

HISTORIC AGRICULTURAL LANDSCAPES AND STRESS: A PRELIMINARY
EXAMINATION OF THE CORRELATION BETWEEN HUMAN WELL-BEING AND
HISTORIC PLACES

by

STEPHEN LAYNE WHITE

(Under the Direction of John C. Waters)

ABSTRACT

The United States is losing natural areas, green space, and farmland at an alarming rate. From 1992 to 1997 the conversion to suburbia happened at a rate of 2.2 million acres per year, almost double the annual loss of the previous decade. Certainly, we are losing a significant component of our heritage and straining our planet. Ultimately, and most profoundly, the loss may adversely affect human well-being. This thesis attempts to answer the question: Is there a correlation between historic farmland and stress as a component of well-being? The research began with a survey of literature. The project's centerpiece consisted of a survey meant for 1,500 university students, which asked them to respond to slides depicting historic agricultural landscapes through a depression scale. The student survey showed a trend toward a correlation and encourages more powerful studies. The intention of this work is to trigger research on a large scale that forges statistically significant correlations between all types of historic sites and mental, physical, and social well-being. Hopefully, the offspring of this study will inspire in our citizenry a quantifiably higher quality of life and a more dutiful regard for environmental stewardship.

INDEX WORDS: landscape and health, landscapes and well-being, healthy environment, healthy places, nature, historic places, historic places and health, historic places and well-being, historic places and quality of life, well-being, quality of life

HISTORIC AGRICULTURAL LANDSCAPES AND STRESS: A PRELIMINARY
EXAMINATION OF THE CORRELATION BETWEEN HUMAN WELL-BEING AND
HISTORIC PLACES

by

Stephen Layne White

B.A, Middle Tennessee State University, 1997

A Thesis Submitted to the Graduate Faculty of the University of Georgia in Partial
Fulfillment of the Requirements for the Degree

MASTER OF HISTORIC PRESERVATION

ATHENS, GEORGIA

2012

© 2012
Stephen Layne White
All Rights Reserved

HISTORIC AGRICULTURAL LANDSCAPES AND STRESS: A PRELIMINARY
EXAMINATION OF THE CORRELATION BETWEEN HUMAN WELL-BEING AND
HISTORIC PLACES

by

STEPHEN LAYNE WHITE

Major Professor: John C. Waters

Committee: Wayde Brown
David Spooner
Ian Firth

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
August 2012

Dedication

This thesis is dedicated to my father, Sammy Bryant White, who, in his playful way, taught me the vastness of my capabilities and paved my way to achievement. May you rest in peace, dad.

Love, "Bud"

Acknowledgements

These individuals are the few who rose above many more in stellar performances of support.

John C. Waters, the founding program director, my major professor and boss, imbued in me a well-seasoned and comic approach to cultural resource management and became a primary member of my academic family.

Donna Gabriel is the kingpin of our college's graduate programs. For her, we all owe immeasurable gratitude.

Dr. Wayde Brown and Rene Shoemaker proved the correlation between the education experience and friendship by becoming two of my best friends.

Dr. James Bason taught me the power of statistics in research. He was a vital part of the survey.

Tim Wasem showed me the value of an anxious luddite recruiting a young individual with impressive technical acumen and editing aplomb to generate the final version of this thesis.

Dr. Paige Tench kept a roof over my head and a cup of coffee in my hand for most of my time in Athens.

Dr. Steve Herrin, my best friend and partner, helps me in every aspect of life and this thesis was not the exception. Thank you, "Sweetpea."

TABLE OF CONTENTS

	Page
ABSTRACT	i
LIST OF MODELS & TABLES	vii
Chapter	
1. INTRODUCTION	1
Problem Statement.....	1
Historical Context	8
2. DEFINITION OF WELL-BEING & ITS INTERPLAY WITH LANDSCAPES.....	11
3. METHODOLOGY	15
4. DATA ANALYSIS	23
5. CONCLUSION	29
BIBLIOGRAPHY	34
APPENDICES	40
Appendix I: Results of Independent Samples Test & Demographics	40
Appendix II: Survey Answer Distributions & Depression Levels	42

LIST OF TABLES

	Page
MODEL 1: Flow Chart of a Landscape's Effects in Urban and Rural Areas.	13
TABLE 1: OLS Regression Model	24
TABLE 2: Group Statistics.....	25
TABLE 3: Independent Samples Test	28

CHAPTER 1

Introduction

Problem Statement

Few Americans escape the allure of the historic American agricultural landscape because of its prominence and, consequentially, familiarity. To escape traversing this gentle imprint of civilization is nearly impossible because of its sheer mass.

Unfortunately, the magnitude is dwindling at an alarming rate. Conversion of the nation's natural areas, green space, and farmland to suburbia happened at a rate of 2.2 million acres per year between 1992 and 1997. Approximately 1.4 million acres were lost each year during the previous decade.¹ The American Farmland Trust translates the loss of prime farmland to 12 square miles every day. "Over-development (17 percent) is the second problem facing rural America, trailing lack of money and poverty."² The losses of farmland and farm buildings are all part of our vanishing agrarian past as financially strained farming families neglect or raze barns and out-buildings perceived as out-dated with the hope of saving money. Out of financial desperation and/or mental fatigue from years of struggling, the land is often sold to

¹ U.S. Department of Agriculture and Council on Environmental Quality, *National Agricultural Lands Study: Final Report, 1981*, prepared by the U.S. Department of Agriculture and Council on Environmental Quality, (Washington, DC: Government Printing Office, 1994).

² Greenburg Quinlan Rosner Research, "Perceptions of Rural America" (Battle Creek, MI: W.K. Kellogg Foundation, 2001) <http://www.greenbergresearch.com> (accessed January 30, 2008), 3.

developers or other individuals, who, then, eventually sell to developers. Professionals and laymen alike are increasingly alarmed by the loss.

Among an assortment of tactics, the historic preservationists as keepers-of-culture attempt to protect these and other threatened cultural resources by generating nebulous talk about “quality of life” and sharing unfounded quotes like Margaret Mead’s, “The destruction of things that are familiar and important causes great anxiety in people.” Joining their ranks, scholars have explored people’s attachment to natural areas and architecture, but leave a dearth of information on attachments to historically significant places.

Like many potential forces behind historic preservation, research which could help protect these agricultural landscapes is woefully sparse. According to the National Trust for Historic Preservation, “The current pace of the preservation effort is not enough. It is as though the preservation movement were trying to travel up a down escalator.”³ Abraham, Sommerhalder, and Abel assess this particular deficiency in “Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments.” However, their overview of the literature on the health-promoting influence of landscapes does not include agricultural landscapes, much less historic agricultural landscapes.⁴ Conversely, current literature reviews on landscape and health focus either on the links between “wild” nature and health or between the built

³ Tara L. Cooner, “Popular Media as a Tool for Preservation Education” (master’s thesis, University of Georgia, 2006), 1.

⁴ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, “Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments,” *International Journal of Public Health* 55 (2010): 62.

environment and health.⁵ Stephen Kaplan elaborates more on current literature by saying, “Many preference studies have concentrated on urban, residential and wilderness settings; rural areas and particularly water-oriented settings have seen limited attention.”⁶ This thesis is an attempt to begin exploration of the correlation between widely defined human well-being and historic places by answering the more manageable question: Is there a correlation between stress management and historic agricultural landscapes? The data from this research may substantiate long-standing suspicions and arm preservationists with a new, quantitative defense. Furthermore, the work may trigger future research on the broader definition of well-being and its correlation to all historic places.

Beyond the childhood memories of these places in peril, there are myriad reasons calling for preservation and continued research. All affect a people and their culture. Three of the more significant reasons are preference, health, and economic stability.

Simply, people prefer cultural landscapes versus natural landscapes.⁷ Suffice it to say, farms also have a natural character. As the products of mankind, agricultural landscapes are cultural landscapes. “Agriculture plays the predominant role in

⁵Ibid., 60.

⁶ Stephen Kaplan, “An Informal Model for the Prediction of Preference,” in *Landscape Assessment: Values, Perceptions, and Resources*, ed. J.G. Fabos (Stroudsburg, PA: Dowden, Hutchinson, and Ross, 1975), 226.

⁷ Robert L. Ryan, “Perceptions and Values for a Midwestern River Corridor,” *Landscape and Urban Planning* 42 (1998): 226.

respondent's perception of rural America."⁸ Therefore, in the context of preference, people have an affinity for agricultural places.

A chorus of scholars explain preferences that describe agricultural landscapes. These scholars were part of a community associated with the emerging field of environmental psychology during the 1960s and 1970s. A few eminent individuals were: Rachel and Stephen Kaplan, Roger Ulrich, Andrea Abraham, Terry C. Daniel, and Ervin Zube. More specifically, Rachel and Stephen Kaplan explain the aesthetic qualities that support a preference for agricultural landscapes:

In terms of preferences, the spacial configuration that consistently generates favorable responses involves areas that are open, yet defined. Characteristically, these have relatively smooth ground texture and trees that help define the depth of the scene . . . Mean preferences for these are always among the highest, ranging between 3.7 and 4.2⁹

Terry C. Daniel, Louise M. Arthur, and Ron S. Boster supplement the Kaplans:

Several studies have supported the positive value of variety. Gratzner and McDowell in 1971 provided evidence that observers tend to focus on areas of change or edges.

In the context of assessing scenic beauty, in 1974 Zube... "suggested that extensive natural areas often become monotonous. When man introduces breaks in this monotony, aesthetic value often increases."¹⁰

The Kellogg Foundation captured people's belief that agriculture plays the predominant role in their perceptions of rural America. The people of the United States hold strongly

⁸ Greenburg Quinlan Rosner Research, "Perceptions of Rural America" (Battle Creek, MI: W.K. Kellogg Foundation, 2001) <http://www.greenbergresearch.com> (accessed January 30, 2008), 1.

⁹ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 48.

¹⁰ Terry C. Daniel, Louise M. Arthur, and Ron S. Boster, "Scenic Assessment: An Overview," *Landscape Planning* 4 (1976): 112.

positive views about rural life, which alludes to the same perceptions about agricultural landscapes:

Based on 242 in-depth interviews of rural, urban, and suburban Americans in several regions of the country, this study shows that respondents hold strongly positive views about rural life in America. Respondents perceive that rural America is serene and beautiful, populated by animals, livestock and landscape covered by trees and family farms.¹¹

The Kellogg Foundation's study continues to substantiate the preference for rural life:

Respondent's notions of rural America are dominated by images of the family farm, crops, and pastures. The three most common images of rural America for rural, suburban and urban respondents were farms and crops (32%), pastures (21%) and animals (12%).

Country life, as they view it, is serene, peaceful and slow-paced. Non-rural residents speak in glowing terms about the peaceful, stress-free living of country life.¹²

As well as ordinary citizens, United States legislatures hold a positive view of the rural landscape's comprehensive value:

Federal legislators see rural America as an important part of the nation's landscape. As the source of the nation's food supply, it plays a central role in the vitality of the country. As an incubator of American values, such as self-reliance, stewardship of the land and faith, it represents an important source of American tradition.¹³

Obviously, people of the U.S. harbor a significant preference for rural and agricultural landscapes.

¹¹ Greenburg Quinlan Rosner Research, "Perceptions of Rural America" (Battle Creek, MI: W.K. Kellogg Foundation, 2001) <http://www.greenbergresearch.com> (accessed January 30, 2008), 3.

¹² Ibid., 4.

¹³ Greenburg Quinlan Rosner Research, "Perceptions of Rural America: Congressional Perspectives" (Battle Creek, MI: W.K. Kellogg Foundation, 2001) <http://www.greenbergresearch.com> (accessed January 30, 2008), 2.

Health is a significant issue to the developed mind and, therefore, the relationship between health and the landscape's preservation is important. In general terms, Buddha addressed what Olmsted specifically addressed in relation to the rural landscape, articulating, "Health is the greatest gift . . ." With this backdrop, health is another reason to preserve agricultural landscapes. With no direct connection, but in the same vein, Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel echo the federal legislators notion of the comprehensive value of landscapes by stating, "In the field of health promotion, landscape should be understood to be a multi-faceted resource for physical, social health and well-being."¹⁴

Abraham, Sommerhalder, and Abel continue with positive physiological effects of landscapes:

As the literature shows, positive effects take place when the landscape contains particular visual stimuli such as moderate complexity and richness of natural elements (i.e. the agricultural landscape). Indicators for a positive effect are lower physiological excitation in terms of lower pulse rates and lower emotional arousal.¹⁵

Roger Ulrich supplements Abraham, Sommerhalder, and Abel's idea of natural elements as part of a preference for the landscape by talking about the landscape and health in relation to psychology. Ulrich declares, "Stressed individuals feel significantly

¹⁴ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, "Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments," *International Journal of Public Health* 55 (2010): 65.

¹⁵ Ibid.,63.

better after exposure to nature scenes rather than to American urban scenes lacking nature elements.”¹⁶

The Kaplans echo the same sentiment by saying, “urban scenes eroded emotional well-being with significant effects on sadness. Less significant effects are seen on anger/aggression and attentiveness.”¹⁷ Abraham, Sommerhalder, and Abel depart from the physiological aspects to join the ranks of researchers espousing the positive psychological affects by saying, “...studies in our review have highlighted that a natural landscape is more restorative than an urban one.”¹⁸ Ulrich espoused, “According to psychological theories, a reduction in arousal or activation as seen in these landscapes produces pleasurable feelings if an individual is experiencing stress or excessive arousal.”¹⁹ Ulrich continues to elaborate by saying,

Largely on the basis of laboratory studies by psychologists using “non-landscape” stimuli, complexity has received considerable emphasis as a variable influencing emotional activation.

The findings here suggest the possibility that other visual properties related to nature vs. man-made differences are also of importance.²⁰

¹⁶ Roger S. Ulrich, “Visual Landscapes and Psychological Well-Being,” *Landscape Research* 4 (1979): 21.

¹⁷ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 21.

¹⁸ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, “Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments,” *International Journal of Public Health* 55 (2010): 61.

¹⁹ Roger S. Ulrich, “Visual Landscapes and Psychological Well-Being,” *Landscape Research* 4 (1979): 21.

²⁰ *Ibid.*, 21.

Dr. Steve J. Herrin elaborates on emotional activation, stating that “Emotional activation includes the full range of emotion (e.g. agitation, excitement, etc).”²¹ Through extrapolation of the entire aforementioned, Dr. Herrin and this author conclude that these particular landscapes in question activate the positive emotions which include, but are not limited to calmness. They are structured and offer stimuli through change without complexity.

The evident tranquility of rural landscapes has a direct impact on stress and reaches the heart of this thesis. Perhaps the reason with the most far-reaching effects relates to the local economy:

Among Midwestern legislatures, there is a sense that when agricultural land stops being used for farming, it simply dies for those communities.

The decline of the family farm, of course affects the entire rural landscape because towns lose populations, which in turn affects small businesses and other community institutions.²²

Hence, preference, health, and economic stability as critical aspects of life become valid reasons for more focused attention to the preservation of historic agricultural landscapes.

Historic Context

The relation between agricultural rural landscapes and human well-being is not a nascent idea. Generally, a focus on the health effects of place reaches back two

²¹ Steve J. Herrin, M.D., interview by author, Johnson City, TN, September 28, 2010.

²² Greenburg Quinlan Rosner Research, “Perceptions of Rural America: Congressional Perspectives” (Battle Creek, MI: W.K. Kellogg Foundation, 2001) <http://www.greenbergresearch.com> (accessed January 30, 2008), 3.

millennia to Hippocrates in the work, “On Airs, Waters, and Places.”²³ More recently, Frederick Law Olmsted, often deemed the father of landscape architecture, and Ian McHarg recognized the connection between place and health while departing from French landscape design philosophies by respecting local ecosystems with designs from nature and not over nature. Frederick Law Olmsted refined the concept by designing city parks which served as arenas for the interaction of nature and development. Olmsted observes, “...it must be remembered, also, that man’s enjoyment of rural beauty has clearly increased rather than diminished with his advance in civilization.”²⁴

Olmsted grasped the complexity of well-being and how landscapes affected each of the relative facets in a positive manner. To him, the rural landscape, whether in or out of town, contributed to the psyche and social equity of human-kind. Olmsted effectively offers up testimony to buttress his points:

As to the effect of public health, there is no question that it is already great. The testimony of the older physicians of the city will be found unanimously on this point. Says one: “Where I formerly ordered patients of a certain class to give up their business altogether and go out of town, I now often advise simply moderation, and prescribe a ride in the park before going to their offices and again or drive with their families before dinner by simply adopting this course of habit, men who have been breaking down frequently recover tone rapidly, and are able to retain an active and controlling influence in an important business, from which they would have otherwise have been forced to retire.”

Olmsted continues,

²³ Howard Frumkin, “The Measure of Place,” *American Journal of Preventative Medicine* 31 (December 2006): 531.

²⁴ Frederick Law Olmsted, *Public Parks and the Enlargement of Towns* (Cambridge: Riverside Press, 1870), 9.

The lives of women and children too poor to be sent to the country can now be saved in thousands of instances by making them go to the park. The much greater rapidity with which patients convalesce, and may be returned with safety to their ordinary occupation after severe illness, when they can be sent to the park for a few hours a day, is being understood.²⁵

Anecdotal material and the limited research linking people and place call for an ever-expanding research endeavor to include all types of cultural resources.

²⁵ *Ibid.*, 32.

CHAPTER 2

Definition of Well-Being & Its Interplay with Landscapes

Whether the subject of a Sunday drive or an integral part of childhood memories, most people have a clear concept of the American rural landscape. Conversely, well-being is a nebulous term deserving clarity for understanding this work. Even hazier is the relationship between well-being and place.

“Much literature has been generated on well-being defined as life satisfaction.”²⁶ To this author, well-being is the state of being generally healthy, happy, and an integral part of society. In the context of stress, psychological well-being is more relevant. “The core dimensions of the formation of psychological well-being are: self acceptance, positive relations with others, autonomy, environmental mastery, purpose of life, personal growth.”²⁷ A lack of these pillars of human well-being results in stress, which is the arch enemy of psychological well-being. The destruction by stress is articulated by a Canadian Health Report, which states “Good health entails physical, mental, and

²⁶ Carol D. Ryff, “Happiness is Everything, Or Is It? Explorations on the Meaning of Psychological Well-Being,” *Journal of Personality and Social Behavior* 57 (1989): 1070.

²⁷ *Ibid.*, 1071.

emotional well-being. Domains of health overlap. Thus the explanation of stress' impact on well-being."²⁸

Some literature proposes the landscape as an effective treatment for stress and ultimately the other aspects of well-being. In Rachel and Stephen Kaplan's "The Experience of Nature: a psychological perspective," the theoretical foundation is laid with four characteristics for restorative environments:

First, restorative environments enable people to get some distance from their daily life. Second, they attract people's attention without being exhausting. Third, they enable constant discovery about the environment. Fourth, they are in line with the intentions of their users, i.e. the environment enables the users to do what they want to do. Herzog et al. added that these kinds of environments contribute to attention restoration in terms of clarifying and ordering thoughts and of reflecting on personal goals and vital matters.²⁹

Ulrich supplements the Kaplans' framework with a refinement regarding stress and other psychological fallout. Ulrich et al. showed that,

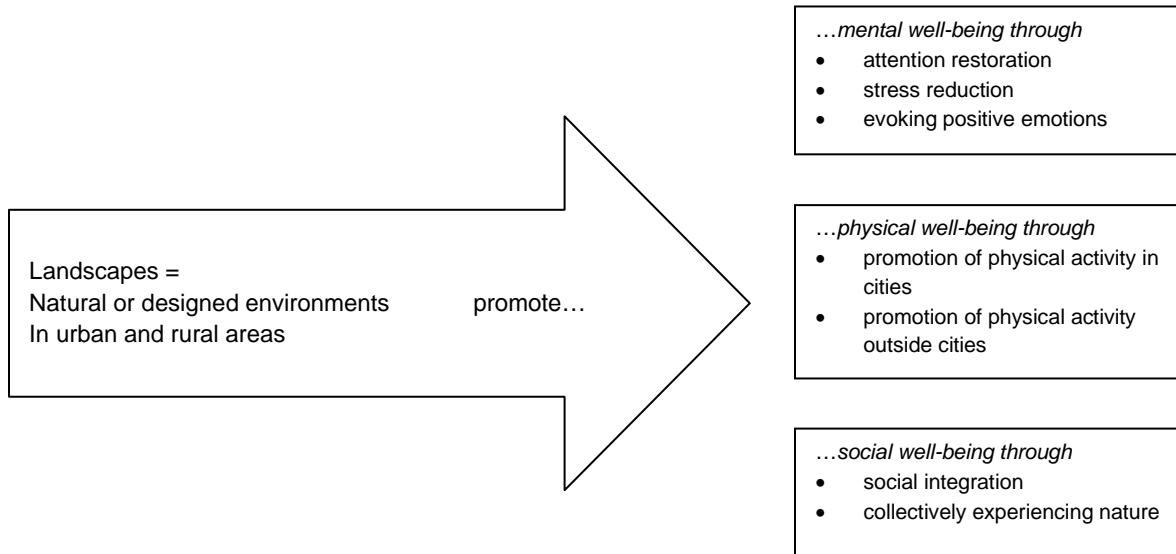
When people look at a natural landscape, immediate, unconsciously released emotional reactions significantly affect their stress recovery. These effects concern their attention, conscious mental processing, behavior and psychological reactions. While looking at a landscape that is perceived as pleasant, negative feelings and thoughts - which were previously induced by negative stress exposure - are replaced by positive feelings such as interest, cheerfulness and calmness...Indicators for a positive effect are lower physiological excitation in terms of lower pulse rates and lower emotional arousal.³⁰

²⁸ Statistics Canada, "Stress and Well-Being," *Health Reports* 12. Cat. No. 82-003. <http://www.statcan.gc.ca/pub/82-003-x/2000003/article/5626-eng.pdf> (accessed June 18, 2010).

²⁹ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, "Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments," *International Journal of Public Health* 55 (2010): 61.

³⁰ Ibid., 63.

For the visual learner, Abraham et al. provide the crowning exhibit by compiling the Heuristic framework on the health-promoting impact of landscape into the following model. The following model forms concepts on landscapes as a health resource that promotes physical, mental, and social well-being.³¹



Model 1. Flow chart of the effects of landscapes in urban and rural settings.

The skeptics question the feasibility of defining well-being, which is a jeopardizing force against the notion of interplay between landscape and well-being:

Researchers attracted to such formulations have been immobilized by the absence of valid measurements. A second major stumbling block is that the criteria of well-being generated are diverse and extensive. A third objection has been the claim that this literature is hopelessly value laden in its pronouncements about how people should function.³²

³¹ Ibid., 64.

³² Carol D. Ryff, "Happiness is Everything, Or Is It? Explorations on the Meaning of Psychological Well-Being," *Journal of Personality and Social Behavior* 57 (1989): 1070.

Even with a split in the scholarly community, interplay exists within the realm of possibility and, therefore, an opportunity for the correlation between historic agricultural landscapes and well-being through extrapolation.

CHAPTER 3

Methodology

Supposedly, Albert Einstein warned, “Not everything that counts can be counted; and not everything that can be counted, counts.” Nevertheless, the intention of this work is to expand the quantitative pursuit of linking places to well-being by including historic places. The methodology and its rationale require comparable explanation in light of Einstein’s observation and Robert Ribe’s more directly relevant declaration: “There is something incongruous about putting a number on scenic beauty.”³³

With those caution signals, a survey and analysis of the literature established a breadth of knowledge and an appropriate methodology to consider the thesis question.

The obvious question in gauging human response to a landscape regards its basic or essential nature: What is a landscape? “The European Landscape Convention (Council of Europe 2000) currently defines landscape as a ‘zone or area as perceived by local people or visitors whose visual features and characteristics are the result of nature and/or culture (that is human) factors.’”³⁴ The results of a Kaplan study “showed that the size of an open space was not a factor in itself; nor was the tidiness or

³³ Robert G. Ribe, “On the Possibility of Quantifying Beauty,” *Landscape Planning* 9 (1982): 68.

³⁴ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, “Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments,” *International Journal of Public Health* 55 (2010): 59.

maintenance of the area.”³⁵ For this work, historic agricultural landscapes are deemed by a lack of modern development (i.e. development 50 years old or less) and currently used for agricultural purposes. Historic landscape in this context does not, necessarily, suggest historically significant, as defined by Secretary of the Interior standards.

With these parameters and heeding advice for researchers to be careful of their own biased representation of a large area, the landscapes were chosen randomly.³⁶ More specifically, images accommodated the aforementioned definitions of landscape and historic agricultural landscape within regions convenient to and without a strong attraction for the author. Frames in Southern Appalachia and the Midwest were chosen without significant composition in the forms of built environments and livestock to avoid accusations of viewers responding to overlaying subject matter.

The instrument of research is similar to the instrument of an orchestra, each chosen for the performance. A survey/questionnaire was used because this is empirical work for historic places. Surveys are “valuable sources of preliminary information in a new area of research.”³⁷ Furthermore the questionnaire will provide a more rewarding harvest of information. Louise Arthur et al. explain: “Questionnaires also can create preferences where real preferences are either weak or nonexistent. For example, a respondent could complete a questionnaire concerning what he likes or dislikes about

³⁵ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 22.

³⁶ Louise M. Arthur, Terry C. Daniel, and Ron S. Boster, “Scenic Assessment: An Overview,” *Landscape Planning* 4 (1977): 121.

³⁷ *Ibid.*, 117.

natural wilderness areas even if he has never visited on or never will.”³⁸ The impressive line of scholarship validating this data gathering measure continues. Langer and Michael determined the mental-health validity of a psychological measure based on items included in a mail questionnaire.³⁹ The dilemma between subjects viewing the actual scenes or their photos was unraveled by Stephen Kaplan et al. in a deeply effective work. Kaplan reports, “...peoples responses to the two-dimensional representations are surprising similar to what they are in the setting itself.”⁴⁰ Three capstone discoveries sealed this approach to collecting data. Arthur et al. assure, “Although perceptions can still vary, direct presentation of a visual stimulus should permit less perceptual variation than verbal descriptions.”⁴¹ Any doubts whether an instrument is capable of capturing psychological processes at a given time are dissipated by the Zuckerman Inventory of Personal Reactions (Z.I.P.E.R.S.) This inventory measures emotions and anxiety at a given point.⁴² Physiological processes may also be captured with relative ease. For instance, Dr. Carol Proctor poses IgA

³⁸ Ibid., 117.

³⁹ Ibid., 117.

⁴⁰ Stephen Kaplan and J.F. Talbot, “Psychological Benefits of a Wilderness Experience,” in *Behavior and the Natural Environment*, eds. Irwin Altman and Joachim F. Wohlwill (New York, NY: Plenum Press, 1983), 163.

⁴¹ Louise M. Arthur, Terry C. Daniel, and Ron S. Boster, “Scenic Assessment: An Overview,” *Landscape Planning* 4 (1977): 118.

⁴² Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 19.

(immunoglobulin A), measurable in saliva, could determine a place's affect on the immune system.⁴³

With the mounting evidence supporting a survey/questionnaire, a University of Georgia entity was contracted to design and implement the survey. Their contribution was as follows:

The Survey Research Center...conducted the Agricultural Landscapes and Stress survey between June 10 and 25, 2010 when a web-based survey was sent to 1,500 University of Georgia undergraduate students currently enrolled during summer session. One half of the respondents were provided eight pictures of agricultural landscapes to view (the experimental group) while a control group did not receive the stimulus. All respondents then answered the CES-D depression scale, along with a battery of demographic items. Each respondent received a follow-up email invitation one week following the original request for participation. Of those originally contacted, 32 email invitations were returned undeliverable and one refused participation making the eligible sample size 1,468 students. Ninety-seven students responded to the request for participation resulting in a response rate of 6.6%.⁴⁴

For the reader's edification,

The CES-D was developed in the 1970's by Lenore Radloff while she was a researcher at the National Institute of Mental Health. Almost 85% of those found to have depression after an in-depth structured interview with a psychiatrist will have a high score on the CES-D. However, about 20% of those who score high on the CES-D will have rapid resolution of their symptoms and not meet full criteria for major or clinical depression.⁴⁵

Because of a well-being's scope, this survey dealt with stress as a manageable component of mental well-being. Depression was a surrogate for stress as gauges by the depression scale.

⁴³ Carol Proctor, M.D., interviewed by author, Asheville, NC, October 19, 2011.

⁴⁴ James J. Bason, *Agricultural Landscapes and Stress Survey Report to Author* (Athens, GA: University of Georgia Survey Research Center, 2010).

⁴⁵ L.S. Radloff, "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population," *Applied Psychological Measurement* 1 (1977): 385.

The culmination of the center's work for this research is the following survey:

Agricultural Landscapes & Stress

The Survey Research Center at the University of Georgia is assisting Mr. Stephen White, a Masters student under the direction of John C. Waters, professor in the College of Environment and Design at the University of Georgia in conducting a research survey about stress among students attending the University of Georgia. You have been randomly selected to be a participant in the study. **Your participation is very important!** It is anticipated that the survey will take no more than 10 minutes of your time to complete.

Your participation in this survey is completely voluntary. **All individually identifiable information that you provide will be kept strictly confidential, and you may choose not to answer any questions you don't want to answer.** No risk or discomfort is anticipated from participation in the study, and you may choose not to answer any questions you don't want to answer, and you may refuse to participate or stop taking part at any time without penalty or loss of benefits to which you are otherwise entitled. Participants will benefit by assisting the researchers in identifying factors which may mitigate stress among college students. Please note that Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the technology itself. However, once I receive the surveys, standard confidentiality procedures will be used. All records from this study will be kept in a password-protected computer that only the researcher has access to. Only participants 18 years and older should participate.

To begin the survey, please click on the 'START SURVEY' link below.

If you have any questions do not hesitate to ask now or at a later date. You may contact James J. Bason, Ph.D., Director of the Survey Research Center at 542-9082, jbason@uga.edu with any questions.

Thank you for the invaluable help that you are providing by participating in this research study.

Sincerely,

James J. Bason, Ph.D.
Director and Associate Research Scientist
Survey Research Center
University of Georgia
Athens, GA 30602
(706) 542-9082
E-mail: jbason@uga.edu

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 612 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu.

CLICK HERE TO ENTER SURVEY

Q1. Are you male or female?

1. Male
2. Female

Q2 – What is your current classification?

1. Freshman
2. Sophomore
3. Junior
4. Senior
5. Graduate Student
6. Other

Q3 – What is your race?

1. American Indian
2. Asian
3. Black/African-American
4. Hawaiian/Pacific Islander
5. Multi-racial
6. White

Q4 – Are you of Hispanic origin?

1. Yes
2. No

Now I would like for you to take a quick look at several pictures.





Q5 – Which picture did you like the best?

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

Rarely/None Of the Time	Some/A Little Of the Time	Occasionally/Moderate Amount of Time	Most/ All of the Time
----------------------------	------------------------------	---	--------------------------

- Q6. I was bothered by things that usually don't bother me.
- Q7. I did not feel like eating; my appetite was poor.
- Q8. I felt that I could not shake off the blues even with help from my family or friends.
- Q9. I felt I was just as good as other people.
- Q10. I had trouble keeping my mind on what I was doing.
- Q11. I felt depressed.
- Q12. I felt that everything I did was an effort.
- Q13. I felt hopeful about the future.
- Q14. I thought my life had been a failure.
- Q15. I felt fearful.
- Q16. My sleep was restless.
- Q17. I was happy.
- Q18. I talked less than usual.
- Q19. I felt lonely.

- Q20. People were unfriendly.
- Q21. I enjoyed life.
- Q22. I had crying spells.
- Q23. I felt sad.
- Q24. I felt that people dislike me.
- Q25. I could not get “going.”

Q26 – All things considered, how happy are you overall with your life today? Would you say you are very happy, somewhat happy, not very happy, or not happy at all?

- 1. Very happy
- 2. Somewhat happy
- 3. Not very happy
- 4. Not happy at all

Q27 – Do you or anyone in your family live on a farm?

- 1. Yes
- 2. No

The survey exhibits judgments of “better” or “higher quality” as preferred to arbitrary numbers,⁴⁶ and describes the subjects.⁴⁷ Subjects were allowed to pace themselves while viewing photos.⁴⁸ The Survey Research Center accumulated the raw data for this author’s interpretation.

⁴⁶ Louise M. Arthur, Terry C. Daniel, and Ron S. Boster, “Scenic Assessment: An Overview,” *Landscape Planning* 4 (1977): 115.

⁴⁷ Roger S. Urich, “Visual Landscapes and Psychological Well-Being,” *Landscape Research* 4 (1979): 19.

⁴⁸ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 15.

CHAPTER 4

Data Analysis

Results indicate a trend toward lower depression rates in the experimental group (those who viewed landscape pictures), but the difference between the control and experimental groups was not statistically significant.

Before discussing specific statistical results, a few words about research statistics are warranted. The author postulated that historic landscapes improve human well-being and the purpose of this project was to trigger broader studies of this impact by examining one element of both, historic, agricultural landscapes and stress. However, research protocols start with the assumption there is no impact (also called null hypothesis). Therefore, one must disprove the null hypothesis at a statistically significant level in order to conclude evidence of an impact. The value of at least a 95% chance that the null hypothesis has been correctly rejected is traditional. This 95% benchmark must be reached before one may state there is statistical significance in a study's results. A study is not considered statistically significant unless the null hypothesis can be rejected with at least 95% confidence, signified by a p-value of 0.05 or less. "No statistical significance" does not mean it had no effect, but only that the study failed to reject the assumed null hypothesis at a predetermined level of confidence. This traditional use of research statistics may feel somewhat like following a backward double negative. An example statement would resemble this: I suspect 'A'

impacts 'B', but can say 'A' impacts 'B' ONLY if I can prove with very high certainty that A does NOT impact B'.

Prior to completing the depression scale index, study participants were asked to give some demographic information and answer some general questions as noted in Table 1 below. Of the demographic and other questions prior to taking the depression scale, the only answers as noted in Table 1 that correlated with depression scores were to the question "All things considered, how happy are you overall with life today?" A Sig. p value of less than 0.05 indicates significant correlation (see Table 1 below). This correlation between higher depression scale scores and the questions of general quality of life is to be expected intuitively. It is also important to state that demographic data such as gender, ethnicity, student classification or living on a farm was not correlated with final depression scores.

Variable	B	Std. Error	t	Sig. p
(Constant)	-5.158	3.945	-1.308	.195
Gender ⁴⁹	1.986	2.059	.964	.338
Student Classification ⁵⁰	2.550	1.724	1.479	.143
Ethnicity ⁵¹	3.285	2.321	1.416	.161
Happiness Question	11.562	1.100	10.508	.001
Live on Farm ⁵²	-3.689	2.665	-1.384	.170
Treatment or Control ⁵³	-1.444	1.765	-0.818	.416

Adjusted R Square - .577

Table 1. OLS Regression Model of Explanatory Variables on Depression.

⁴⁹ Gender is coded as a dummy variable where male is the excluded category.

⁵⁰ Student classification is coded as a dummy variable where sophomore and junior are the excluded categories.

⁵¹ Ethnicity is coded as a dummy variable where non-white is the excluded category.

⁵² Live on farm is coded as a dummy variable where live on farm is the excluded category.

⁵³ Treatment is coded as dummy variable where the control is the excluded category.

Table 2 of the group statistics of depression scale scores indicates that the control group, which was not exposed to images of agricultural landscape, had a higher depression score than the treatment group, which was exposed to images of agricultural landscape. The control group had a mean score of 17.34 and the treatment group had a mean score of 14.76. Although the lower score of the treatment group was consistent with the hypothesis that exposure to agricultural landscapes had a positive effect on reducing stress and ultimately improving well-being, the difference was not statistically significant for reasons previously mentioned.

treat		N	Mean	Std. Deviation	Std. Error Mean
scale	Control	47	17.34	13.148	1.918
	Treatment	37	14.76	9.485	1.559

Table 2. Group Statistics⁵⁴.

The t-test was used to determine if there was statistical significance. The t-test is the most common statistical procedure in medical literature.⁵⁵ The t-test can be used to test the hypothesis that two group means are not different.⁵⁶ "The t-test is simply a special case of analysis of variance applied to two groups."⁵⁷ In this study, the variance referred to is the variance of the mean scores for depression, as measured by the CES-D scale, between the control group and the treatment group. The "paired t-test" is used

⁵⁴ Appendix II shows list of depression scale questions with distribution of answers.

⁵⁵ Stanton A. Glantz, *Primer of Biostatistics* (New York: McGraw-Hill, 2002), 65.

⁵⁶ *Ibid.*, 89.

⁵⁷ *Ibid.*, 84.

when comparing results before and after a single treatment in the same individuals. The “unpaired t-test” is used when comparing two separate groups consisting of different individuals. The “unpaired t-test” was appropriate for use in this study as we were comparing two groups consisting of different individuals (control vs. treatment).

A false positive is referred to as a “Type I” error and is measured by alpha. This is the likelihood of rejecting the null hypothesis incorrectly. A Type I error occurs when the null hypothesis is rejected when in fact the null hypothesis is true (i.e. no effect). A false negative is referred to as a “Type II” error and is measured by beta. This represents the likelihood of accepting the null hypothesis incorrectly. A false negative occurs when there is a true difference (i.e. agricultural landscape exposure does improve well-being but the study did not have the power to reject null hypothesis). This study showed trend toward an effect on treatment group but was not statistically significant, therefore there is the risk of making a Type II error. If our study results are a false negative, it would mean historical landscapes truly do improve human well-being. However, this study did not have the power to detect impact at a statistically significant level.

False negatives (Type II, beta errors) may be due to statistical procedures that lack the power to detect the effect. The ability of a study to detect differences, such as the power of a study, that are statistically significant depends on the quality of the treatment’s effect, variability within the population, and size of the sample.⁵⁸

“In other words, the power of a given statistical test depends on three interacting factors:

⁵⁸ Ibid., 64-65.

- The risk of error you will tolerate when rejecting the hypothesis of no treatment effect.
- The size of the difference you wish to detect relative to the amount of variability in the populations.
- The sample size."⁵⁹

Regarding the “risk of error” one will tolerate: as previously stated this usually is set at a p-value of 0.05 or less, meaning a 95% or more probability (1 minus the p-value) that one is correct in rejecting the null hypothesis. Another way of viewing this is that a p-value of less than 0.05 means that if the treatment had no effect then there is less than a 5% chance of getting a value of ‘t’ from the data as far or farther from 0 as the critical value of t to be considered "big".⁶⁰ Bottom line: if p-value is greater than 0.05, one cannot reject the null hypothesis with great confidence and, therefore, the results are considered 'negative,' 'no effect,' or 'not statistically significant.'

The “Table of Independent Samples Test” in this study (Table 3 below) using the t-test shows p-values of .317 or .299 depending on whether equal variances within samples are assumed or not assumed. Both values are greater than 0.5, so null hypothesis may not be rejected with great confidence. However, as noted earlier, these results do not exclude the possibility of a Type II error. With a p-value of 0.317, the probability of correctly rejecting the null hypothesis and stating there is an effect on well-being is only 68.3%, better than 50/50, but less than the usually accepted 95% or greater which constitutes statistical significance.

⁵⁹ Ibid., 171.

⁶⁰ Ibid., 78.

	t-test for Equality of Means		
	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.317	2.584	2.568
Equal variances not assumed	.299	2.584	2.472

Table 3. Independent Samples Test

More variability in the sample makes showing accurate total effect more difficult.⁶¹ Variability refers to the variability within a sample group. If either group (control or treatment) had a wide range of depression scores within the sample, it would have been more difficult to detect statistical differences between the samples. Although there was a difference of means in our two groups, there was a large variability within the group and a relatively large standard deviation (see Table 2 above), so a statistical difference would be more difficult to obtain.

“Not statistically significant” does not mean there is no correlation between historic agricultural landscapes and human well-being. It does mean, however, that this study did not show correlation at a predetermined level (p-value of 0.05 or less) of significance. Or to pose it another way, even if there is a true correlation, this study did not have the power or breadth to show statistical significance. This lack of power is not unusual in initial test studies. It is encouraging that although there were not statistical significances between the study groups to reject the null hypothesis there was a trend showing real impact on well-being. This trend is motivation for further research studies with more statistical power, such as larger sample size and more sophisticated and/or discriminating measures of well-being, in order to better elucidate the hypothesis.

⁶¹ Ibid., 178.

CHAPTER 5

Conclusion

After describing the long, rich history of a particular farm field, Alain de Botton laments, “But time has run out for the field.”⁶² With one field symbolizing the disappearing agricultural landscape, the future of its preservation seems bleak. Conversely, hope springs eternal. With the trace of support for this hypothesis unfolds a plethora of ideas for future research and potential impact. The possibilities seem infinite as one imagines the complexity of this challenge and realizes the shallow reach of this single work. Possibilities range from health improvement to establishing preservation priorities. Future endeavors on this topic should consider the affects beyond the scientific approach which produces data for business persons and politicians. Quantifiable data does not objectify powerful “feelings” of the heart.

Concept One

Insure appropriate return. Kaplan and Talbot claim, “Research of this kind requires that there are enough individuals participating in the study. The interest, after all, is in how people see the environment...”⁶³ “If the researcher receives only a 50%

⁶² Alain de Botton, *The Architecture of Happiness* (New York, NY: Vintage Books, 2006), 253.

⁶³ Stephen Kaplan and J.F. Talbot, “Psychological Benefits of a Wilderness Experience,” in *Behavior and the Natural Environment*, eds. Irwin Altman and Joachim F. Wohlwill (New York, NY: Plenum Press), 20.

return or less he/she cannot be assured that these are a representative sample of the nominal population.”⁶⁴ Thus, the goal for a higher return is vital.

Concept Two

Strive to develop more powerful studies. Dr. Steve Johnson Herrin heralds,

Conduct studies with research protocols having more power including: a larger sample size, more exposures to images, more closely matched control and treatment groups to minimize within group variability, before and after studies on the same individuals, or use of more objective measures of effect, such as biometrics (i.e. blood pressure, papillary size changes, respiratory changes, or markers of immune system function—one example is immunoglobulins such as IgA which may be measured in saliva and proxy for immune status.⁶⁵

Each of these measurements could determine a place’s affect on a person.

Concept Three

Embracing the idea of the nation’s regional diversity, allow people from different regions to respond to the same series of photos. Abraham et al. note,

...Landscape is also a matter of personal perception and trajectories: this means that landscapes as an analytical concept is characterized by an inherently dialectical relationship between physical reality and metaphoric and social construction. The same landscape can, from this point of view, be perceived completely differently. The explanation lies in the fact that landscape is linked to meaning, identity, attachment, belonging, memory, and history.⁶⁶

⁶⁴ Louise M. Arthur, Terry C. Daniel, and Ron S. Boster, “Scenic Assessment: An Overview,” *Landscape Planning* 4 (1977): 118.

⁶⁵ Steve J. Herrin, M.D., interview by author, Asheville, NC, January 26, 2012.

⁶⁶ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, “Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments,” *International Journal of Public Health* 55 (2010): 60.

Concept Four

Broadly implement panels toward complexity ratings, which would include two geographers, psychologist, a landscape architect, and laymen working independently to rate each slide on a 5-point scale. The measure is to avoid complexity in scenes which are known to affect the perceiver's psycho-physiological state. Significant variations in anxiety levels could obscure findings.⁶⁷

Concept Five

Rachel Kaplan and Stephen Kaplan support the universal use of a 5-point scale in assessment, which would allow comparisons with many studies.⁶⁸

Concept Six

Determine areas already identified as desirable through scenic preference assessment and run the aforementioned battery of psychological and physiological tests to open up edifying correlations.

Concept Seven

Abraham et al. succinctly assert, "Future studies should address issues concerning variations in different social group."⁶⁹ For instance, a social group may be shattered into sub-groups regarding income, education, age, etc.

⁶⁷ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York, NY: Cambridge Press, 1989), 22.

⁶⁸ *Ibid.*, 48.

⁶⁹ Andrea Abraham, Kathrin Sommerhalder, and Thomas Abel, "Landscape and Well-Being: A Scoping Study on the Health-Promoting Impact of Out-Door Environments," *International Journal of Public Health* 55 (2010): 66.

Concept Eight

Conduct a systematic, comprehensive research program regarding the landscape as a health resource. Abraham et al. exhibit lamentation by noting, “While current evidence of landscape as a health resource is considerable this evidence remains scattered.”⁷⁰ Perhaps an existing governmental agency could create and manage the overarching effort.

Concept Nine

Confirm each category of historic resources (as distinguished by the U.S. Department of the Interior) as a health resource.

Concept Ten

Study and confirm the correlations between each type of historic resource (see Concept Nine) and every element of well-being as detailed in the second chapter of this thesis (i.e. mental, physical, and social) to determine the full range of health care contributions by historic sites.

Concept Eleven

Better define the essential features of psychological well-being with regard to positive functioning. Carol Ryff argues that defining such fundamental elements in this realm is neglected.⁷¹

⁷⁰ Ibid., 66.

⁷¹ Carol D. Ryff, “Happiness is Everything, Or Is It? Explorations on the Meaning of Psychological Well-Being,” *Journal of Personality and Social Behavior* 57 (1989): 1069.

Concept Twelve

Consider human well-being as a less tangible product when preserving and managing historic resources. The precedent is several decades old:

Daniel et al. observe that, “The Multiple Use Sustained Act of 1960 and the National Environmental Policy of 1962 required that National Forests be managed with concern for less tangible products—aesthetics, wildlife, and recreation—as well as marketable ones, but do not indicate how these ‘intangibles’ are to be considered.”⁷²

Conclusion

A full understanding of the impact historic sites has on health and well-being will buttress arguments and set priorities for preservation. The aforementioned and other endeavors serve as “fodder” for the mind as we ponder these staggering challenges as stewards:

We want beauty: we want convenience. We want nature; we want shopping malls.

How do we balance these very different desires? How do we create a space where change and timelessness can co-exist? Given the sobering lessons of our new century, how can we preserve our vanishing natural [and cultural] beauty in this ever-changing world?⁷³

⁷² Terry C. Daniel, Louise M. Arthur, and Ron S. Boster, “Scenic Assessment: An Overview,” *Landscape Planning* 4 (1976): 109.

⁷³ Roberta Levanthal Sudakoff Foundation, *Interpretive Signage Project* (Sarasota, Florida: Marie Selby Botanical Gardens, accessed January 15, 2012).

Bibliography

- Abraham, Andrea, Kathrin Sommerholder, and Thomas Abel. "Landscape and Well-Being: A Scoping Study on the Health Promoting Impact of Out-Door Environments." *International Journal Public Health* 55 (2010): 59-69.
- Aoki, Y., Y. Yasuoka, and M. Naito. "Assessing the Impression of Streetside Greenery." *Landscape Research* 10 (1985): 9-13.
- Arthur, Louise M., Terry C. Daniel, and Ron S. Boster. "Scenic Assessment: An Overview." *Landscape Planning* 4 (1977): 109-129.
- Balling, J.D., and J.H. Faulk. "Development of Preference for Natural Environments." *Environment and Behavior* 14 (1982): 5-28.
- Balker, G., and R. Franken. "Effects of Stimulus Size, Brightness, and Complexity upon EEG Desynchronisation." *Psychonomic Science* 9 (1967): 289-290.
- Barker, R.G. *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Stanford, CA: Stanford University Press, 1968.
- Barkow, J.H., and J. Tooby, eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. New York, NY: Oxford University Press, 1992.
- Berkman, Paul L. "Life Stress and Psychological Well-Being: A Replication of Langer's Analysis in the Midtown Manhattan Study." *Journal of Health and Social Behavior* 12, no. 1 (March 1971): 35-45. <http://www.jstor.org/pss/2948452> (accessed June 18, 2010).
- Berlyne, D., and P. McDonnell. "Effects of Stimulus, Complexity, and Incongruity on Duration of EEG Desynchronisation." *Electroencephalography and Clinical Neurophysiology* 18 (1965): 156-161.
- Bradburn, Norman M., and David Caplovitz. *Reports on Happiness*. Chicago, IL: Aldine, 1985.

- Bradley, G.A. "Forest Aesthetics: Harvest Practices in Visually Sensitive Areas." research paper, Washington Forest Protection Agency, Olympia, WA, 1996.
- Chavis, D.M., P.E. Stucky, and A. Wandersman. "Returning Basic Research to the Community: A Relationship Between Scientist and Citizen." *American Psychologist* 38, no. 4 (1983): 424-434.
- Cooner, Tara L. "Popular Media as a Tool for Preservation Education." master's thesis, University of Georgia, 2006.
- Craik, K.H. "A System of Landscape Dimensions: Appraisal of Its Objectivity and Illustration of Its Scientific Application." research paper, Berkley, CA: University of California Institute of Personality Assessment and Research, 1970.
- de Botton, Alain. *The Architecture of Happiness*. New York, NY: Vintage Books, 2006.
- Eagly, A.H., and S. Chaiken. *The Psychology of Attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers, 1993.
- Frewald, D.B. "Preferences for Older Buildings: A Psychological Approach to Architectural Design." PhD diss., University of Michigan, 1989.
- Frumkin, Howard. "The Measure of Place." *American Journal of Preventative Medicine* 31 no. 6 (December 2006): 530-532.
- Garling, Tommy, and Reginald G. Golledge, eds. *Behavior and Environment*. New York, NY: Elsevier Science Publishers, 1993.
- Glantz, Stanton. *Primer of Biostatistics*. New York, NY: McGraw-Hill, 2002.
- Hartig, T., A. Book, J. Garvill, and T. Garling. "Environmental Influences on Psychological Restoration." *Scandinavian Journal of Psychology* 37 (1996): 318-393.
- Hartig, T., and G.W. Evans. "Psychological Foundations of the Nature Experience." *Advances in Psychology* 96 (1993): 427-457.
- Hammitt, W.E. "Visual and User Preference for a Bog Environment." PhD diss., University of Michigan, 1998.

- Huntington, Ellsworth. *The Character of Races as Influenced by Physical Environment, Natural Selection, and Historical Development*. New York, NY: C. Scribner's Sons, 1924.
- Kaplan, Rachel. "The Dimensions of the Visual Environment: Methodological Considerations." Proceedings of the Environmental Design Research Association Conference, Los Angeles, CA, 1972.
- Kaplan, Rachel. "Some Psychological Benefits of Gardening." *Environment and Behavior* 5 (1973): 145-161.
- Kaplan, Rachel, and Stephen Kaplan. *The Experience of Nature: A Psychological Perspective*. New York, NY: Cambridge Press, 1989.
- Kaplan, Rachel. *The Psychological Benefits of Nearby Nature: The Role of Horticulture in Human Well-Being and Social Development*. Portland, OR: Timber Press, 1992.
- Kaplan, Stephen. "An Informal Model for the Prediction of Preference." In *Landscape Assessment: Values, Perceptions, and Resources*, edited by E.H. Zube, R.O. Brush, and J.G. Fabos, 92-101. Stroudsburg, PA: Dowden, Hutchinson, and Ross, 1975.
- Kaplan, Stephen. *Past Environments and Past Stories in Human Well-Being*. Oklahoma City, OK: Environmental Design Research Association, 1989.
- Kaplan, Stephen. *The Urban Forest as a Source of Psychological Well-Being: Urban Forest Landscapes Integrated Multi-disciplinary Perspectives*. Seattle, WA: University of Washington Press, 1995.
- Kaplan, Stephen. "The Analysis of Perception via Preference: A Strategy for Studying How the Environment is Experienced." *Landscape Planning* 12: 161-176.
- Kaplan, Stephen, and C. Peterson. "Health and Environment: A Psychological Analysis." *Landscapes and Urban Planning* 26 (1993): 17-23.
- Kaplan, Stephen, and J.F. Talbot. "Psychological Benefits of a Wilderness Experience." In *Behavior and the Natural Environment*, edited by Irwin Altman and Joachim F. Wohlwill, 163-203. New York, NY: Plenum Press, 1983.

- Kearney, A.R. "Public Attitudes and Preferences Regarding the Indian River." research paper, USDA Forest Service, North Central Forest Experiment Station, East Lansing, MI, 1996.
- Korpela, K., and T. Hartig. "Restorative Qualities of Favorite Places." *Journal of Environmental Psychology* 16 (1996): 221-233.
- Kroh, D., and R.H. Gimblett. "Comparing Live Experience with Pictures in Articulating Landscape Preference." *Landscape Research* 17, no. 2 (1992): 58-69.
- Leff, H.L. *Experience, Environment, and Human Potential*. New York, NY: Oxford University Press, 1978.
- Magill, A.W. "What People See in Managed and Natural Landscapes." *Journal of Forestry* 92, no. 9 (1994): 12-16.
- McAndrew, F.T. *Environmental Psychology*. Pacific Grove, CA: Brooks/Cole Publishing, 1993.
- Mulan, Sudhardi, Shariff Mohd., Kamal Mustafa, and Patrick A. Miller. "Landscape Preference and Human Well-Being." *International Journal on Sustainable Tropical Design Practice & Research* 1 (2006): pp. 25-30.
- Olmsted, Frederick Law. *Public Parks and the Enlargement of Towns*. Cambridge: Riverside Press, 1870.
- Radloff, L.S. "The CES-D Scale: A Self Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1 (1977): 385-401.
- Relf, Diane. *The Role of Horticulture in Human Well-Being and Social Development*. Portland, OR: Timber Press, 1990.
- Ribe, Robert G. "On the Possibility of Quantifying Scenic Beauty—A Response." *Landscape Planning* 9 (1982): 61-75.
- Ryan, Robert L. "Perceptual River Corridors: Preference in America's Countryside." master's thesis, University of Michigan, 1995.
- Ryan, Robert L. "Local Perceptions and Values for a Midwestern River Corridor." *Landscapes and Urban Planning* 42 (1998): 225-237.

- Ryff, Carol. "Happiness is Everything, Or Is It? Explorations on the Meaning of Psychological Well-Being." *Journal of Personality and Social Behavior* 57, no. 6 (1989): 1069-1081.
- Statistics Canada. "Stress and Well-Being." *Health Reports* 12. Cat. No. 82-003. <http://www.statcan.gc.ca/pub/82-003-x/2000003/article/5626-eng.pdf> (accessed June 18, 2010).
- Sullivan, W.C. "Perceptions of the Rural-Urban Fringe: Citizen's Preferences for Natural and Developed Settings." *Landscape and Urban Planning* 29 (1994): 85-101.
- Turner, Roger. *Capability Brown and the Eighteenth-Century English Landscape*. West Sussex, England: Phillimore and Co. LTD., 1999.
- Ulrich, Roger S. "Human Responses to Vegetation and Landscapes." *Landscape and Urban Planning* 13 (1986): 29-44.
- Ulrich, Roger S. "Visual Landscapes and Psychological Well-Being." *Landscape Research* 4 (1979): 17-23.
- U.S. Department of Agriculture and Council on Environmental Quality. *National Agricultural Lands Study: Final Report, 1981*, prepared by the U.S. Department of Agriculture and Council on Environmental Quality, (Washington, DC: Government Printing Office, 1994).
- Wohlwill, Joachim F. *The Concept of Nature: A Psychologist's View of Behavior and the Natural Environment*. New York: Plenum Press, 1982.
- Yang, B.E., and T.J. Brown. "A Cross Cultural Comparison of Preferences for Landscape Styles and Landscape Elements." *Environment and Behavior* 24 (1992): 471-507.
- Zeistel, John. *Inquiry by Design: Tools for Environment-Behavior Research*. Cambridge: Press Syndicate of the University of Cambridge, 1984.
- Zube, Ervin H., Robert O. Brush, and Julius Gy Fabos, eds. *Landscape Assessment: Values, Perceptions and Resources*. Stroudsburg, PA: Dowden, Hutchinson and Ross, Inc., 1975.

Zuckerman, M. "The Development of a Situation Specific Trait Set Test for the Prediction and Measurement of Affective Responses." *Journal of Consulting and Clinical Psychology* 45, no. 4 (1977): 513-523.

APPENDIX I

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
scale	Equal variances assumed	5.620	.020	1.006	82
	Equal variances not assumed			1.045	81.443

Figure 1. Results of independent samples test.

		t-test for Equality of Means	
		95% Confidence Interval of the Difference	
		Lower	Upper
scale	Equal variances assumed	-2.524	7.691
	Equal variances not assumed	-2.334	7.501

Figure 2. Results of independent samples test.

	n	%
Gender:		
Male	25	25.8
Female	72	74.2
TOTAL	97	100.0
Classification:		
Freshman	0	0.0
Sophomore	17	17.5
Junior	29	29.9
Senior	51	52.6
TOTAL	97	100.0
Hispanic:		
Yes	3	3.1
No	94	96.9
TOTAL	97	100.0

Figure 3. Demographic characteristics of test subjects.

APPENDIX II

	n	%
Bothered By Things Don't Usually Bother Me:		
Rarely/None of Time	36	39.1
Some/Little of Time	36	39.1
Moderate Amount of Time	14	15.2
Most of Time	6	6.5
TOTAL	92	100.0

Did Not Like Eating/Appetite Was Poor:		
Rarely/None of Time	58	62.4
Some/Little of Time	24	25.8
Moderate Amount of Time	10	10.8
Most of Time	1	1.0
TOTAL	93	100.0

Could Not Shake the Blues Even With Help From Friends/Family:		
Rarely/None of Time	44	47.8
Some/Little of Time	23	25.0
Moderate Amount of Time	15	16.3
Most of Time	10	10.9
TOTAL	92	100.0

Felt I Was Just As Good As Other People:		
Rarely/None of Time	39	42.9
Some/Little of Time	26	28.6
Moderate Amount of Time	15	16.5
Most of Time	11	12.0
TOTAL	91	100.0

Had Trouble Keeping Mind on What I Was Doing:		
Rarely/None of Time	18	19.6
Some/Little of Time	46	50.0
Moderate Amount of Time	19	20.7
Most of Time	9	9.7
TOTAL	92	100.0

	n	%
Felt Depressed:		
Rarely/None of Time	48	51.6
Some/Little of Time	27	29.0
Moderate Amount of Time	13	14.0
Most of Time	5	5.4
TOTAL	93	100.0
Felt Everything Was an Effort:		
Rarely/None of Time	27	29.3
Some/Little of Time	32	34.8
Moderate Amount of Time	23	25.0
Most of Time	10	10.9
TOTAL	92	100.0
Felt Hopeful About The Future:		
Rarely/None of Time	37	34.4
Some/Little of Time	43	46.2
Moderate Amount of Time	13	14.0
Most of Time	5	5.4
TOTAL	93	100.0
Thought Life Had Been Failure:		
Rarely/None of Time	67	74.4
Some/Little of Time	18	20.0
Moderate Amount of Time	3	3.3
Most of Time	2	2.2
TOTAL	90	99.9
Felt Fearful:		
Rarely/None of Time	51	54.8
Some/Little of Time	29	31.2
Moderate Amount of Time	8	8.6
Most of Time	5	5.4
TOTAL	93	100.0

	n	%
Sleep Was Restless:		
Rarely/None of Time	38	40.9
Some/Little of Time	28	30.1
Moderate Amount of Time	17	18.3
Most of Time	10	10.7
TOTAL	93	100.0
Was Happy:		
Rarely/None of Time	32	34.4
Some/Little of Time	43	46.2
Moderate Amount of Time	13	14.0
Most of Time	5	5.4
TOTAL	93	100.0
Talked Less Than Usual:		
Rarely/None of Time	44	47.3
Some/Little of Time	26	28.0
Moderate Amount of Time	15	16.1
Most of Time	8	8.6
TOTAL	93	100.0
Felt Lonely:		
Rarely/None of Time	38	40.9
Some/Little of Time	26	28.0
Moderate Amount of Time	14	15.0
Most of Time	15	16.1
TOTAL	93	100.0
People Were Unfriendly:		
Rarely/None of Time	59	64.1
Some/Little of Time	25	27.2
Moderate Amount of Time	6	6.5
Most of Time	2	2.2
TOTAL	92	100.0

	n	%
Enjoyed Life:		
Rarely/None of Time	43	46.2
Some/Little of Time	33	35.5
Moderate Amount of Time	15	16.1
Most of Time	2	2.2
TOTAL	93	100.0
Had Crying Spells:		
Rarely/None of Time	64	68.8
Some/Little of Time	18	19.4
Moderate Amount of Time	8	8.6
Most of Time	3	3.2
TOTAL	93	100.0
Felt Sad:		
Rarely/None of Time	42	45.2
Some/Little of Time	31	33.3
Moderate Amount of Time	12	12.9
Most of Time	8	8.6
TOTAL	93	100.0
Felt People Disliked Me:		
Rarely/None of Time	56	60.2
Some/Little of Time	26	28.0
Moderate Amount of Time	9	9.7
Most of Time	2	2.1
TOTAL	93	100.0
Could Not Get Going:		
Rarely/None of Time	42	45.2
Some/Little of Time	32	34.4
Moderate Amount of Time	14	15.1
Most of Time	5	5.4
TOTAL	93	100.0

Figure 4. Distributions of survey questions and answers regarding depression.

	n	%
All Things Considered, How Happy Are You Overall With Life Today:		
Very happy	45	48.9
Somewhat Happy	32	34.8
Not Very Happy	13	14.1
Not Happy at All	2	2.2
TOTAL	92	100.0
Does You Or Anyone In Family Live on Farm:		
Yes	11	11.8
No	82	88.2
TOTAL	93	100.0

Figure 5. Distribution of answers to “Happiness” and “Lived on farm” questions.

	<u>Treatment</u>		<u>Control</u>	
	N	%	n	%
≤ Median Depression Score	22	48.9	23	51.1
> Median Depression Score	15	38.5	24	61.5

Figure 6. Median depression level, by treatment or control.