by Hoyt & Stunkard:

$$\text{estimate of reliability coefficient, } r_{tt} = \frac{A' - C'}{A'} = .919$$

std. error of measurement for an individual's score is given by

$$SE_{\text{measure}} = \sqrt{nC'} = 10.982$$

Analysis of Variance for the Comparison of Academic Achievement by Control Orientation

Source of Variation	df	SS	MS	F
Between Groups	2	.0573	.0286	.095
Within Groups	94	28.2278	.3003	
Total	96	28.2851		

<u>Group</u>	<u>Count</u>	<u>Mean (G.P.A.)</u>
Internal	93	2.91
Powerful Others	3	3.05
Chance	1	2.86

Subjects ^a	Class Standing ^b	Sex ^c	Grade Point Average ^d	Loneliness Score ^e	Locus of Control Scale		
					I Sub-scale Score ^f	P Sub-scale Score ^g	C Sub-scale Score ^h
1				49	33	22	11
2				79	11	22	22
3				76	39	23	26
4				92	35	22	20
5				85	37	31	21
6				82	36	13	22
7				151	37	36	22
8				85	37	25	32
9				76	30	19	15
10				90	39	33	15
11				96	22	15	26
12				76	37	16	33
13				90	33	22	22
14				87	36	14	13
15				107	36	34	20
16				63	35	21	14
17				115	31	33	19
18				135	33	22	32
19				67	33	33	33
20				93	37	28	34
21				39	33	27	33
22				51	41	11	33
23				72	33	33	33
24				80	33	33	30
25				73	33	16	17
26				73	33	16	16
27				92	33	21	11
28				63	33	11	13
29				102	33	21	22
30				77	33	14	14
31				91	33	33	14
32				96	33	33	14
33				129	33	33	22
34				73	33	33	14
35				99	33	33	14
36				74	33	33	14
37				66	33	33	14
38				85	33	33	14
39				111	33	33	14
40				70	22	20	14
41				81	33	33	14
42				138	33	33	14
43				63	33	33	14
44				98	33	33	14
45				98	22	20	29
46				67	39	13	15
47				62	22	25	17
48				100	33	13	24
49				52	22	13	13
50				93	33	15	14
51				63	33	13	17
52				80	33	33	22
53				60	15	16	16
54				58	22	22	27
55				68	33	33	14
56				80	20	13	13
57				72	22	22	34
58				79	33	27	21
59				60	19	18	18
60				89	26	23	27
61				113	26	27	27
62				113	24	24	24
63				90	17	21	21
64				93	25	25	25
65				85	23	22	22
66				74	11	9	9
67				106	27	3	3
68				64	0	23	23
69				73	19	17	17
70				75	22	24	24
71				80	22	15	15
72				69	13	20	20
73				86	3	8	8
74				61	13	13	13
75				156	27	17	17
76				66	19	19	19
77				119	20	26	26
78				70	17	23	23
79				87	29	33	33
80				79	17	21	21
81				90	17	17	17

Subjects	Class Standing	Sex	Grade Point Average	Loneliness Score	Locus of Control Scale		
					I Sub-scale Score	P Sub-scale Score	C Sub-scale Score
82				68	22	21	22
83				68	22	21	22
84				69	22	21	22
85				57	22	21	22
86				73	22	21	22
87				104	22	21	22
88				70	22	21	22
89				80	22	21	22
90				124	22	21	22
91				55	22	21	22
92				106	22	21	22
93				101	22	21	22
94				112	22	21	22
95				81	22	21	22
96				97	22	21	22
97				103	22	21	22

a N = 97

b Freshman = 28
Sophomore = 33
Junior = 20
Senior = 16

c Male = 51
Female = 46

d Mean = 2.92

e Mean = 85.06
Standard Deviation = 23.36

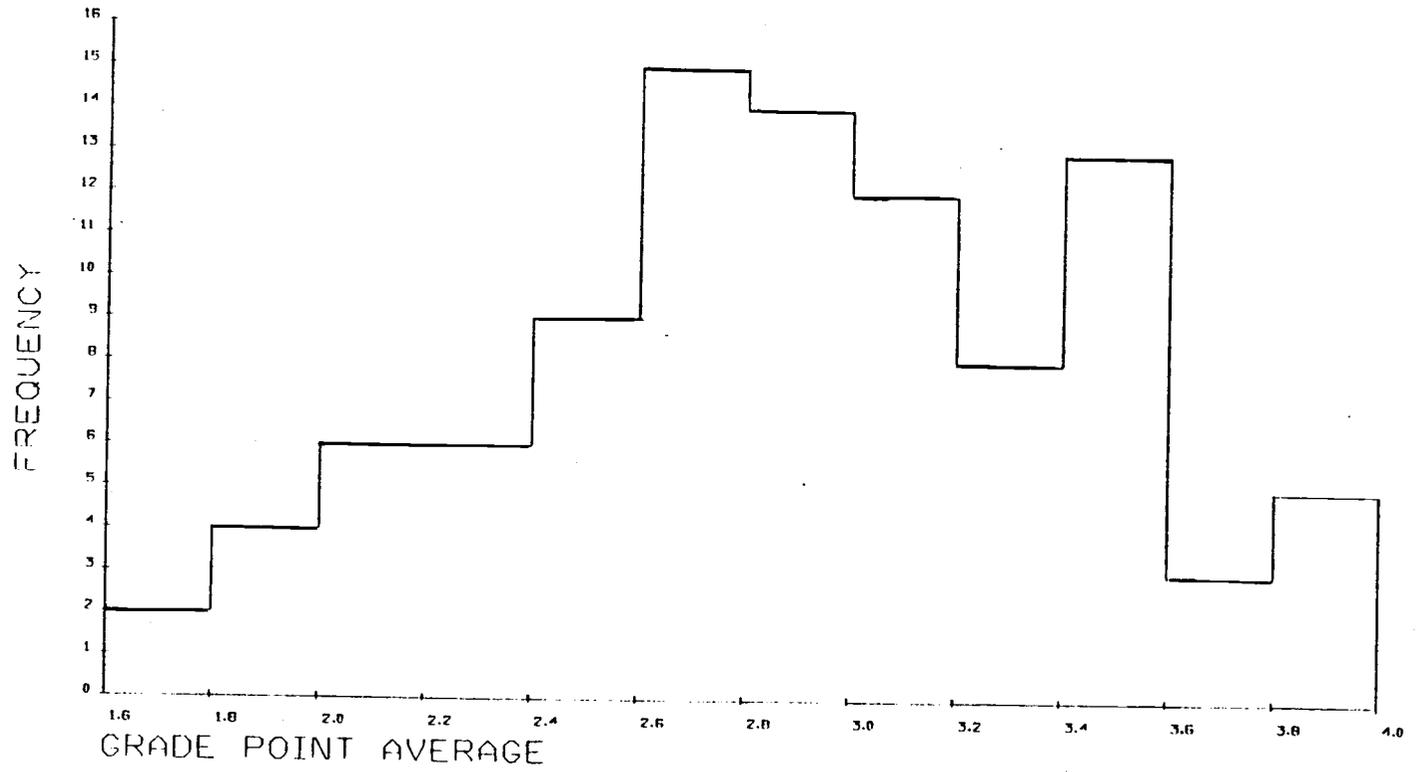
f Mean = 36.45
Standard Deviation = 4.27

g Mean = 21.83
Standard Deviation = 6.01

h Mean = 21.36
Standard Deviation = 6.05

HISTOGRAMS OF RAW SCORES

Appendix F



Appendix F, continued

