Youth and Nature:

Assessing the Impact of an Integrated Wellness Curriculum on Nature Based Play and Nature Appreciation for Youth in Out-of-school Time Recreation Programming

A DISSERTATION

SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL

OF THE UNIVERSITY OF MINNESOTA

BY

Terence Grant Lewis, Jr.

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY IN EDUCATION

Dr. Keith C. Russell

May 2009

ACKNOWLEDGMENTS

A critical component to any experiential learning activity is taking the opportunity to reflect on the experience and note that impact that the experience had in transferring learning to future endeavors. The journey toward completion of this academic journey encompasses more than the past three years, as the foundation was set several years ago and the support in making this dream, hope, and goal a reality has been an ongoing process. In looking back over these years I find it necessary to acknowledge those individuals for without whom none of this would be possible.

First and foremost, I would like to express my sincerest gratitude to my beautiful and amazing wife Lindsey. Her continued love, support, and care are gifts which she has bestowed upon me, in both the good and challenging times. Our relationship is the foundation on which my personal and professional growth have been built, and I cannot begin to truly express my gratitude and love for her and everything that she has and continues to present me with. I would be remiss if I did not mention our wonderful 'baby girl', Zion. While she has been unable to offer me verbal support and encouragement, my four-legged companion is always willing to lend me a paw, and brighten those otherwise gloomy days with a wag of her tail and her infectious 'smile'. I would like to thank as well my parents and my mother-in-law, Deborah Sturdivant, for their continued love and support of both Lindsey and I, and for all the assistance and care they have offered.

Special thanks to my advisor, mentor, colleague, and friend, Keith Russell. I will forever be indebted to you for providing this opportunity and supporting me in making my goals and dream a reality. I thank you for your continued patience and objective analysis of everything that I pushed across your desk. Although you've been miles away, you and your family have continually been in our thoughts.

I would like to thank the members of my committee, Dr. Stephen Ross, Dr. Beth Lewis, and Dr. Ross Velure Roholt, who have provided me with the support and 'push' to keep sight of the end goal. Each of you has provided valuable insight into the questions I sought to answer, and the expertise that each of you brought to this multi-faceted study was invaluable.

This study as a whole would not have been made possible without the time, energy, and enthusiasm of the Säjai® Foundation. Over the past three years Melissa Hanson has kept me 'on my toes', and her drive and passion for the work she does is contagious and unwavering. I could not have asked to be partnered with a better organization, and a group of people who share my desire to impact the lives of youth in our society. Thank you as well to Carrie Stolar, Amy Rea, and the members of the Säjai Foundation Board, who have continued to keep the vision, passion, and work of Barb King alive.

Dr. Asuncion Suren and Teodora Ildefonzo at San Francisco State University deserve special thanks for their help and assistance in collecting forms, observing youth and staff, and for conducting focus groups at recreation programs throughout the city of San Francisco. I would like to extend my sincerest gratitude to Dr. Suren, who provided me with the additional guidance and support necessary in completing this study.

The City of Saint Paul Parks and Recreation, The City of San Francisco Recreation and Parks Department, the many staff who work for these organizations, and the youth and families who volunteered to participate in the program implementation and research study deserve my heartfelt thanks. My hope is that their openness and willingness to inform this study will be a valuable resource to future generations of youth and family in creating relationships with nature.

Lastly, I would like to acknowledge my mentors and colleagues in the field, past and present. Jude and Lee, thank you for believing in me, supporting me, and for your never ending wisdom and guidance. The crew in Cooke Hall, Mike Walsh, Drew Bailey, Genevieve Marchand, Nevin Harper, Tami Goetz, Joe Popelka, and H.K. Kang, as well as Sarah Cohn and Sean Morrissey, thanks for all the good times and memories. I wish you all the best for continued success in life, and the contributions you will make in our field.

ABSTRACT

The United States is facing a dilemma related to the wellbeing of today's children and adolescents. Youth, on a broader scale, are increasingly afflicted with what author Richard Louv, in his book *Last Child in the Woods* (2005), has labeled "nature deficit disorder" (NDD). The NDD phenomenon is considered to have emerged as a result of children and adolescents not having as many direct experiences with or exposure to nature. Estimations are that from the years 1997 to 2003 there was a 50% drop in the number of youth who participated in outdoor activities, including walking, hiking, and fishing ("Mother Nature Knows Best", 2007). Furthermore, only six percent of children age 9 to 13 plays outside on their own (Louv, 2007). Play, however, is considered an essential part of the learning process throughout life and should not be neglected (Rieber, Smith, & Noah, 1998). In addition, there is growing evidence indicating that there are healthy outcomes associated with unstructured play in nature and that although children only play outdoors for limited amounts of time, they enjoy playing outdoors, and given more choice and/or opportunity, many would play outdoors more than they currently do (British Market Research Bureau, 2005; Ericson, 2001; White & Stoecklin, 1998).

The purpose of the study was to further investigate the premise that structured integrative health and wellness programs in an out-of-school setting can play a significant role in helping young people adopt physical activity habits and behaviors, as well as influencing dietary choices. This study focused specifically on the evaluation of the Säjai® *Wise Kids® Outdoors* program to gain an increased comprehension of the effects that may result from intentional out-of-school time programming with wellness and outdoor exploration focus areas. The program was

designed to be fun, experiential, and educational in promoting nature based play and nature appreciation in youth ages 6 to11 years of age while teaching them basic wellness concepts.

The research design used to evaluate the program's effects is best described as a mixed-methods approach. The study is based on a quasi-experimental, repeated measures design that utilized a collective (multi-site) case study technique with pre-, post- and follow-up assessments. Multiple sources of evidence were used in the study, including surveys, observations, and focus groups with youth and staff. The Theory of Planned Behavior (TPB) served as the theoretical framework as the latent constructs of the TPB have been indicated in the literature as being predictive of behavior related to physical activity and dietary choices. Although program enrollment in the cities of St. Paul and San Francisco totaled 170 participants, 67 youth ages 6 to 13 from diverse socio-economic and cultural backgrounds completed all three phases of data collection.

Quantitative measures were administered to assess change in adolescent outcomes related to the latent constructs of the TPB. While results of the quantitative analysis did not show significant differences across the three measures of the study, youth were found to display significantly higher than average means at baseline. This supports the possibility that youth who showed a higher affiliation towards the constructs measured at baseline, as well as at the end of implementation, will have a continued or greater desire or intention to spend time in the outdoors, thus leading to increased physical activity. Triangulation of qualitative and quantitative findings provided further evidence that out-of-school time programs that are intentionally designed to engage youth with concepts focused on wellness and the natural

environment, such as *Wise Kids® Outdoors*, have the ability to serve as a gateway of opportunity for youth to explore and discover a relationship with nature.

TABLE OF CONTENTS

ACKNOWLEDGMENTS ..... **I**

ABSTRACT ..... **II**

TABLE OF CONTENTS ..... **III**

LIST OF TABLES ..... **IV**

LIST OF FIGURES ..... **V**

CHAPTER I **1**

INTRODUCTION **1**

POSITIVE YOUTH DEVELOPMENT 1

THE DECLINE OF DIRECT EXPERIENCES WITH NATURE 6

PURPOSE OF THE STUDY 8

Research Objectives *9*

Significance of the Study *10*

Definition of Terms *11*

CHAPTER II **13**

REVIEW OF LITERATURE **13**

THE DECLINE OF PHYSICAL ACTIVITY 14

YOUTH AND NATURE 19

NATURE DEFICIT DISORDER AND THE BENEFITS OF NATURE 24

Play *26*

CHANGING THE ENVIRONMENT 29

Barriers and Constraints *29*

Family *35*

Community *37*

YOUTH DEVELOPMENT AS A MODEL FOR CHANGE 40

The Importance of Out-of-School Time Recreation *44*

THEORETICAL FRAMEWORKS 50

Psychosocial Predictors of Healthful Behaviors *50*

Theory of Planned Behavior (TPB) *54*

Attitudes 56

Norms 57

Behavioral Controls 58

Intentions 60

SUMMARY OF LITERATURE REVIEWED 62

CHAPTER III 68

METHODS 68

RESEARCH DESIGN 69

Rationale for Mixed Methods *69*

SAMPLING AND CURRICULUM DESIGN 72

SITE SELECTION 73

Saint Paul 75

San Francisco 78

STUDY RECRUITMENT PROCEDURES 81

PROGRAM DESIGN, IMPLEMENTATION AND TRAINING 81

INSTRUMENTATION 84

Measuring Attitudes, Social Norms, Beliefs, Values, Intentions and Behaviors *85*

Attitudes 86

Social Norms and External Perceived Behavioral Control 86

External Perceived Behavioral Control 87

Values 87

Intentions 87

Behaviors 88

OBSERVATIONS, FOCUS GROUPS, AND SEMI-STRUCTURED INTERVIEWS 89

Observations *89*

Focus Groups *90*

Interviews *91*

DATA COLLECTION 92

DATA ANALYSIS 96

Instrument Reliability and Validity *96*

Participant Change due to Treatment *97*

Correlations between Intentions and Behaviors *98*

TRUSTWORTHINESS 99

OBSERVATION, FOCUS GROUP, AND SEMI-STRUCTURED INTERVIEW RESULTS 104

LIMITATIONS TO THE STUDY 106

ETHICAL CONSIDERATIONS 115

CHAPTER IV 118

RESULTS 118

OVERVIEW 118

QUANTITATIVE DATA 119

Research Aims and Hypotheses *119*

Participant Demographics – Quantitative Measures *120*

City of St. Paul 123

City of San Francisco 125

Response Bias *126*

Reliability *128*

Descriptive Statistics *130*

Normality *132*

Impact of Treatment Exposure *136*

Correlations between Intention and Behavior *141*

QUALITATIVE DATA 149

Research Questions *149*

OBSERVATIONS 150

Engagement *151*

Resistance *152*

Staff Implementation *154*

FOCUS GROUPS 157

St. Paul and San Francisco Youth *157*

What Youth Enjoyed Most about the Program 159

What Youth Least Enjoyed about the Program 163
What Youth Learned by Completing the Program 166
Activities Youth Wanted to Learn More About 168
Activities Youth Feel More Comfortable with after Completing the Program 171
Recommending the Program 172
Nature Defined 174
St. Paul Staff *176*
Strengths of the Program 177
Limitations of the Program 179
Improvements to the Overall Program 182
Strengths and Weaknesses of the Curriculum and Individual Components 183
Modifications and Adaptations 188
Additional Resources Utilized or would be Beneficial for Future Implementations 189
Challenges to Implementing the Program 193
Preparation Time for Implementing the Program 196
San Francisco Staff *197*
QUALITATIVE THEMES 203
Engagement *205*
Staff Characteristics *206*
Dichotomy *206*
Delivery and Fidelity *207*
Reflection *208*
Organization *208*
Benefits *209*
CHAPTER V 211
DISCUSSION, CONCLUSION AND RECOMMENDATIONS 211
SUMMARY AND OVERVIEW 211
DISCUSSION ON THE NEED FOR EVALUATION 212
CONCLUSIONS 217
Conclusion 1. Behaviors that are associated with physical activity, nature based play, and nature appreciation are viewed by youth as being important and/or significant to them. 218

Conclusion 2. The Theory of Planned Behavior was a useful framework to explore how inherent psychosocial factors influence behavioral changes. 223

Conclusion 3. Out-of-school time programs that are intentionally designed to engage youth with concepts focused on wellness and the natural environment have the ability to serve as a gateway of opportunity for youth. 226

Conclusion 4. Staff engagement is a salient determinant of observing and assessing youth interaction with program implementation and developmental outcomes related to wellness. 229

Conclusion 5. Relationships with nature are diverse, and are a function of personal experience....232

RECOMMENDATIONS....235

Recommendations for program design and implementation 235

Recommendations for future research 238

FINAL REFLECTIONS 240

REFERENCES....243

APPENDICES 264

A: INTERNAL REVIEW BOARD ETHICS APPROVAL 264

B: CHILD ASSENT FORM....266

C: PARENTAL CONSENT AND RESEARCH COVER LETTER 267

D: LATENT CONSTRUCTS AND SURVEY QUESTIONS....269

E: PRE-TEST SURVEY 272

F: POST-TEST AND SIX-WEEK FOLLOW-UP SURVEY WITH INTENTIONS....279

G: OBSERVATION FOCUS AREAS....287

H: FOCUS GROUP QUESTIONS – STAFF AND YOUTH....288

LIST OF TABLES

TABLE 1. ATTRITION RATES ACROSS ALL PHASES OF *WISE KIDS® OUTDOORS* IMPLEMENTATION.....121

TABLE 2. DEMOGRAPHIC PROFILE OF RESPONDENTS IN ST. PAUL AND SAN FRANCISCO WHO COMPLETED THE PROGRAM. 122

TABLE 3. DEMOGRAPHIC PROFILE OF YOUTH RESPONDENTS IN ST. PAUL WHO COMPLETED *PRE*-, *POST*-, AND *FOLLOW-MEASURES*. 124

TABLE 4. DEMOGRAPHIC PROFILE OF YOUTH RESPONDENTS IN SAN FRANCISCO WHO COMPLETED *PRE*-, *POST*-, AND *FOLLOW-MEASURES*.....126

TABLE 5. EXAMINATION OF NON-RESPONSE BIAS TO DETERMINE IF COMPARABLE GROUPS EXIST BETWEEN YOUTH COMPLETING *PRE*-, *POST*-, AND *FOLLOW-MEASURES* AND YOUTH COMPLETING ONLY *PRE*- AND *POST-MEASURES*. 128

TABLE 6. CHRONBACH'S ALPHAS ASSESSING SUBSCALE RELIABILITY SCORES OF EACH LATENT CONSTRUCT FOR *PRE*-, *POST*-, AND *FOLLOW-MEASURES*.....130

TABLE 7. MEAN SCORES AND STANDARD DEVIATIONS FOR *PRE*-, *POST*-, AND *FOLLOW-MEASURES* ON SUBSCALES COMPRISING A THREE-POINT SCALE. 132

TABLE 8. EVALUATION OF THE ASSUMPTION OF NORMALITY BASED ON MEASURES OF CENTRAL TENDENCY. 135

TABLE 9. *Z*-SCORES WITH ASSOCIATED *P* VALUES FOR THE WILCOXON MATCHED-PAIRS SIGNED-RANK TEST ASSESSING DIFFERENCE SCORES FROM *PRE*- TO *POST-MEASURES*, *POST*- TO *FOLLOW-MEASURES*, AND *PRE- TO FOLLOW-MEASURES*.....138

TABLE 10. MEAN RANKS AND SUM OF RANKS FOR THE WILCOXON MATCHED-PAIRS SIGNED-RANK TEST ASSESSING DIFFERENCE SCORES FORM *PRE*- TO *POST-MEASURES*, *POST*- TO *FOLLOW-MEASURES,* AND *PRE*- TO *FOLLOW-MEASURES*.....139

TABLE 11. CORRELATIONS BETWEEN INTENTIONS AND BEHAVIORS *POST-TREATMENT* AND AT THE *SIX-WEEK FOLLOW-UP* PERIOD. 142

TABLE 12. CORRELATIONS BETWEEN *POST BEHAVIOR* AND *POST INTENTIONS* INDICATING THE RELATIONSHIP OF INDIVIDUAL ITEMS ON THE SURVEY INSTRUMENT.....145

TABLE 13. CORRELATIONS BETWEEN *FOLLOW BEHAVIOR* AND *FOLLOW INTENTIONS* INDICATING THE RELATIONSHIP OF INDIVIDUAL ITEMS ON THE SURVEY INSTRUMENT.....148

TABLE 14. RANKED YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT DID YOU MOST ENJOY ABOUT THE PROGRAM?* 161

TABLE 15. RANKED YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT DID YOU ENJOY LEAST ABOUT THE PROGRAM?* 165

TABLE 16. YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT DID YOU LEARN BY COMPLETING THE PROGRAM?* 168

TABLE 17. YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT ACTIVITIES DO YOU WISH YOU COULD HAVE LEARNED MORE ABOUT, OR WOULD WANT TO LEARN?* 170

TABLE 18. YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT ACTIVITIES WOULD YOU FEEL MORE COMFORTABLE DOING ON YOUR OWN OR WITH YOUR FAMILY?* 172

TABLE 19. YOUTH FOCUS GROUP RESPONSES TO THE QUESTION *WHAT REASONS WOULD YOU OR WOULDN'T YOU RECOMMEND THIS PROGRAM TO A FRIEND?* 174

TABLE 20. RANKED STAFF FOCUS GROUP RESPONSES INDENTIFYING *STRENGTHS OF THE PROGRAM*. 179

TABLE 21. RANKED STAFF FOCUS GROUP RESPONSES INDENTIFYING *LIMITATIONS OF THE PROGRAM*. 182

TABLE 22. STAFF FOCUS GROUP RESPONSES IDENTIFYING *STRENGTHS AND WEAKNESSES OF THE CURRICULUM AND INDIVIDUAL COMPONENTS*. 187

TABLE 23. STAFF FOCUS GROUP RESPONSES INDENTIFYING *MODIFICATIONS AND ADAPTATIONS AT INDIVIDUAL CENTERS*. 189

TABLE 24. STAFF FOCUS GROUP RESPONSES INDENTIFYING *ADDITIONAL RESOURCES UTILIZED OR WOULD BE BENEFICIAL FOR FUTURE IMPLEMENTATIONS*. 192

TABLE 25. STAFF FOCUS GROUP RESPONSES IDENTIFYING *CHALLENGES TO IMPLEMENTING THE PROGRAM*. 195

TABLE 26. QUALITATIVE THEMES. 205

LIST OF FIGURES

FIGURE 1. THE MODEL OF THE THEORY OF PLANNED BEHAVIOR POSITED BY AJZEN (1991) 56

FIGURE 2. *WISE KIDS® OUTDOORS* SCOPE AND SEQUENCE 83

FIGURE 3. LOGIC MODEL OF DATA COLLECTION METHODS.....93

CHAPTER I

INTRODUCTION

Must we always teach our children with books? Let them look at the mountains and the stars up above. Let them look at the beauty of the waters and the trees and flowers on earth. They will then begin to think, and to think is the beginning of a real education.

- David Polis

Positive Youth Development

Providing opportunities for youth development which result in positive outcomes for young people is a critical concern for society. Traditional views and examination of youth development in the social sciences and the field of health have focused on prevention and/or problem reduction (Burt, 2002; Smith, 2007). Prevalent views within society have painted youth in negative light, creating an impression of youth as problems or issues in their homes, in their schools, and in their communities (Witt & Caldwell, 2005). The idea of youth as problems to be managed has created a perspective in which youth development has been examined through a deficits based model (Lerner, Brentano, Dowling & Anderson, 2002). The underlying assumptions of the deficits based model suggest that youth development programs should be focused on assisting young people in avoiding negative behaviors in order to be problem free (Burt; Gallagher, Stanley, Shearer & Mosca, 2005; Witt & Caldwell). There is a growing recognition, however, that suggests the examination of youth development strictly from the perspective of prevention and/or problem reduction does not acknowledge nor assist youth in developing the personal potential that every youth possesses. In order for youth to thrive as individuals both within and as a part of a larger community it is necessary to move

beyond the deficit bases models and view youth as assets in the making (Lerner et al.; Witt & Caldwell).

Deficit based models have been inspired by the application of the biomedical approach to public health problems (Blum & Ellen, 2002). In these models health is generally defined as simply the absence of illness. Deficit models vary in nature by behavior and related outcomes, and are used to examine the causal mechanisms that that increase the risk of engaging in health-compromising behaviors and experiencing negative health-related outcomes (Blum & Ellen). Treatment of the individual is traditionally focused on the elimination of the causes for a specific illness or condition. Recent views, however, consider health as a function of complete well-being in the physical, mental, emotional, social, and spiritual realms as opposed to the mere absence of disease or infirmity (World Health Organization, 2004). A holistic approach to caring for the individual takes into account this idea of interconnectedness between the various realms of function. The overall belief in a holistic approach to promoting positive health outcomes in youth is that improving quality of life is a result of creating a healthy lifestyle that includes not only the reduction of illness, but development of these physical, mental, emotional, social, and spiritual realms (Blum & Ellen; Burt, 2002; Hellison, 2000; Witt & Caldwell, 2005).

The developmental changes and challenges that youth experience are considered to be necessary for young people to acquire and secure the various competencies, attitudes, values, skills, and social capital necessary to make a successful transition into adulthood (Bialeschki, Henderson & James, 2007; Burt, 2002; California State Parks, 2005; Duncan et al., 2007; Gallagher et al., 2005; Kirby & Coyle, 2007; Murphey,

Lamonda, Carney & Duncan, 2004; Nicholson, Collins & Holmer, 2004; Quane & Rankin, 2006; Roth & Brooks-Gunn, 2003; Zarrett & Eccles, 2006). Lakin and Mahoney (2006) cite Erikson (1968) in claiming that adolescence is a time of significant challenge and change. This period of development is marked by greater independence from parents, an increase in peer influence, and changes in physical, educational, social, and psychological dimensions. The summation of these changes place adolescents at risk for numerous difficulties. Quane and Rankin, and Witt and Caldwell (2005) contend that previous research indicates a compendium of psychological and behavioral competencies that are considered critical for successful negotiation through adolescence. Even though individuals may be confronted by a variety of potentially harmful experiences, this period of development offers opportunities for positive growth of self-identity and orientation to others, while enabling individuals to explore personal autonomy in making decisions and solving problems (Lakin & Mahoney; Witt & Caldwell). Considering this notion it is vital to move beyond a deficit based model.

Witt and Caldwell (2005) claim that young people should be considered as assets, not liabilities. This claim is echoed by Gallagher et al. (2005), Klein et al. (2006), and Lerner et al. (2002) who suggest that youth be viewed as resources to be developed, basing this claim on the idea that every young person has the potential for successful, healthy development, and that all youth possess the capacity for positive development. Lerner and Thompson (2002), Murphey et al. (2004), and Roth and Brooks-Gunn (2003) cite the work completed by the Search Institute who published the 40 Development Assets of Youth. This framework links the cumulative effects of assets identified as having the potential to reduce the likelihood of engaging in high-risk behaviors while

increasing the probability of participation in behaviors that afford youth an opportunity to thrive. Blum and Ellen (2002) cite research that shows that these assets are additive or cumulative. This suggestion was supported by Murphey et al. who concluded that the number of assets an individual reports possessing has a direct relationship to correlates found in studies on risk and wellness behaviors of adolescents. The results of this study indicated that as individuals reported additional assets the probability of engaging in certain health-compromising behaviors significantly decreased while the likelihood of engaging in additional health promoting behaviors increased. Blum and Ellen note that a strength of the developmental assets approach is that the sources of these assets encompass a variety of community organizations, such as families, neighborhoods, religious institutions, school, and businesses. Murphey et al. caution, however, that all of the 40 assets have not been equally well-supported within the literature.

The support for the deficit based model rests on the idea that in avoiding negative behaviors youth will be problem free. Preventing problems before they occur or reducing problems after they appear are aims that support the idea of a deficits based model (Blum & Ellen, 2002). The model does not take into account that the development of the knowledge, skills, attitudes, and behaviors that are necessary for a youth to become a fully functioning adult may not occur, or that even if they do, the youth may not choose to utilize them (Kirby & Coyle, 1997; Witt & Caldwell, 2005). Blum and Ellen assert that society has a responsibility to youth that goes beyond ensuring the absence of problems by providing opportunities for every adolescent to maximize the likelihood that they will develop into a healthy, thriving adult. Therefore focusing on problem prevention and reduction is simply not enough (Bialeschki et al., 2007; Blum & Ellen;

Burt, 2002; Hartje, Evans, Killian & Brown, 2008; Tebes et al., 2007; Smith, 2007; Witt & Caldwell). Youth need experiences for affective, cognitive and evaluative grow and development to occur, as well as for physical, social, and spiritual growth and development. In addition, opportunities to practice and apply these developing areas are a necessity as a common thread across numerous learning theories is the notion that development occurs through a process in which youth are actively involved in their own growth (Larson & Walker, 2005).

There is growing awareness and recognition that out-of-school time settings are a means by which youth may find the resources and supports that are necessary for growth and development to occur (Bialeschki et al., 2007; Dunn, Kinney & Hofferth, 2003; Zarrett & Eccles, 2006). Shortt (2002) noted that research has begun to link participation in out-of-school time programs to more positive outcomes for youth. This includes a belief that the benefits of such programs reach far beyond the individual to touch the larger community. This is supported by VanderVen (2007) who cites research contending that regular attendance in quality out-of-school time programs can yield a range of positive developmental outcomes for school-age children. Yet many organizations who deliver programs of this nature struggle with the recognition that is necessary for improving the quality of the programs that are being delivered.

Youth spend more than half of their waking hours involved in leisure-based activities (Fredricks & Eccles, 2005), which include activities such as sports, the arts, and school clubs. The structures, processes, and outcomes connected to these activities, often classified as recreational in nature, demonstrate the importance of recreation for youth of today. Recreation has the ability to support youth development. Recreation activities

have been shown to provide a milieu for the positive development of numerous skills and processes; these include decision-making, cooperative behaviors, pro-social relationships, personal efficacy, conflict resolution, self-reliance, and resiliency, among others (Bialeschki et al; California State Parks, 2005; Dunn et al; Witt & Caldwell, 2005; Zarrett & Eccles.). The development and growth of these skills and processes are inherent and necessary for the holistic well-being of youth as individuals in a community context. Therefore the growing recognition of the positive outcomes that result from participation in recreational activities lends support and credence for the development and implementation of quality out-of-school time programming based in recreational settings.

The Decline of Direct Experiences with Nature

The United States is currently facing a dilemma related to the well-being of today's children and youth. The foundation of numerous current issues and trends that youth are encountering, such as a decline in physical activity levels, lack of safe places to play, barriers to going outside, state-mandated curricula, the loss of natural areas, poor dietary choices, and the increasing prevalence of mental illness (Swiderski, 2006), can be traced back to what is being considered as a lack of connectedness to nature and/or the natural world. Being disconnected with nature is not a biased process; the disconnect afflicts boys and girls in every state, young children as well as adolescents, and the disconnect is not distinguishable across socioeconomic status, culture or ethnicity (Koplan, Kraak & Liverman, 2005). The roots of this growing disconnect are considered to be biological, psychological, socio-cultural, and environmental in nature, acting independently of one another as well as in combination (Koplan et al.).

The consequences of youth lacking a relationship with nature are becoming apparent in numerous trends. There is a growing awareness that childhood obesity is widely considered to be reaching epidemic proportions in the United States (Baker, Brownell & Little, 2003). The prevalence of overweight and obese children has nearly tripled over the past three decades in children aged 6 to 11 years, and has more than doubled for youth aged 12 to 19 years in that same span (Hardy, 2006; Hood, 2005; Koplan et al.). Another alarming trend is the report by the American Psychiatric Association (APA) which estimates that nearly eight million children in the United States suffer from mental disorders (Tucker, 2006). Many of these children are being prescribed psychotropic medications and therapy as a means to "cure" the illnesses of which they are diagnosed. Furthermore, a disconnect with nature is leading to a decrease in the concern and care that people have for the natural environment. The growing rise in American's achievement oriented schedules and technology centric lives has left little time for individuals to develop personal relationships with the natural world ("State of the Industry", 2006). The result has been fewer opportunities of learning to know and appreciate, even love, nature firsthand (Erickson, 2007). Yet there is evidence that formative experiences in nature and connection to "special places" during childhood and adolescence have the potential to increase commitment to environmental protection or environmental education in adulthood (Chawla, 2007; Wells & Lekies, 2006). Wals (1994), however, offers the position that without nature experiences people will not come to appreciate and value nature. The current generation of youth therefore may have little regard for being the stewards of the natural environment for generations to come if these direct experiences and opportunities are not supported or offered.

The reality of the situation is that although environmental educators, conservationists, and others have worked to bring more children to nature over the past few decades, they have done so with inadequate support and resources from local and national legislature (Louv, 2007). The deficiency of support and resources is yet another factor contributing to the disconnect between youth and nature that has become evident in today's world. The emerging predicament that confronts children and adolescents today is overarching, finding its way into numerous facets of everyday life. Youth, on a broader scale, are increasingly afflicted with what author Richard Louv, in his book *Last Child in the Woods* (2005), has labeled "nature deficit disorder" (NDD). The NDD phenomenon is considered to have emerged as a result of children and adolescents not having as many direct experiences with or exposure to nature. The lack of direct experiences and the resulting disconnect from the natural world is contributing to a diminished appreciation for the environment, and producing ill effects in both the minds and bodies of children and adolescents (Kellert, 2002; "Why Kids", 2005). There is a growing belief that providing opportunities and experiences for youth to be immersed in nature has the potential to increase levels of nature based play, which in turn will serve as a vehicle for developing and enhancing nature appreciation in youth as well as aiding in overall health and wellness.

Purpose of the Study

There is growing recognition and concern that today's children and adolescents are suffering from a disconnect with nature and the natural environment. Based on conclusions generated from a review of literature, the purpose of this study was to determine the impact of an integrated wellness program on nature based play and nature

appreciation, which included the dimensions of nature immersion and physical activity behaviors in outdoor settings. In addition the phenomenon termed *nature deficit disorder* was investigated in an attempt to operationalize the phenomenon as a salient determinant of nature based play. Youth participants were administered a questionnaire constructed and pilot-tested by the researcher before and after the implementation of the program, then once more six-to-eight weeks following the completion of the program. The questionnaire measured the factors that are reasoned to influence physical activity behavior. These have been identified as *attitudes*, *social norms*, *perceived behavioral control*, and *intentions,* which are believed to be indicators of behavior in humans. Discussions were held with youth participants, staff, and parents following the program implementation to enable the construction of meaning for the concept nature deficit disorder while supporting changes in the factors that contribute to behavior.

Research Objectives

The following objectives guided the current study:

1: Determine the impact of an integrated wellness program on nature based play and nature appreciation;

2: Examine the dimensions of nature immersion and physical activity behaviors in outdoor settings;

3: Conceptualize the concept *nature deficit disorder* as a salient determinant of nature based play.

Significance of the Study

The current study contributes to the existing literature that emphasizes the need for determining the factors that contribute to adopting wellness behaviors in youth. In this study wellness behaviors include physical activity specifically. This study represents one of the first known attempts to evaluate the benefits associated with the development of a bond between youth and nature through experiential learning in after-school recreation settings. There are few published studies that have an examined the methods of experiential learning as a facilitator of the development of this relationship, particularly as related to adopting wellness behaviors in youth.

The practical implications of the current study to the fields of recreation and experiential education will include considerations for program design and implementation related to the inclusion of wellness concepts. Vinluan (2005) posits that recreational activities have the potential to impact the future well-being of children and adolescents. The researcher believes that this study will support the growing recognition and empirical support that claims integrative health and wellness programs which are implemented in out-of-school settings, such as after-school recreation, can potentially play an important role in helping youth adopt positive lifestyle behaviors (Blissett et al., 2005; Mullis, Pate, & Trost, 2001). Although the methods of experiential education have been theorized to be valuable in the construction of knowledge, the processes involved in experiential learning, however, have been shown to be complicated to verify.

In contrast, traditional assumptions prevail, particularly within formal education systems, that knowledge is owned, controlled and transferred to others by adults (Burke, 2005). Individual creation of meaning, however, is a conceptual foundation of

experiential learning processes. Efforts thus must be made to accept that youth's knowledge of their own worlds is owned by them and that they are the experts in knowing and recording their own worlds (Burke). The idea is therefore posited that program development and implementation can be evaluated and adapted to provide experiences that are more effective in supporting the transfer of learning necessary to develop a significant relationship between youth and nature, while increasing the adoption of long-term healthy lifestyles.

Definition of Terms

1. *Experiential Learning*: The process through which a learner constructs knowledge, skill, and value from direct experience (Itin, 1999).
2. *Nature*: Nature includes, in its broadest interpretation, the material world and all of its objects and phenomena; in addition, nature is often what is considered or termed as "the outdoors" (Louv, 2005, p.8).
3. *Nature Awareness*: Refers to both cognitive (knowledge-based) and affective (relationship-based) processes that occur while spending time in natural settings. In this study NA will relate specifically to the goals of the program content being developed and implemented.
4. *Nature Based Play*: Refers to any structured or unstructured activity that takes place in an outdoor setting. In considering the concept of play, it is typically spontaneous and involves non-obligatory active engagement (Stignitti, 2004). In this study NBP will relate specifically to the core activities of the program being developed and implemented.

5. *Nature Deficit Disorder*: The human costs of alienation from nature, which includes the diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses (Louv, 2005, p.34).
6. *Out-of-school time*: Formal programs covering the time youth are not in school; this time period has been estimated at 20% (VanderVen, 2007). These include programs before school, after school and during the summer, when many youth are not in traditional education settings.
7. *Place:* Refers to a location in addition to the many other factors that give that location its unique character, including opportunities for seclusion or quiet, opportunities for exploring, and opportunities to effect change (Wilson, 1997).
8. *Youth:* There is no universally accepted definition of the term "youth". In this study "youth" will refer to individuals who fit chronologically into the developmental categories of children and adolescents, and will comprise an age range of 6 to 11 year olds.

CHAPTER II

REVIEW OF LITERATURE

The chapter is designed to provide a relevant information that discusses the issues concerning to the declines in direct experiences with the natural environment. This discussion includes an examination of the barriers that children and adolescents often encounter in experiencing the natural world, as well as the benefits of creating relationships with, and an appreciation of, nature. There is growing recognition that many of these benefits are ultimately connected to overall health and well-being of the individual, often considered in the context of wellness. Therefore, the determinants of healthy lifestyles, particularly those concerning physical activity behaviors, were examined in order to help frame the scope of the issue.

Organizations and agencies, such as the Säjai® Foundation, that are dedicated to programming in out-of-school time (OST) environments recognize the need for developing programs that target positive youth development. The OST milieu provides an ideal structure for intentional programs aimed at increasing wellness outcomes in youth, while offering opportunities for creating connections to the natural environment. The review presents a reflection of how OST programming and curricula, such as *Wise Kids® Outdoors*, can be implemented with these objectives as both proximal and distal outcomes, while exploring the role that organizations who design and deliver these programs have in stimulating positive youth development. Included in the discussion on OST is an analysis of the construct *play*, and an examination of the role and impact that the environment, including OST programs, the family, and the community, have on

children and adolescents in terms of supporting relationships with and appreciation of nature, and the benefits of living a healthy lifestyle.

The Theory of Planned Behavior (TPB) served as the theoretical foundation for the study. The TPB has been identified in the literature as supporting the evaluation of why individuals chose to engage in a particular behavior, or set of behaviors, including those related to healthy lifestyle choices. The notion exists that recognizing the reasons why individuals make particular decisions can support the development of programs and curricula that are aimed at increasing overall wellness, particularly in OST settings that serve youth. The review consequently concludes with an examination of the TPB and its related constructs as a rationale for the exploration of these concepts in assessing the relationship between youth and nature based play and nature appreciation.

The Decline of Physical Activity

Cultural dynamics necessitate that many children follow schedules that are often as "full" as those of adults in society, with a view that the school day is nothing less than a child's "job" (Ranz-Smith, 2007). Reports indicate that approximately 60% of American adults feel pressure to work too much, yet more than 80% wish they had more family time (Steptoe, 2003). Research has found that families spend less time together as a result of parents working more or longer hours, the change in traditional family structure, and children's schedules becoming increasingly more busy (Doherty & Carlson, 2003). This "over-work" and "over-scheduling" has taken control over numerous American families, where youth are constantly shuttled from soccer practice and play rehearsals, to tutoring and music lessons. Many of today's overscheduled children and adolescents rarely have time to play dress-up or a game of "kick the can"

(Wills, 2007). A recent report by the American Academy of Pediatrics suggests that play is important to healthy brain development (Wills). Play enables such processes as enhanced learning, creativity, confidence, self-efficacy, resiliency, and the ability to work in groups. Furthermore, play affords children and adolescents an opportunity to explore the world around them, and to discover what they love to do. Yet there are estimations that children's' free playtime has dropped by 25% over the past decades (Burdette & Walker, 2005; Doherty & Carlson), and that children reportedly spend, on average, just 30 minutes of unstructured time outdoors each week (Hofferth & Sandberg, 2000, as cited in Wells & Lekies, 2006). According to Doherty and Carlson this time represents a 50% drop in unstructured outdoor activities since the 1970's. While there are few studies describing how the amount and/or nature of play has changed, indirect evidence suggests that children are engaging in less play overall, less play without adult-provided structure, and less play outdoors (Burdette & Whitaker).

The average adolescent in the United States is unsupervised after school for up to five hours, two days a week (Ericson, 2001). Accordingly, the afternoon hours, typically considered as between three and six o'clock, represent a period of potential harm for children. This is especially true for those children who are home alone, without the benefits of supervision, whether it is parental or otherwise. Nutritionally, the average child will consume up to one third of the recommended daily caloric intake in the hours between school dismissal and suppertime (McAllister, 2003). Whether these children have access to appropriate sources of healthy foods is an issue. The problem is further compounded in that the after-school hours are often the time of greatest inactivity for children and adolescents, who typically spend much of the time in front of television sets

or plugged into computers or video games (McAllister). The prevalence of a high consumption of fast food and sweets was significantly increased in children who spent more than one hour watching television per day (Grund, Koertzinger, Langnase, Mast & Muller, 1999). Furthermore, children and adolescents typically report eating foods high in fat and engaging in low levels of physical activity together (Frenn & Porter, 1999). Grund et al. (1999) supports this notion, indicating that physical inactivity was associated with unhealthy eating practices.

Physical activity is a complex behavior that is influenced by a multitude of factors, including those in the physiological, psycho-social, socio-cultural, and ecological domains (Heitzler et al., 2006; Kahn et al., 2008; Lindquist, Reynolds & Goran, 1999; Sallis et al., 1996; Springer et al., 2006). Goran, Reynolds & Lindquist (1999) thereby contend that physical activity is multidimensional construct, which includes subsets such as exercise and physical fitness. The operationalization of a definition of physical activity varies greatly. Nahas, Goldfine and Collins (2003) claim this is a result of discrepancies in determining the nature and purpose of the activity, the intensity of the activity, and the cognitive processes involved in the activity. Instruments related to measuring physical activity in children and adolescents typically include suggestions of active games, active play, sports, or exercise, particularly those that increase movement, heart rate, and respiratory rates. Measuring physical activity, however, is often problematic, particularly in children (Goran et al.). This is due primarily to the use of self-report measures employed in the majority of studies regarding physical activity levels of children and adolescents (Barr-Anderson et al., 2007; Deforche et al., 2004; Heitzler et al., 2006; Kahn et al., 2008; Sallis et al., 1996; Sherwood et al., 2004; Springer

et al., 2006; Trost et al, 1999). Similar to defining the construct of physical activity, determinants of the levels of physical activity are considered complex as well. Numerous theories have been utilized to explain or predict physical activity behavior in children and adolescents. These theories have been used to examine the impact of factors such as family, peers, and school, access to parks and playgrounds, opportunities to participate, and personality characteristics (Heitzler et al.; Strauss, Rodzilsky., Burack & Colin, 2001).

Life course theory has been used to support the concept of positive youth development. Life course theory contends that individual, family, and societal factors interact to determine the developmental outcomes of adolescents (Blum & Ellen, 2002). There is increasing recognition that a physically active lifestyle is an important factor in maintaining health and well being. Physically active lifestyles, with regular participation in physical activity, are associated with improved health as well as quality of life (Kahn et al., 2008; Springer et al., 2006; Stahl et al., 2001; Trost, Saunders & Ward, 2002; Trost et al., 1999; Welk & Schaben, 2004). Childhood and adolescence are believed to be ideal periods of development for fostering active lifestyles that can be maintained throughout life (Garcia, Pender, Antonakos & Ronis, 1998). This is posited by the contention that physical activity habits that are developed early in life may persist into adulthood (Brodersen, Steptoe, Wardle & Williamson, 2005; Heitzler et al., 2006; Trost et al., 2002; Watkins, 1992), and that physical activity in childhood creates a foundation for regular physical activity across the life span (Goran et al., 1999), and that adolescence is a time when many future health behaviors begin (Clemmens & Hayman, 2004). A 1997 study by Saunders et al. claimed that the connection between physical activity and health in

children and adolescents though was not well understood. Recent studies, however, have investigated the perceived link between levels of physical activity and healthy outcomes in this population. Regular participation in physical activity during childhood and adolescence may be of critical importance in the prevention of chronic disease later in life.

Children are becoming more sedentary, and there is reason to believe that the current generation of children may be the most sedentary in the history of the United States (Hill & Trowbridge, 1998). Cardon et al. (2005) claim that although the benefits of a physically active lifestyle have been documented, the populations of most industrialized countries continue to live a sedentary lifestyle. Sedentary behaviors have been linked to an increase in diseases, such as obesity, in children and adolescents (Brodersen et al., 2005; Garcia et al., 1998). Increased levels of sedentary behaviors have been associated with decreased levels of physical activity as well (Straus et al., 2001). In the United States approximately 36% of children and adolescents participate in physical activity on a daily basis (Hill & Trowbridge, 1998). Studies indicate that 61.5% of children aged nine to 13 do not participate in any organized physical activity during their non-school hours, and that 22.6% do not engage in any free-time physical activity (Springer et al., 2006). Additionally, approximately 50% of American youths aged 12 to 19 years lack vigorous activity on a regular basis (Frenn et al., 2005). Compounding the situation is the fact that daily participation in high school education classes dropped 14% between 1998 and 2003 ("State of the Industry", 2006). Activity levels decrease as children move through adolescence (Clemmens & Hayman, 2004; Elder et al., 2007; Goran et al., 1999; Kahn et al., 2008; McGuire, Hannan, Neumark-Sztainer, Cossrow &

Story, 2002; Nader et al., 1999; Springer et al.; Welk & Schaben, 2004), with estimates ranging between 26 and 37% (Frenn et al.). These estimates indicate that there is a significant decline in the level of physical activity as youth move from childhood through adolescence.

Youth and Nature

Wilson (2006) claims that "Nature is a part of us, as we are a part of Nature" (p.362). Children thus need nature. Children need nature as a means to explore and discover, to awaken the senses and stimulate creativity. Children need nature as a chance to be free of the constraints of a technological society, as a milieu in which growth and development can occur. Children need nature for the numerous benefits nature offers.

Research contends that a connection to nature is biologically innate, that humans have an affinity for the natural world (Frumkin, 2001; Kahn, 2001; Kellert, 2002; "Why Kids", 2005). Biologist E.O. Wilson introduced the concept of biophilia, claiming that there is an innate affiliation of human beings to other living organisms (Wilson, 1993). Wilson posits that human history is imbedded in natural settings, and therefore human beings continue to carry affinities and preferences associated with that past. Kellert asserts that there are basic meanings people attach to the natural world while drawing benefits from nature. The respected conservationist John Muir observed that,

> "Thousands of tired, nerve-shaken, over-civilized people are beginning to find out that going to the mountains is going home; that wilderness is a necessity; and that mountain parks and reservations are useful not only as fountains of timber and irrigating rivers, but as fountains of life."

Heerwagen and Orians (1993) claim that an affinity for nature goes beyond living organisms, and expands to include features of the natural environment such as the wind, streams, trees and ocean waves (as cited in Frumkin & Louv, 2007). This claim is supported by Frumkin, who notes evidence exists that connects contact with nature as a means to enhance health can be found in aspects of the natural world, including animals, plants, landscapes, and wilderness experience. Psychologist Rachel Kaplan (as cited in Frumkin & Louv) contends that nature matters to people and is an important ingredient for a good life. Yet there is a growing belief that modern people are culturally disconnected from the natural environment.

Louv (2005) suggests that the tendency has been to view the most significant forms of nature as occurring somewhere else, often hundreds of miles away from where most people actually live. Berry (1994) asserts that the typical American park is in a place that is beautiful or wonderful, and of little apparent economic value. Accordingly, Berry cites Wes Jackson's suggestion that the love of nature is limited to scenic venues, thus excluding unscenic places from the view of what nature is and from the respect that is often accorded to nature. In this manner the view is offered that nature can only exist and be experienced in large national parks and reserves, such as Yosemite or Yellowstone, and therefore society cannot interact harmoniously with nature in the city (Brastow, 2006). Louv (2005) contends that the challenge remains to overcome the polar distinction between what is urban, and what is nature. McGregor (2004) supports this notion by claiming that knowledge of nature will always partly be a social construct, shaped by the social and cultural lenses through which an individual sees the world. Wals (1994) offers that the *American College Dictionary* defines nature as "a primitive,

wild condition: an uncultivated state", and thus nature may not exist for people who live in urban areas (p.4). In considering these viewpoints, the issue thus needs to be less about the idea of a "place" as a fixed context, and more about the notion of a "place" as including its surroundings.

Curriculum and exposure to nature through environmental education is often designed by considering the "average" experience with nature and environmental issues, neglecting to recognize that some individuals have little or even no prior experiences on which to reflect (Wals, 1994). This is particularly true for urban youth, who may hold different perceptions of what nature is and often have varying degrees of comfort in relation to spending time in nature (Simmons, 1994). Consequently, environmental education has typically focused on teaching children and adolescents about pristine environments or wilderness (Fisman, 2005). This method of instruction has potentially contributed to the growing disconnect between youth and nature, particularly for urban and suburban youth who must learn about nature from books or from visits to nature centers. Examining the historical accounts of how perceptions of nature have changed, Wals concluded that "nature" as a concept is a dynamic mental construction that is the result of an individual's interactions and experiences with a changing world. The concept of nature must therefore be reconsidered and shown as existing much closer to home, as a place and its inherent surroundings, which may mean the backyard, a city park, a farm, an area of woods, or even a rooftop garden (Louv, 2005).

Developmental theory indicates that youth learn through the sounds, scents, and seasons of the outdoors (Louv, 2007). Exposure to nature provides youth with opportunities to learn about the earth and their natural environment, while supporting the

learning process both in and out of the classroom. People who work to protect the environment or educate others about the environment often cite special places in nature where they played as a child or went camping, hiking, or fishing as an adolescent as the reasons for their commitment to this cause (Chawla, 2007). These formative experiences have been shown to be instrumental in continued work towards advocating for care and appreciation of the natural world (Chawla; Wells & Lekies, 2006). Contact with natural settings provides for a context of learning and teaching that surpasses that of a textbook or computer-based learning environment (Tanner, 2001). Nature provides all the conditions for events that hold children's attention, as they see immediate, reinforcing effects of their actions, which simultaneously show them how the world works and their own capabilities (Chawla). Research has indicated that by providing children and adolescents opportunities to connect with nature they can develop crucial skills in areas such as literacy, language, math, science, and social studies ("Effects of Outdoor Education", 2005; Louv, 2005; Sprung, 2007).

In addition, exposure to natural environments has the potential to increase a sense of stewardship for the planet (Louv, 2005). Wells and Lekies (2006) determined that when youth truly become engaged with the natural world, the experience is likely to stay with them in a powerful way, and thus shaped their subsequent environmental position. These notions were supported by Erickson (2007) who cites one study in which children who experienced nature in the wild before age 11 were more likely as adults to be stewards of the environment. Outdoor experiences are consequently critical for the development of positive environmental attitudes and the survival of conservation.

Louv (2007) posits the idea that one of the first windows to wonder is the natural world. Malone (2004) notes the classical view offered by John Locke, who viewed the child as a tabula rasa, or a blank slate upon which life experience is written. Piaget (1962) claimed that children learn by constructing their own knowledge about the world, not be memorizing facts (as cited in White, 2004). In accordance, Tanner (2001) contends that the individual who sees, discovers, and explores a situation, in essence one who experiences *it*, will get the most out of the situation. This notion of experience as a learning process is what the Association for Experiential Education (AEE) calls experiential learning, defined as "a process through which a learner constructs knowledge, skill, and value from direct experience" (Itin, 1999). Furthermore, Sharp (as cited in Tanner) concluded that when youth are afforded the chance to learn in outdoor settings, as compared to staying in the classroom, they have been shown to learn more quickly, have a greater appreciation of the experience, and retain as well as transfer skills and knowledge longer. Constructivist theory supports this idea by claiming that learning is the individual's own action initiated to make sense of the experience, subsequently adapting the educational event to fit past understanding (Haluza-Delay, 2001). Knowledge, therefore, is the construction an individual builds to fit with his or her experience of the world. In addition, nature supports what is termed "adaptive intelligence" (Louv, 2005), which enables individuals to adapt to changing environments. The notion of "adaptive intelligence" is aligned with "naturalist intelligent", or "nature smarts", that is one of eight intelligences described by Gardner's (1993) *Theory of Multiple Intelligences*.

Nature Deficit Disorder and the Benefits of Nature

Dolesh (2007) points out that "nature deficit disorder" is a social problem, one in which there is growing recognition that today's generation sees nature more as an abstraction rather than a reality. Louv (2005) lays caution to the proposed phenomenon, claiming that "nature deficit disorder" should not be considered a verifiable medical condition, rather a trend that has implications for children and adolescents. Louv (2005) claims that the phenomena should be considered as a description of the human costs associated with alienation from the natural world. These associated costs include, but are not limited to, diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses (Erickson, 2007; Louv, 2005, p.34).

Nature contact yields surprisingly broad benefits. Studies document a restorative power of nature, and therefore its importance in mental development (Tucker, 2006; Frumkin, 2001). There is an emerging body of research though that connects mental, physical and spiritual health directly to a positive association with nature (Dolesh, 2007; California State Parks, 2005; Frumkin, 2005; "State of the Industry", 2006). Louv (2007) cites Robin Moore, an international expert on the design of environments for children's play, learning, and education, who claims that natural spaces and materials stimulate a child's limitless imagination; these natural spaces and materials thus serve as the medium for initiative, creativity, and ingenuity. Exposure to nature can be a powerful form of therapy, and has shown to positively impact maladies including obesity, attention deficit and hyperactivity disorder (ADHD), post-traumatic stress syndrome (PTSD), and depression (Frumkin; Louv, 2005).

Berger (2006) explored the use of nature in treating special needs populations, particularly youth whose IQ and abstraction skills are below average. In this study the environment served not only as a therapeutic setting, but as a medium and partner in the process. The results demonstrated positive outcomes, including how nature as a dynamic and ever-changing "place" supported coping mechanisms in dealing with the uncontrollable and unexpected (Berger). Several studies have revealed that children with ADHD have fewer symptoms, and enhanced ability to focus, after being engaged in outdoor activities (Faber-Taylor & Kuo, 2004; Krisberg, 2007; Tucker, 2006). Kaplan and Kaplan (1989) have demonstrated that contact with nature restores attention, while promoting a recovery from mental fatigue and restoration of mental focus (as cited in Frumkin & Louv, 2007). White (2004) cites the growing body of literature that demonstrates how the natural environment has positive effects on the well-being of adults, including better psychological wellbeing, superior cognitive functioning, fewer physical ailments and speedier recovery from illness. Mayer, Frantz, Bruehlman-Senecal, and Dolliver (2008) acknowledge research in environmental psychology that supports the contention that humans derive physical and psychological benefits from spending time in the natural world. Louv (2007) and Tucker documented how increases in attention span, mood, and perceptions of health, as well as reductions in stress levels, have been attributed to exposure to nature.

There is a growing belief that the lives of children today are much different than generations past. Children today are said to have fewer opportunities for outdoor free play and regular contact with the natural world (White, 2004). The current generation of youth has been described as being so plugged into electronic diversions that these youth

have lost a connection to the natural world (Krisberg, 2007). Louv (2005) offers the example of a fourth grade student who boldly states that "I like to play indoors better 'cause that's where all the electrical outlets are" (p.10). There are inherent dangers of not allowing youth to engage in free play and environmental learning. These have been shown to include the inhibition of affective, cognitive, and evaluative development, as well as threats to independent judgment, ability to feel awe and wonder, and the valuing of place (Kellert, 2002; Louv, 2007; Malone, 2004). Play, however, is considered an essential part of the learning process throughout life and should not be neglected (Rieber, Smith, & Noah, 1998). Evidence indicates that there are healthy outcomes associated with unstructured play in nature.

Play

Play is recognized as a universal activity and a primary occupation of childhood (Cooper, 2000; Erickson, 2001). Play, however, is often considered to be a complex behavior that in appearance is deceptively simple (Stagnitti, 2004). Bundy (2001) claims that there is little agreement and much ambiguity on virtually every aspect associated with play thereby often making the concept difficult to operationalize (as cited in Stagnitti). A review of classical, modern, and socio-cultural play theories indicates that the concept has varied widely.

Classical theories of play offer the simplest examination of the concept. Burdette and Whitaker (2005), Erickson (2001), and Stagnitti (2004) cite simplistic observations of play as a spontaneous activity in which children engage to amuse and occupy themselves, to release energy, or something which children do instinctively. Torrence (2001) presents the Montessori view of play, in which the concept was described as

"something of little importance which the child undertakes for lack of something better to do" (p.20). In this regard play activity is often varied and there is less interest in maintaining singular activities. Modern and socio-cultural theories of play offer evidence that indicates there are developmental and mastery processes associated with play, such as impacts in socialization, creativity, language development, problem-solving abilities and sensorimotor skills (Burdette & Whitaker; Cooper; Erickson; Stagnitti). Play thus provides an optimum learning environment by offering a context for a child to express the contents of his or her inner world, while concurrently providing a means to comprehend the world outside themselves (Cooper; Torrence, 2001; Wills, 2007). Ranz-Smith (2007) claims that within play children experience a growth that allows them to thrive cognitively, physically, and emotionally.

Play that is unstructured, imaginative, and exploratory is increasingly becoming recognized as an essential component in wholesome child development (Burdette & Whitaker, 2005; Cooper, 2000; Erickson, 2001; Ginsburg, 2007; Ranz-Smith, 2007; Torrence, 2001; Wills, 2007). Play provides children with limitless opportunities to explore, experiment, and practice new skills, which in turn affords an opportunity to gain a sense of mastery over themselves and their environment (Cooper; Stagnitti, 2004). This notion is supported by the work of Burke (2005), who noted that play serves as a catalyst in the creation of identity. Stagnitti claims that the environment is a leading factor in shaping play behavior, and provides evidence to support that play varies as a function of environment.

Although assumptions have been made to indicate that play has increasingly become an "indoor activity", there is significant evidence that outdoor places are still

considered as having value and importance to youth. Burdette and Whitaker (2005) cite several studies that claim the outdoors is where free play, as well as gross motor activity, is most likely to occur. Wals (1994) found that outdoor places provide a place for entertainment, learning, and a background for activities. Burke (2005) determined that open spaces provide opportunities for meeting and talking with friends, and that particular features found in open spaces hold significant meaning and often trigger memories in relation to play and friendship. Ranz-Smith found that adult participants in her case study reflected on past experiences of play as a youth that were typically tied to outdoor play interactions with natural phenomena. Wells and Lekies (2006) cite several studies that demonstrate formative experiences in childhood and adolescence potentially have long-term impacts regarding positive affiliation with spending time outdoors in adulthood as well as various outcomes related to environmentalism.

Outdoor spaces often provide more variety and context due to less structure, thereby affording youth opportunities for decision making, problem-solving, and creative thinking. Furthermore, outdoor play is essentially social play. Children, particularly in urban settings, are less likely, however, to go out and play when there are few others doing the same (Karsten & van Vliet, 2006). Yet children who play outdoors are often more physically active, and as Louv and others point out immersion in nature affords children an opportunity to develop imagination and a sense of place. Children's play structures thus enable them to express complex meaning systems, to organize their behavior in ways that improve comprehension of themselves and others, and to make sense of the world in which they live (Torrence).

Changing the Environment

Barriers and Constraints

Childhood and adolescence are ideal periods of development for fostering active lifestyles that can be maintained throughout life (Garcia et al., 1998). A fine balance exists between the environment and the individual that allows children and adolescents to make the choice for a more healthy and active life (Hood, 2005). Dietz and Robinson (2005) contend that alterations are necessary in the environments in which children and adolescents live. This is particularly salient as early childhood educators suggest that young children learn by interacting with their environments (Burdette & Whitaker, 2005; Wilson, 1997).

The majority of previous research on levels of physical activity in children and adolescents has primarily considered psychological correlates. Goran et al. (1999) asserted that despite the potential direct influence socio-cultural factors have on physical activity patterns of children these have received only modest attention. Sallis et al. (1996) claimed that few studies had examined variation in physical activity participation among adolescents by ethnicity and socioeconomic status even though epidemiological studies with adults indicated that variations exist based on these factors. Furthermore, Stucky-Ropp and DiLorenzo (1993) emphasized that the generalizability of findings for previous studies at the time were limited to educated, middle-class Caucasian families. In contrast, a systematic review of studies by Butcher, Sallis, Mayer and Woodruff (2008) found that socioeconomic status was not consistently related to physical activity levels. This finding, however, appears to be inconsistent with related literature.

Cultural changes and advances in technology have had dramatic effects on the physical activity trends of children and adolescents (Goran et al., 1999). These changes have become more pronounced over the past few decades. Readily available access to television, computers, and video games may have a direct impact in the rising amount of sedentary behavior. The attractiveness of television, computers, and video games may perhaps be leading to less time spent doing more physically active behaviors (Hill & Trowbridge, 1998; Springer et al., 2006; Taylor, 2003), and therefore less time being spent in the natural environment. The problem is further compounded in that the after-school hours are often the time of greatest inactivity for children and adolescents, who typically spend much of that time in front of television sets or plugged into computers or video games (McAllister, 2003). The average child currently spends approximately four hours each day watching television (McAllister; Shute, 1998), and approximately 30 minutes playing video games (Springer et al.). This is an increase from the findings of Saunders et al. (1997) who determined that 70% of youth watched television for more than one hour on a typical school day. Subsequently, Hofferth and Sandberg (2000) determined that children age three to 12 spend 27% of their time watching television, but only 1% of their time outdoors (as cited in Wells & Lekies, 2006). Taylor cites one study that indicated 32% of 11 to 20 year olds spend 10 to 20 hours a week online. Estimations are that from the years 1997 to 2003 there was a 50% drop in the number of youth who participated in outdoor activities, including walking, hiking, and fishing ("Mother Nature Knows Best", 2007). Furthermore, only six percent of children age nine to 13 plays outside on their own (Louv, 2007). Yet there is growing evidence that although children only play outdoors for limited amounts of time, they enjoy playing outdoors, and given

more choice and/or opportunity, many would play outdoors more than they currently do (British Market Research Bureau, 2005; Ericson, 2001; White & Stoecklin, 1998).

Although estimations indicate that 80% of Americans live in cities, many do not have easy access to a park, playground, or community garden ("State of the Industry", 2006). In instances where recreational facilities may be available to youth, their use often varies based on neighborhood safety (Burdette & Whitaker, 2005). Babey, Hastert, Yu and Brown (2008) claim that physical activity and access to parks may differ as a function of an adolescent's socio-demographic, housing, and neighborhood characteristics. Neighborhood parks that children used to visit on their own have become less accessible and changed character, such that many parents now consider parks to be too dangerous for children to explore without adult supervision (Karsten & van Vliet, 2006). Access to recreational facilities and parks, and concerns regarding neighborhood safety have been shown to have an inverse relationship to physical activity in children and adolescents (Kahn et al., 2008). Neighborhood safety and access to recreational facilities were positively associated with physical activity (Utter, Denny, Robinson, Ameratunga & Watson, 2005). Feeling safe and feeling that there were places in the neighborhood to do physical activity were determined to be of significance in youth ages 9 to 13 by Heitzler et al. (2006). A 1994 report by the Trust for Public Land indicated that safe parks and recreation centers were a desired priority for adolescents when asked what they wanted most during non-school hours. In addition, greater access to parks has been associated with more physical activity in youth, and consequently less sedentary behavior (Krisberg, 2007). This finding is supported by Babey et al. who found that access to a safe park was positively associated with physical activity. Issues of access to

recreation facilities relate directly to Bandura's (1986) concept of the physical environment, as cited by Trost et al. (1999).

The identification of barriers lends to the idea of a world in which stepping out the front door is both dangerous and perilous. This may be particularly true for minority and low-income children and adolescents who have a greater lack of access to recreational facilities and other opportunities for physical activity than Caucasian youth in middle and high socio-economic status classes (Kahn et al., 2008). O'Loughlin, Paradis, Kishchuk, Barnett and Renaud (1999) posited that socio-economically disadvantaged children may have limited access to physical activities. Butcher et al. (2008) demonstrated similar results, indicating that adolescents from higher income households were significantly more likely to comply with recommended physical activity guidelines. Molnar, Gortmaker, Bull and Buka (2004) indicate that limited access to safe neighborhood areas in which to play is a primary concern of youth from families of lower socio-economic status. Molnar et al. claim that previous research, however, is inconsistent regarding an inverse association between levels of physical activity of youth and neighborhood safety. This finding is consistent with those of Gomez et al. (2006). Goodway and Smith (2005) found that children living in low-income, inner-city locations did not have ready access to environments that foster physical activity behaviors, such as backyards, local parks, and formalized programs. Research has indicated, however, that city neighborhoods that are surrounded by green space incur less crime and less violence (Kuo & Sullivan, 2001a; Kuo & Sullivan, 2001b; Tucker, 2006;), while facilitating an increase in coping skills and social relationships (Kuo, 2001; Kuo & Sullivan, 2001b).

The creation of a climate of fear has the potential to limit knowledge and skills necessary for youth to negotiate freely in the environment (Malone, 2007). This climate of fear, in addition to changes in the environments, has impacted the ability of children and adolescents to move freely. The issue of access therefore includes not only the location of recreational facilities and parks, but transportation to these areas as well. A lack of sidewalks, safe bike paths, and parks in neighborhoods can discourage children from walking or biking to school. Carver, Timperio and Crawford (2008), and Karsten and van Vliet (2006) cite evidence that there has been a decrease in the participation rates of active transport, such as walking and biking, among children. Traffic and stranger danger are often cited as the two most prevailing reasons why children's independent movement is restricted (Carver et al.; Malone). Kerr et al. (2006) note that parental concerns, including travel distance, traffic, and crime, have been connected to inactive commuting. Clark (2007) and Burdette and Whitaker (2005) contend that improving access to safe places to play and engage in physical activity that are close-to-home is a necessity. This contention could be supported by Mackett, Lucas, Paskins and Turbin's (2005) finding that children who walk to activities tend to be more active when they arrive than those who travel by car.

In order to ensure that children and adolescents engage in physical activity there is a need to provide safe and accessible environments for these behaviors to occur (Goodway & Smith, 2005; Heitzler et al., 2006). Research indicates that when there are parks, greenways, trail systems and playgrounds within each reach of their homes, people actually enjoy in greater levels of physical activity ("State of the Industry", 2006). Barr-Anderson et al. (2007) contend that offering a greater variety of activities after school

could reduce barriers, such as the need for transportation, that impact the degree of participation, particularly for girls. The creation of sidewalks and bicycle paths, the preservation of open spaces, and shifting funds towards public transit with access for all are examples of how physical activity levels and in children and adolescents can be increased.

In order for behavior change to occur and persist, interventions must create and maintain environments that support healthy lifestyle behaviors (Elder et al., 1999). Parents and adults in urban, suburban, and rural areas list numerous reasons why children have less contact with nature then they themselves did. Those reasons include disappearing access to natural areas, competition from television and computers, dangerous traffic and insufficient places to commute, increased amounts of homework, violence and crime, lack of adequate play facilities, over-scheduling and time commitments, and the ever present "stranger danger" (Burke, 2005; Burdette & Whitaker, 2005; Clark, 2007; Doherty & Carlson, 2003; Gomez, Johnson, Selva & Sallis, 2004; Halpern, 1992; Louv, 2007; Malone, 2007; Richter et al., 2000). In addition, the radius around the average home where children were allowed to roam has shrunk to approximately a ninth of what this was in 1970 (Louv, 2005; "State of the Industry", 2006). The barriers offered paint a picture of a dangerous and perilous world, one in which childhood has morphed into an indoor activity only. Malone contends that over protective parents thus contribute to the disconnect between youth and nature by effectively "bubble wrapping" their children. Furthermore, Malone adds that the result is a generation of youth who are potentially lacking the necessary resilience and skills critical to be competent and independent environmental users, and to deal with everyday

risks. Accordingly, in order to improve and increase nature based play and nature appreciation in children and adolescents it is essential to eliminate both the real and perceived barriers that youth and adults have in regards to youth in nature.

Family

Primary caregiver-child interactions and the home environment can affect the behaviors of children and adolescents related to lifestyle choices (CDC, 2006). Children are likely to develop habits similar to those of their parents, who are often viewed in the capacity of role models by their children. The impact of family on the attitudes and normative beliefs related to levels of physical activity in children and adolescents should be considered as well. Trost et al. (2002) determined that parental activity and adult support for physical activity are significant determinants of physical activity behavior in children and adolescents. Family physical activity participation and encouragement were found to be positively related to higher daily minutes of moderate-to-vigorous physical activity, although family participation may be more important in reducing sedentary behavior (Springer et al., 2006). Youth perception of parental support was indicated as a correlate of physical activity behaviors, particularly in organized physical activity settings (Heitzler et al., 2006). This is supported by parental beliefs regarding physical activity. Heitzler et al. contend that the importance of children participating in physical activity is of significant concern for parents, both in organized and free-time settings. Interactions with primary caregivers and the home environment have the potential to positively or negatively affect the behaviors of children and adolescents in relation to lifestyle choices (CDC).

Parents are often considered to be role models, and create normative beliefs and values that are passed from generation-to-generation. Koplan et al. (2005) contend that parents have a profound influence on their children by fostering values and attitudes, and rewarding or reinforcing specific behaviors. Parents who are interested in promoting healthy lifestyle behaviors in their children have the potential to influence their children's attitudes through modeling behaviors, communicating interest in the behaviors of their children, and being a source of reinforcement for healthy behaviors (Baker et al., 2003; Stucky-Ropp & DiLorenzo, 1993). Parental support and encouragement are thereby deemed to be critical for children and, to a lesser extent, adolescents in adopting physically active lifestyles. The physical activity behaviors and support of parents has been shown to have positive influences on physical activity levels of young children (McGuire et al., 2002). Deforche et al. (2004) found that physical activity levels of children being treated for obesity were directly influenced by parental levels of activity. The frequency of family physical activity participation has been shown to be positively related to higher daily minutes of moderate-to-vigorous physical activity. Previous studies have determined that parental activity and adult support for physical activity are significant determinants of physical activity behavior in youth (Saunders et al., 2002). The impact of family and role modeling extends to a commitment for nature appreciation as well. Chawla's extensive work demonstrates the role of family mentors as being instrumental and critical in the adoption of positive affect towards the natural world. Children and adolescents are therefore likely to develop habits similar to those of their parents. Regular participation as a family unit could consequently impact the levels of

physical activity in children and adolescents, provided that these behaviors are willingly engaged and communicated.

Parents should assist and educate their children in making positive decisions regarding behavior choices, and encourage play in the outdoors and other physically active pursuits (Koplan et al., 2005). Malone (2007) argues that over-protective parents are creating a generation of youth who are potentially ill-equipped to deal with the everyday risks they encounter. Changing environments and a climate of fear has led to restrictions on the ability of children's to move freely. This climate of fear has the potential of limiting the social, psychological, cultural and environmental knowledge and skills necessary for youth to negotiate freely in the environment (Malone). Youth are lacking in the opportunities to build resiliency and the critical skills to be competent and independent environmental users.

Community

People living in a particular environment can be influenced by their setting (Duncan, Mummery & Spence, 2005). The built environment within communities influences access to physical activity opportunities (CDC, 2006). The local socioeconomic environment, with often profound disparities in physical and financial access to physical activity, thus may contribute to the disconnect with the natural environment (Hood, 2005). Burke (2005), Karsten and van Vliet (2006), and Malone (2007), suggest that youth in many countries around the world experience restricted opportunities to engage in free play in their neighborhood streets and parks. A lack of sidewalks, safe bike paths, and parks in neighborhoods can discourage children from walking or biking to school as well as from participating in activities in their natural

environments. Traffic and stranger danger are often cited as the two most prevailing reasons why children's independent movement is restricted (Malone). Yet according to the findings of Karsten and van Vliet, parents associate green spaces and elements of nature with neighborhoods that are welcoming and friendly, and see nature as important to their children's health In addition, adolescents have indicated that safe parks and recreation centers are a desired priority for non-school hours ("Healing America's cities", 1994).

Access to safe places to play and exercise that are close-to-home are a necessity (Clark, 2007). Tucker (2006) contends that access to nature may contribute to a safer environment for children to play in. Incorporating opportunities for exposure in the built environment design is therefore a critical component in increasing physical activity in youth (Burdette & Whitaker, 2005: Hood, 2005), and consequently reconnecting children and adolescents to nature. Wilson (1997) posits that the quality of the physical environment can affect that attitudes and values that youth have toward the world of nature, as well as their role as caretakers and guardians of the land. In support of this notion, studies have indicated that city neighborhoods that are surrounded by green space incur less crime and less violence (Kuo & Sullivan, 2001a; Kuo & Sullivan, 2001b; Tucker), while facilitating an increase in coping skills and social relationships (Kuo, 2001; Kuo & Sullivan, 2001b). People living in these areas may therefore be more inclined to allow children and adolescents to spend time outdoors, particularly if they have a belief that these areas are safe spaces. Engwicht (as cited in Malone, 2007) contends that a need for the natural surveillance system of neighbors watching children who walk or bike to school must be re-established. In order for the this to occur a shift

must take place that replaces the view of the neighborhood street as being deserted, silent, and consequently dangerous (Malone). This claim is supported by Burdette and Walker, who assert that the streets and yards of a neighborhood can be socially enriching and cognitively stimulating spaces for children to play. Burke (2005) contends that planners of urban environments must design spaces and places for play that not only meet the concerns and needs of the adults within a community, but those of the children who reside in those communities as well. Recognition should therefore be given to how youth perceive and appreciate natural and outdoor spaces as "places" for play. The creation of sidewalks and bicycle paths, the preservation of open spaces, and shifting funds towards public transit with access for all are just some of the ways that physical activity levels and exposure to the natural environment in children and adolescents can be increased.

The role of the community in supporting the idea of reconnecting children and youth with nature is of the utmost importance. Communities can help foster social norms that promote attitudes and behaviors that will help children and adolescents maintain a healthy lifestyle (Koplan et al, 2005). Biddle, Gorely and Stensel (2004) assert that evidence suggests the majority of youth's activity occurs in out-of-school time. This has grown increasingly true based on the increasing number of states that do not offer or require participation in physical education and/or health classes. Thus there is a necessity for community programs to interact with school programs, as well as families, to provide opportunities for children and adolescents to be mentally and physically engaged with the natural environment, both during and after school hours (Hill & Trowbridge, 1998). A focus on prevention and intervention through targeted curricula in out-of-school

programs in community settings is a means to support the need for promoting health and well being for youth.

Youth Development as a Model for Change

Positive youth development has emerged in the context of rethinking child and adolescent development (Smith, 2007). The field of youth development seeks to examine negative behavioral trends in an attempt to promote the acquisition and development of positive behaviors. In order to accomplish this, the field of youth development takes an interdisciplinary approach to working with children and adolescents, families, and communities (Walsh, 2007). The positive youth development perspective is characterized by a focus on building competencies and skills necessary for being a successful and contributing adult member of society, and has thus declined to focus on risk reduction and prevention. Positive youth development posits that the independent and interactive effects of the individual, family, and social factors may vary by the gender, race or ethnicity, culture, and level of disability of the child or adolescent (Blum & Ellen, 2002). Programs aimed at promoting positive youth development have been associated with behaviors that allow youth to thrive, such as the opportunity to display leadership, to assist others, and to overcome barriers or adversity (Lerner et al., 2002; Murphey et al., 2004; Nicholson et al., 2004). A youth development framework provides mechanisms for youth to fulfill basic needs, including a sense of safety and structure, a sense of belonging and group membership, a sense of self-worth and contribution, a sense of independence and control, a sense of closeness and relationships with peers and nurturing adults, and sense of competence (Kirby & Coyle, 1997; Lakin & Mahoney, 2006; Murphey et al.).

Positive youth development considers that development is not problematic in nature but rather draws attention to the characteristics of youth that are essential to becoming productive and successful adults (Duncan et al., 2007; Gallagher et al., 2005; Smith, 2007; Tebes et al., 2007). Klein et al. (2006) and Lerner and Thompson (2002) assert that there is growing recognition of focusing the outcomes of programs on promoting positive development. This recognition contends that placing emphasis on the prevention and subsequent reduction of a problem is not equivalent to providing youth with the assets necessary for healthy development. Furthermore, this perspective of youth avoids the view that youth are troublemakers and in need of being fixed; rather, it emphasizes the resilience and value to others and the community that youth possess. Tebes et al. note that recent shifts in preventive science acknowledge the value of balancing risk reduction with promotive approaches to prevention, and posit that positive youth development programs may be best served by offering opportunities that emphasize the reduction of health-compromising behaviors while promoting the growth of these necessary competencies. Advocates of positive youth development programs indicate that these are important venues to promote social and cognitive development, particularly among underserved youth (Hellison, 2006; Junge, Manglahallan & Raskauskas, 2003; Quane & Rankin, 2006; Walsh, 2007).

The growth of programs aimed at positive youth development is an attempt to expose youth to an increased number of protective factors that are associated with more constructive youth outcomes (Burt, 2002; Catalano, Hawkins, Berglund, Pollard & Arthur, 2002; Klein et al., 2006; Nicholson et al., 2004; Quane & Rankin, 2006). Protective factors are those that buffer, modify, or ameliorate and individual's reaction to

adverse situations (Blum & Ellen, 2002; Catalano et al.; Perkins & Caldwell, 2005). Individual, family, and neighborhood aspects are examples of factors that have been shown to protect against the subsequent effects of known risk factors. Although specific protective factors are typically apparent in combination with a specific risk factor, some protective processes have universal application (Perkins & Caldwell). These are believed to include caring relationships with adults, high expectations, and opportunities for participation, contribution, and recognition. Recent evaluations of positive youth development programs suggests that programs focused on a particular problem may be more effective if they address the predisposing or underlying risk factors while concurrently enhancing protective factors (Blum & Ellen).

The concept of positive youth development is complex in nature, and definitions are often inconsistent in that these encompass many different aspects of youth development (Gallager et al., 2005; Roth & Brooks-Gunn, 2003; Smith, 2007). Positive youth development has often been operationalized in empirical studies within the field of adolescent health as being focused on the dimensions of social skills, constructive use of leisure time, caring adult relationships, and decision making (Smith). Lerner and Thompson (2002), Nicholson et al. (2004), Perkins and Caldwell (2005), and Roth and Brooks-Gunn (2003) indicate that the key attributes of positive youth development are competence, confidence, character, connection, and caring/compassion. These attributes are considered the "five C's" of positive youth development. A sixth "C", contribution, is included when considering a community youth development perspective (Perkins & Caldwell). Smith noted that increasing attention has been given to additional components as well, including agency, initiative, problem solving, and social relationships. The idea

of agency asserts and emphasizes the importance of doing activities with youth, not simply for youth, while providing opportunities for youth to lead activities (Smith). Programs that seek to develop these attributes of positive development in youth view youth as assets in the making (Witt & Caldwell, 2005) and seek to build upon perceived strengths. Programs of this nature are concerned with youth well being, use principles of effective youth programs, and committed to going beyond the traditional deficits-based model of youth development (Lerner & Thompson). This does not suggest that interventions focused on prevention or problem reduction do not have a role in the positive development of youth. Rather, a holistic approach is necessary that seeks to intervene in the course of an individual's development in order to promote change for the better (Burt, 2002; Lerner & Thompson).

Life course theory has been used to support the concept of positive youth development. Life course theory contends that individual, family, and societal factors interact to determine the developmental outcomes of adolescents (Blum & Ellen, 2002). This theory has important implications for positive youth development. In relation to physical activity there is a belief that physical activity habits developed early in life may persist into adulthood (Brodersen et al., 2005; Heitzler et al., 2006; Trost et al., 2002; Watkins, 1992), that physical activity in childhood creates a foundation for regular physical activity across the life span (Goran et al., 1999), and that adolescence is a time when many future health behaviors begin (Clemmens & Hayman, 2004). Blum and Ellen support this belief by conveying how life course theory indicates that what occurs during the period of childhood may have significant influence on how an adolescent develops

into an adult. Furthermore, due to the continual changes that occur in society the effects of various determinants may vary with successive generations.

The structure of after-school settings can vary greatly, dependent upon the purpose and mission of the program (Lerner & Thompson, 2002; Smith, 2007). Programs may be focused on academic achievement and remediation, creating a "school-like" atmosphere, whereas others may be structured in a way to encourage more interest, exploration, and engagement (Smith). The design of the program may emphasize problem reduction or prevention, or attempt to promote positive youth development (Lerner & Thompson). Furthermore, Lerner and Thompson suggest the emphasis of a program's outcomes may focus on change within in the individual, or on changing not only the individual but components of the system in which the individual develops. These components may be policies or organizations affecting youth, or social support structures, such as the family or peer groups. The varying degrees as to how and why after-school programs have been developed suggest a need for empirically based evaluations of programs to determine the extent to which both prevention and promotion are addressed.

The Importance of Out-of-School Time Recreation

A need exists to locate environments that provide for a combination of effort, skills, interest, and enjoyment (Bolt et al., 2005). Research indicates that extracurricular involvement is beneficial, provided the issue of balance is considered and sought (Doherty & Carlson, 2003). There is a growing recognition and empirical support that integrative health and wellness programming in out-of-school settings can play a significant role in helping young people adopt positive lifestyle behaviors and achieve

positive outcomes for youth (Blissett et al., 2005; Mullis et al., 2001; Shortt, 2002). A common belief exists that recreation, and therefore recreational activities, can have a profound impact on the future well-being of children and adolescents (Vinluan, 2005). In order to support this belief there is a necessity to demonstrate and prove health benefits garnered from public land (Vinluan, 2006). There is a further need to provide evidence that individuals will be more likely to get the recommended dose of daily physical activity if they (1) have access to a park, and (2) will use the park as a resource should it be made available (Vinluan, 2006). This is particularly true as greater access to parks has been associated with more physical activity in youth, and consequently less sedentary behavior (Krisberg, 2007). After-school settings in recreational contexts are ideal settings to explore the potential for intentional programming designed to increase youth awareness regarding conceptions of the natural world. As Louv (2005) contends, nature isn't the problem, rather, nature is the solution.

Evidence indicates that the afterschool hours have become progressively more important in regards to youth and behavior (Smith, 2007). Ericson (2001) claims that the average adolescent in the United States is unsupervised after school for up to five hours, two days a week. Tebes et al. (2007) noted that approximately 14 million children and adolescents regularly spend time after-school without adult supervision. Junge et al. (2003) suggest that the demand of parents' work schedules leaves children in need of supervision around the school hours. Accordingly, the afternoon hours, typically considered as between three and six o'clock, represent a period of potential harm for children. This is especially true for those children who are home alone, without the benefits of supervision, whether it is parental or otherwise. Sloat, Audas and Willms

(2007) claim that the amount of time spent alone and with peers increases during adolescence, thereby increasing the susceptibility of all youth are susceptible to negative influences from peers. Research has demonstrated that unsupervised out-of-school time is associated with various negative outcomes for youth, a finding that supports the need for further examination of this time period (Ericson; Hellison, 2000; Kahne et al., 2001; Tebes et al.). Approximately 18,000 organizations in the United States report offering programs designed to serve youth (Lerner & Thompson, 2002; Roth & Brooks-Gunn, 2003). In the United States it is estimated that 6.6 million children are involved in afterschool programs (Smith). A review of literature by Tebes et al. resulted in the conclusion that structured after-school programs have been developed to address the negative outcomes associated with lack of parental or adult supervision, particularly for urban youth. These statistics and conclusions indicate that the after-school context is become increasingly important for numerous reasons.

The increasing focus on accountability and the implementation of high-stakes testing has led to a shift in schools to focus on academics with less time for student enrichment (Sloat et al., 2007; Smith, 2007). This has led to the elimination of certain subjects in order to increase time allotted for improving performance on testing (Smith). The shift in school priorities has resulted in a need for quality programming designed and focused on prevention and promotion of healthy development in children and adolescents. Junge et al. (2003) and Quane and Rankin (2006) suggest that it is reasonable to assume that participation in after-school programs is considered to have a direct impact on school performance and potentially psychological orientation toward school, particularly as after-school programs have received an increase in funding over

the past decade. Gallagher et al. (2005) offered similar evidence of the increased funding being allotted to youth-oriented programs. The time after school is therefore considered as one arena where these programs can be implemented.

Durlak and Weissberg (2007) claim that where and how youth spend their time outside of normal school hours has important implications for their development. Quane and Rankin (2006) note that how youth spend their free time can have a positive impact on social development, particularly if it involves more organized and challenging leisure activities that require perseverance and dedicated effort on the part of the youth. This claim is supported by Fredericks and Eccles (2005) who suggest that involvement in extracurricular activities determines how adolescents spend their time, influences the selection of friends, and facilitates membership in a prosocial peer group. Ericson (2001) found that a majority of youth wish there were more activities available after school, and that a large percentage of youth would be likely to participate should programs be made available. Research has indicated that after-school settings are a means by which youth may find the resources and supports that are necessary for growth and development to occur (Bialeschki et al., 2007; Dunn et al., 2003; Hartje et al., 2008; Kahne et al., 2001; Murphey et al., 2004; Nicholson et al., 2004; Zarrett & Eccles, 2006). Dedicated settings where activities take place provide safe and inviting places where youth are afforded the opportunity to interact with peers while learning important lessons regarding the formation of friendships and developing personal autonomy outside of family structures (Quane & Rankin). Furthermore, youth who have opportunities to participate in constructive, supervised activity during non-school hours may be less likely to engage in behaviors that are harmful to themselves or others (Murphey et al., 2004).

Studies by Larson (1994), Spady (1970), and Verba, Schlozman and Brady (1995), found that physical activity programs have not been shown to be effective compared to other extended day programs (as cited in Kahne et al., 2001). The criticism of these approaches is linked to the conclusion that programs of this nature do not provide strong life skill development or long-term relationships between youth and adults, even though these do provide safe and enjoyable opportunities. These findings are in stark contrast to numerous studies that have shown the value and importance of physical activity programs in the development of overall health of children and adolescents. Biddle et al. (2004) asserted that there is increasing evidence suggesting that the majority of youth's activity occurs in out-of-school time. Although considerable attention has been focused on examining the influence of social supports, such as family, peers, and teachers, in the development of assets, Quane and Rankin (2006) cite recent research that has focused on programs occurring in out-of-school time, and the effectiveness of organized extra-curricular or after-school leisure activities on promoting positive youth development.

Fredericks and Eccles (2006) claim that youth spend more than half of their waking hours involved in leisure-based activities, which includes activities such as sports, the arts, and school clubs. The structures, processes, and outcomes connected to these activities, often classified as recreational in nature, demonstrate the importance of recreation for youth of today. Recreation therefore has the ability to support youth development. Recent studies have drawn a connection between recreation and academic outcomes, demonstrating support for programming that is not simply an extension of the classroom. Recent research has shown that the development of pro-social skills, such as

communication, decision making, and cooperation, contribute positively to academic achievement (Durlak & Weissberg, 2007; Fredericks & Eccles; Hartje et al., 2008; Junge et al., 2003; Morrissey & Werner-Wilson, 2005; Nicholson et al., 2004; Quane & Rankin, 2006; Sloat et al., 2007; Smith, 2007). Furthermore, recreation activities have been shown to provide a milieu for the positive development of numerous skills and processes; these include decision-making, cooperative behaviors, pro-social relationships, personal efficacy, conflict resolution, self-reliance, and resiliency, among others (Bialeschki et al., 2007; Browne, Gafni, Roberts, Byrne & Majumdar, 2004; California State Parks, 2005; Duncan et al., 2007; Dunn et al., 2003; Durlak & Weissberg; Hellison, 2006; Klein et al., 2006; Morrissey & Werner-Wilson; Walsh, 2007; Witt & Caldwell, 2005; Zarrett & Eccles). Hellison suggests that physical activity programs that emphasize a focus on life skills and values have the ability to promote transfer to other contexts of a youths' life. Junge et al. reported similar findings in a study emphasizing life skill development through experiential and cooperative learning.

The development and growth of these skills and processes are inherent and necessary for the holistic well-being of youth as individuals in a community context. Lakin and Mahoney (2006) reviewed literature related to community service learning and indicated that adolescents who are actively involved in their community have a stronger self-image and value themselves more than adolescents who do not take part. The findings of Tebes et al. (2007) suggest that interventions designed for adolescents that have demonstrated success in reducing risky behaviors and negative outcomes in one context have the potential to be implemented in an after-school context, provided that these are designed and tailored to meet the developmental needs and cultural

characteristics of the participating youth. The growing recognition of the positive outcomes that result from participation in recreational activities thus lends support and credence for the development and implementation of quality out-of-school programming based in recreational settings.

Theoretical Frameworks

Psychosocial Predictors of Healthful Behaviors

Children and adolescents typically have engaged in unhealthy behaviors for less time than adults, which may translate to increased success in modifying deleterious behaviors (Hill & Trowbridge, 1998). Several theories, including the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT), have been used in an attempt to explain and to predict human behavior. Bauman, Sallis, Dzewaltowski, and Owen (2002) contend that identifying factors, or determinants, that are associated with physical activity is a concern. Lindquist et al. (1999) claimed that identifying the determinants of physical activity among children is a necessity to guide research practice in this area. Recognizing the determinants or the factors that influence physical activity in children and adolescents therefore is an important prerequisite to designing effective intervention strategies and messages targeted for this population (Heitzler et al., 2006; Kerr et al., 2001; Sallis et al., 1996).

Nahas et al. (2003) refer to determinants as factors that influence behavior. Bauman et al. (2002) define determinants as causal factors, and recommend that the term not be used to describe correlates of physical activity. Welk and Schaben (2004) agree with this claim based on the notion that the term determinants is used to recognize

causality, which cannot be inferred from cross-sectional study designs frequently used in this type of research. A review of the literature associated with physical activity in children and adolescents indicates that the term correlates, however, is more readily adopted, and that a distinction is not necessarily made between the two terms. Nahas et al. support Sallis and Owens' idea that four groups of determinants of physical activity behavior exist. These include personal characteristics, psychological and behavioral determinants, environmental determinants, and physical activity characteristics. Sallis and Owen claim that some are modifiable, whereas others are difficult to change, particularly those that are biologically established (Nahas et al.). Welk and Schaben agree by indicating that daily physical activity patterns in children and adolescents are often influenced by factors that are not within their control. Based on the differentiation between terms offered by Bauman et al., the term correlate will be utilized to describe the potential causal factors and relationships that may be associated with physical activity behavior in children and adolescents.

Correlates of the levels of childhood and adolescent physical activity are considered complex (Strauss et al., 2001). Cardon et al. (2005) cite research that indicates the correlates of physical activity may actually differ in children and adolescents. Furthermore, psychosocial correlates of physical activity are often related to each other (Cardon et al.). Studies examining potential correlates of physical activity levels in children and adolescents, as well as adults, typically consider the potential impact of interventions aimed at increasing physical activity behaviors. Lewis, Marcus, Pate and Dunn (2002) and Stein, Fisher, Berkey and Colditz (2007) note that the results of these studies are often inconsistent, which may be due to statistical, methodological,

and measurement differences across studies. In addition, statistically significant differences have not been found between the intervention and control groups, if and when a control group was utilized (Lewis et al.). Research regarding the perceived correlates of physical activity must take these issues into account in order to provide a more comprehensive examination and recognition of the factors that lend to the adoption of a physically active lifestyle. Compounding the issue is the developmental complexity of the years which include childhood and adolescence.

The years encompassing childhood and adolescence are a time when health behaviors are formed within a developmental framework. This period is recognized as a time of physical, psychosocial, cognitive, and emotional changes within varied socio-cultural contexts (Clemmens & Hayman, 2004). Adolescence, specifically, is marked as a period when individuals develop heightened autonomy and begin making their own decisions concerning lifestyle choices (Baker et al., 2003). Research indicates that past behavior is often the best predictor of future behavior (Armitage, 2005). Numerous studies, including those by Brodersen et al. (2005), Heitzler et al. (2006), McGuire et al. (2002), O'Loughlin et al. (1999), Stucky-Ropp and DiLorenzo (1993), Trost et al. (2002), and Watkins (1992), contend that physical activity habits, for instance, that are developed early in life may persist into adulthood. This suggests that regular physical activity patterns developed during childhood and adolescence are of significant importance in leading a healthy life as an adult, a claim supported by Cardon et al. (2005) who indicate that the transition from childhood to adolescence has both psychological and social implications in the adoption of a physically active lifestyle. In order to develop effective programs that reconnect children and adolescents with that natural environment it is

necessary to know the factors that influence such things as physical activity behavior in youth.

Ajzen (1991) contends that explaining human behavior is a difficult task. There is a suggestion that, “For many people, one of the most frustrating aspects of life is not being able to understand other people's behavior” (unknown). The findings of Frenn and Porter (1999) indicate that adolescents change behaviors in healthy directions when they (1) perceive such a behavior helpful in achieving an important goal, (2) they like engaging in the healthy behavior, and (3) they feel good about themselves as a result of the action. Numerous studies have been conducted on the reasons for the implementation of these concepts of change, with the Theory of Planned Behavior (TPB), Social Cognitive Theory (SCT), and the Transtheoretical Model (TTM), having been given considerable attention, particularly in the literature related to physical activity and dietary patterns (Armitage, 2005; Baker et al., 2003; Bauman et al., 2002; Deforche et al., 2004; Lewis et al., 2002; Saunders et al., 1997; Trost, et al., 2002).

Numerous reasons why children and adolescents engage in physical activity have been hypothesized. There is a belief that the potential impact of physical activity on health is of critical important (Watkins, 1992), and that identifying the correlates of physical activity levels in children and adolescents can assist with the development of targeted interventions designed to not only engage children and adolescents in physical activity, but to appreciate and adopt a healthy lifestyle. Theunissen and Tates (2004) suggest that increasing evidence demonstrates health education focused solely on the transfer of knowledge is ineffective. Additional research has indicated that cognitive processes do not significantly influence physical activity behavior in adults, however

these findings have been inconsistent (Lewis et al., 2002). Awareness of this claim is important as it has been demonstrated that for children and adolescents knowledge itself may not be enough to effect behavior changes or to motivate continued participation in physical activity (Watkins).

The theory of reasoned action (TRA), as put forth by Fishbein and Ajzen, asserts that the influence of attitudes on behavior is mediated through behavioral intentions (Armitage & Christian, 2003). TRA states that performance of a given behavior is primarily determined by an individual's intention to perform that behavior (Saunders et al., 2002). Intention is subsequently influenced by the individual's attitude towards the behavior and the influence of the individual's social environment (or subjective norm). The TRA model supports the idea or notion that individuals may possess a large number of beliefs about a particular behavior, but only a subset of those beliefs are likely to be salient at given time (Armitage & Christian). Attitudes and subjective norms are thereby determined by these salient underlying beliefs. Armitage and Christian note that the TRA implies behavior is solely dependent on personal agency, or the formation of the intention, and control over behavior is relatively unimportant. The constructs evident in TRA are closely aligned with those of the theory of planned behavior, which assists in accommodating behaviors not fully under volitional control (Saunders et al.).

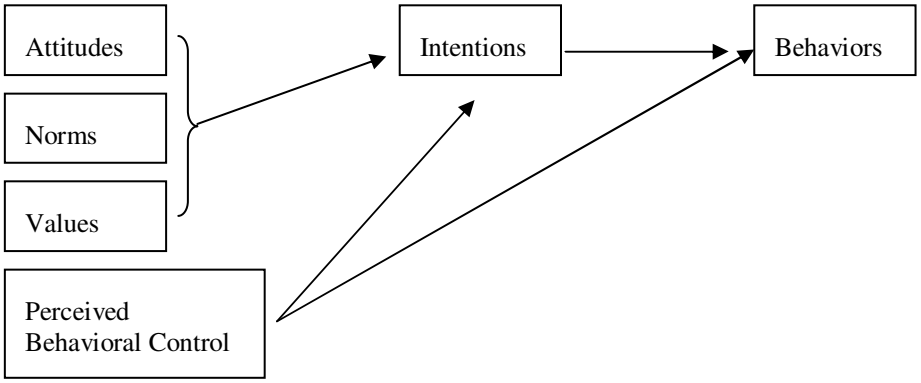
Theory of Planned Behavior (TPB)

The Theory of Planned Behavior (TPB) is an extension of the Theory of Reason Action (TRA) (Ajzen, 1991). The (TRA), as put forth by Fishbein and Ajzen (1980), asserts that the influence of attitudes on behavior is mediated through behavioral intentions (Armitage & Christian, 2003) and addresses the impacts of cognitive

mechanisms, such as attitudes, social norms, and intentions, on behavior (Guo et al., 2007). Kerner and Kurrant (2003) and Guo et al. indicate that Ajzen (1985) suggested that the TRA was insufficient for certain behaviors, such as physical activity, since personal control is often incomplete. The theory is commonly used to study health-related decision making in children and adolescents (Fila & Smith, 2006; Kerner & Kurrant).

The TPB proposes that attitudes, perceived social norms, and perceived behavioral control predict behavioral intentions, which in turn influence behavior (Ajzen, 1991; Baker et al., 2003) (see Figure 1). Attitudes and subjective norms are posited to affect behavior through intention (Rhodes & Plotnikoff, 2005). Attitudes are considered to be the overall evaluations an individual possesses in performing a specific behavior, whereas subjective norms are an assessment of the social pressures upon an individual related to the subsequent engaging in or refraining from the performance. Perceived behavioral control is the perception that an individual holds related to the ability to perform a behavior if motivation is held constant. Perceived behavioral control is considered an additional predictor of intention in conjunction with attitude and subjective norms (Rhodes & Plotnikoff; Webb & Sheeran, 2006). Webb and Sheeran cite literature which suggests that although intentions are considered the most salient determinant of behavior, perceived behavior control has the potential to directly predict behavior and/or mediate the relationship between intention and behavior, when perceived behavioral control accurately reflects the amount of actual control over the performance. The inclusion of perceived behavioral control in the TBP takes into account behaviors that are not considered to be under volitional control of the individual.

Figure 1. The model of the Theory of Planned Behavior posited by Ajzen (1991)



Ajzen (1991) posits that the goal of the TPB is to explain human behavior, not merely to predict it. Behavior is a function of salient information or beliefs that are relevant to a given behavior. Miller (1956), as cited by Ajzen, notes that individuals may hold numerous beliefs about a particular behavior; an individual, however, may only attend to a relatively small number of these beliefs at any given time. These salient beliefs are considered to be the prevailing determinants of a person's intentions and subsequent actions (Ajzen). The TPB provides a reasoned explanation of why individuals engage in certain behaviors based on the notion that individuals are more likely to intend to participate in physical activity if they are positively disposed toward it, if they perceive social pressure to do so, and if they believe they will be successful (Armitage, 2005).

Attitudes

Noar, Chabot and Zimmerman (2008) claim that a general orientation towards health may not lead directly to a specific health behavior, but it may increase the chances of a particular health-related attitude, which in turn may drive the adoption of a specific

health behavior. Webb and Sheeran cite the work of Wicker (1969) who found that general attitudes do not significantly predict behavior. A review of studies by Kerner and Kurrant (2003) found similar conclusions to support this claim, although numerous additional studies have shown attitudes as having the strongest relationship with intention to engage in physical activity. Ajzen and Timko (1986) suggest that general health attitudes, while not considered to be a strong predictor of behavior, have been shown to be significantly related to specific health attitudes and perceived behavioral control over specific behaviors (Noar et al.).

Attitude refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question (Ajzen, 1991; Ajzen & Driver, 1992; Backman, Haddad, Lee, Johnston & Hodgkin, 2002; Fila & Smith, 2006). An attitude is thus a personal evaluation regarding the targeted behavior (Hagger, Anderson, Kyriakaki & Darkings, 2007). In exploring the idea of salient beliefs, behavioral beliefs include those which are assumed to influence attitudes. Individuals in general form beliefs about an object by associating it with certain attributes. In the case of behaviors as a function of attitudes, each belief links the behavior to a certain outcome or to some other attribute (Ajzen). Ajzen contends that individuals learn to be disposed towards behaviors that are believed to have largely desirable consequences, and opposed towards behaviors that are associated with undesirable consequences.

Norms

A subjective norm, sometimes referred to as a social norm, refers to the perceived social pressure to perform or not to perform a given behavior (Ajzen, 1991; Ajzen & Driver, 1992), and according to Ajzen are determined by normative beliefs. Fila and

Smith (2006) operationalized subjective norms as being an individual's willingness to comply with the referents placed on the importance others hold about performing or not performing a behavior. Baker et al. (2005) claim that a critical component of the TPB is the inclusion of the social norm construct. This, for example, is due to the perceived social nature of physical activity, in addition to prevailing cultural norms about body shape, and weight. There is a belief that a heightened sensitivity to social influences occurs during adolescence as well. Few studies have shown strong evidence for norms as a predictor of behaviors, particularly in adolescents (Fila & Smith). There is a belief that norms thus may not directly affect intentions, but rather may exert influence directly via attitudes. The findings of Kerner and Kurrant (2003) though lend support to the notion that subjective norms do contribute to the intention to engage in physical activity. Baker et al. support the inclusion of this construct in the TPB, particularly as social norms during adolescence have been shown to influence attitudes. This assertion is based on the premise that pleasing others, such as family members or peers, is viewed as a positive outcome of performing a behavior and that others who are typically held in esteem influence the formation of attitudes.

Behavioral Controls

Control beliefs provide the basis for perceptions of behavior control (Ajzen, 1991). Central to the TPB is the idea that performance of any behavior is codetermined by behavioral intention and perceived behavioral control (Armitage, 2005). Behavioral intentions are representations of an individual's plan of action, and summarize an individual's motivation to engage in a particular behavior (Armitage). Perceived control is thereby hypothesized to mediate the relationship between intention and motivation

(Kerner & Kurrant, 2003). Individuals who are motivated to engage in a behavior are thus more likely to experience a successful performance as compared to those who are unmotivated. The inclusion of perceived behavioral control in the model is predicated on the belief that if intentions are held constant, the likelihood that enactment of the behavior will be successful will come as a result of increased perceived behavioral control (Armitage & Christian, 2003). Furthermore, perceived behavioral control accounts for the perceptions of control over performance of behaviors that are not completely volitional (Rhodes & Courneya, 2005). Perceived behavioral control has thereby been indicated as a determinant of behavioral intention as well as behavior (Armitage & Christian).

Perceived behavioral control contends that personal beliefs related to how easy or how difficult it will be to adopt a particular behavior determine how likely it is that the behavior will be adopted (Ajzen & Driver, 1992; Armitage & Christian, 2003; Backman et al., 2002; Kerner & Kurrant, 2003; Rhodes & Courneya, 2005; Rhodes et al., 2004; Saunders et al., 2002). Armitage (2005) claims that perceived behavioral control is a reflection of an individual's confidence in their ability to carry out a particular behavior, and is related to the concept of self-efficacy as proposed by Bandura (1986). Courneya and Bobick (2000) note that although Ajzen (1991) has asserted that self-efficacy is comparable to perceived behavioral control others have questioned the relationship between the two constructs. Rhodes et al. emphasize that Ajzen (1991) conceptualized perceived behavioral control in order to capture both perceived and actual skills, resources, and opportunities. The determination and reflection are driven by both internal and external factors. Fila and Smith (2006) noted that some research suggests that the

TBP may be enhanced by replacing perceived behavioral control with self-efficacy, whereas others do not support this suggestion. In most studies perceived behavioral control is considered as being differentiated from self-efficacy.

Several theories, including the TBP, predict that greater perceived or actual control over a behavior is associated with improved prediction of behavior by intention (Ajzen & Driver, 1992; Webb & Sheeran, 2006). In order to support the TPB, perceived control must increase the prediction of intention to engage in physical activity beyond what can be predicted by attitudes and subjective norm alone (Kerner & Kurrant, 2003). This leads to the assessment of an individual's perceived behavioral control or self-efficacy. Backman et al. (2002) and Courneya and Bobick (2000) suggest that perceived behavioral control predicts behavior only to the extent that it accurately represents actual control. Webb and Sheeran lend support to this claim by citing evidence that indicates individuals often overestimate the amount of control that is possessed over a particular behavior.

Intentions

The TPB suggests that proximal determinant of volitional behavior is an individual's intention to engage in that specific behavior (Blanchard et al., in press; Rhodes & Courneya, 2005; Rhodes, Courneya & Jones, 2004; Rhodes & Plotnikoff, 2005). Intentions are thought to be directly driven by the constructs of attitude, subjective norms, and PBC (Fila & Smith, 2006). Intention is considered as the summary of motivation to either engage or not engage in a behavior (Rhodes & Plotnikoff, 2005; Webb & Sheeran, 2006). Fila and Smith cite literature that states the TBP is based on the concept that the stronger the intention to perform a given behavior the greater the

likelihood that the behavior will be performed by the individual. Webb and Sheeran claim that intentions are self-instructions to perform particular behaviors or obtain certain outcomes. The formation of a behavioral or goal intention signifies the end of deliberation regarding what an individual will do, and indicates how hard an individual is prepared to try, or how much effort one will exert, in order to achieve the desired outcomes (Webb & Sheeran). Intentions are therefore designated as the key determinant of behavior (Webb & Sheeran). This claim, conversely, is not supported in every case by previous research which has examined the utility of the TPB in predicting and/or explaining physical activity.

Webb and Sheeran (2006) concluded that the use of correlational studies that employ cross-sectional designs cannot rule out the possibility that behavior may cause intention. A review of research by Noar et al. (2008) found the components of the TPB offer similar prediction of intention but inconsistent prediction of behavior. This included a review of studies across multiple health behaviors. The findings of Fila and Smith (2006) are consistent with this conclusion as there was a lack of association between intention and behavior; it was posited that this may be explained by the concept of intention instability. These results support the notion that in order to test the causal impact of intention on behavior it is necessary to change intention and observe whether there is a corresponding change in behavior (Webb & Sheeran).

Armitage and Christian (2003) contend that the TPB is the most dominant model of attitude-behavior relations, particularly in the field of health psychology. Baker et al. (2003), de Bruijn et al. (2006), Guo et al. (2007), Hagger et al. (2007), Kerner and Kurrant (2003), and Parrott, Tennant, Olejenik and Poudevigne (in press), lend support to

this contention by citing numerous studies which have found considerable relationships between most the theory's constructs. Rhodes, Macdonald and McKay (2006) assert, however, that a limited number of studies have been conducted to support the efficacy of the TPB as it relates to physical activity in children of 13 years old. The strength of the TPB consequently lies in its ability to be broadly applied across numerous disciplines. The TPB therefore provides a potential explanation of why individuals engage in a particular behavior, or behaviors, such as physical activity. The TPB proposes that individuals are more likely to intend to adopt healthy behaviors if they are positively disposed toward it, if they perceive social pressure to do so, and if they believe they will be successful (Armitage, 2005).

Summary of Literature Reviewed

The review of literature explored the growing disconnect between youth and the natural environment, and how this is contributing to decreases in physical activity, nature based play, and appreciation for the natural environment. The review integrated literature in youth development, environmental education, the relationship and benefits of nature to holistic health, theories of play, research and practice in out-of-school time settings, the impacts of physical activity on health, determinants of physical activity, and the Theory of Planned Behavior (TPB). The interrelated and dynamic nature of the constructs related to the TPB are evidenced in the formative growth and development of youths, and thus guided the proposed research. The TPB, as illustrated in Figure 1, served as the theoretical framework, and guided data collection efforts.

Several conclusions can be drawn from the review related to the interconnected reasons why out-of-school-time programming is a potential milieu for intentional

wellness-based programming for youth. Literature related to physical activity demonstrates the difficult nature in clearly defining and measuring physical activity behavior. Physical activity has been labeled as a complex behavior that is influenced by a multitude of factors, including those in the physiological, psycho-social, socio-cultural, and ecological domains (Heitzler et al., 2006; Kahn et al., 2008; Lindquist et al., 1999; Sallis et al., 1996; Springer et al., 2006). The operationalization of a definition of physical activity therefore varies greatly, and often includes suggestions of active games, active play, sports, or exercise, particularly those that increase movement, heart rate, and respiratory rates. Furthermore, the literature indicates that measuring physical activity is often problematic, particularly in children . This is due primarily to the use of self-report measures employed in the majority of studies regarding physical activity levels of children and adolescents. While the creation of guidelines for desired physical activity levels in children and adolescents certainly warrants discussion, what is suggested by the literature is a need for reconceptualizing the idea of what constitutes the concept of physical activity, particularly in populations of urban youth who may encounter additional barriers that inhibit opportunities for both structured and unstructured activities in the outdoors. In addition, attention should be consideration should be afforded to ways in which youth can increase physical activity levels through personal choice, such as activities they perceive as being enjoyable and worthwhile. This may necessitate a need of moving away from "structured" program settings and toward providing opportunities for what landscape architect Robin Moore has termed as the idea of "free range children".

The literature supporting the need for increased physical activity in children and adolescents illustrates the growing number of physical, intellectual, and emotional issues that are being exhibited by this population. While obesity continues to rank as a priority of concern, increasing numbers of children and adolescents are suffering from mental afflictions that may indirectly be associated with being obese, such as depression, and are potentially experiencing difficulties in academic achievement as a result of these conditions. Experts contend that this dramatic shift in the health status of today's youth must be addressed. Numerous reasons have been posited for why youth are spending less time being physically active, including the attractiveness and ease of technology, such as TV, video games, and the internet; the change in family systems, wherein youth often spend more time without parental supervision; the elimination and reduction of physical education and recess in public school settings; the decrease in access and opportunities of safe places to play; and a decline in exposure to and appreciation of the outdoors and nature.

There is growing recognition in the literature that supports the decline of direct exposure experiences as being one of the most prominent reasons why today's youth have a decreased appreciation for the outdoors and nature, and thus do not utilize the environment as a "playground" for activity, discovery, and exploration. This is in stark contrast to evidence in the literature that suggests previous generations had a greater appreciation, even love, of the outdoors and nature. The contention has been made, through discussions, observations, and case studies, that previous generations had more formative experiences, often with their families, in the outdoors, such as camping, hiking, canoeing, nature walks, or playing in the park. These experiences have contributed to

individuals continued appreciation for the natural world. Yet for numerous reasons these experiences are not being transferred to youth.

Author Richard Louv's (2005) influential book, *Last Child in the Woods*, has brought increased recognition to the issue. Only recently, however, has research begun to focus on the physical, social, emotional, intellectual, and spiritual benefits of having a relationship with the natural world. Exposure to nature, and the opportunity for play in the outdoors, has been linked to numerous health benefits. Natural spaces and materials stimulate a child's limitless imagination and thus serve as the medium for initiative, creativity, and ingenuity. Literature suggests that nature can be a powerful form of therapy, and has shown to positively impact an array of maladies including obesity, attention deficit and hyperactivity disorder (ADHD), developmental delays, post-traumatic stress syndrome (PTSD), and depression (Berger, 2006; Faber-Taylor & Kuo, 2004; Frumkin, 2005; Krisberg, 2007; Louv, 2005). The literature reviewed indicates that while research has shown promise in the restorative benefits and impacts of nature exposure and appreciation, more work needs to be done.

An additional conclusion drawn from the reviewed literature connects the ideas of increasing physical activity and nature appreciation by using experiential activities in an outdoor setting. Although environmental education serves an important role in educating youth about environmental issues and awareness, curricula and programs have traditionally been included as part of the science curriculum in formal education settings, which often lack experiential learning activities or direct exposure to nature; or, curricula and programs are offered through local nature centers, which may limit access for some youth, and are often conducted as "one-shot deals". In this manner nature becomes

“someplace” to go, rather than what is readily available in the local park, the neighborhood street, or the backyard garden. Furthermore, research indicates that repetitive exposure is a necessary condition for transfer of learning to occur and knowledge and meaning to be created.

Literature in the field of positive youth development supports the notion of out-of-school-time programming as being an ideal setting for the development of wellness outcomes in children and adolescents. While these programs often provide a structured environment grounded with intentional goals and objectives, they do not have to be considered an “extension of the school day”. Rather, research demonstrates that these programs have the ability to engage youth in activities that youth believe and perceive to be beneficial, while integrating learning, fun and enjoyment that results in holistic growth and development. This includes direct experiences with nature in local settings, and chances for discovery and exploration. Programs of this nature have the potential to diminish some of the barriers presented by parents and adults as to why youth do not engage in outdoor play, including issues of access and safety, and provide chances for youth to develop relationships with peers and other caring adults. These relationships form the foundation for mentorship and role modeling that may be absent in certain situations, and have been shown to be a necessary condition for positive youth development to occur.

Out-of-school time programs therefore may provide an invaluable opportunity to impact youth in a wide variety of outcomes and can serve as a gateway to increased desire for direct experiences related to physical activity, nature appreciation, and nature based play. The literature reviewed for this study indicates that although the number of

empirical studies related to youth and nature continues to grow, more awareness and recognition needs to be given to this critical issue. While the issue of reconnecting youth with nature has tended, even in its infancy, to be viewed as the idea that children and adolescents do not appreciate the natural world, this would be an underestimation of the total phenomenon. The literature from related fields demonstrates that this is not simply an issue to be examined in isolation, but rather a complex web of interrelated and interconnected concepts and concerns. The research reviewed for this study suggests a need for continued exploration and examination of the multi-faceted nature of the issue, while continued efforts must be made to investigate and discover a variety of solutions and the milieus in which this work can be carried out.

CHAPTER III

METHODS

The purpose of this study was to determine the impact of an integrated wellness program on nature based play and nature appreciation, including the dimensions of nature immersion and physical activity behaviors in outdoor settings. In addition, the phenomenon termed nature deficit disorder was explored in an attempt to operationalize the phenomenon and to determine if this is a salient determinant of nature based play. The following chapter presents an explanation for, in addition to a description of, the completed process evaluation that utilized mixed methods of data collection. The quantitative phase utilized a repeated-measures design while the qualitative phase employed a collective (multi-site) case study design (Creswell, 2003).

A rationale for the methodology, data collection methods, and analysis is provided, as well as discussion on the ethical considerations pertinent to the completed study. The study was conducted using a naturalistic approach such that multiple methods of collection and analysis were utilized data during the course of the study. The evaluation was primarily interested in assessing the implementation of the Säjai® Foundation's *Wise Kids® Outdoors* curriculum, while further exploring the belief that out-of-school-time programming can have profound impacts on youth development, specifically related to the concepts of wellness, nature appreciation, and nature based play.

Research Design

Rationale for Mixed Methods

The current study is best described as a mixed-methods approach. The study was based on a quasi-experimental, repeated measures design that utilized a collective (multi-site) case study technique with pre-, post- and follow-up assessments. The current study was designed to include a non-randomized control group that was to be subjected to all quantitative measures as the treament group. Multiple sources of evidence, quantitative and qualitative in nature, were used. The use of both qualitative and quantitative approaches in the study supported a mixed methods design where participants were surveyed, observed, and interviewed in order to determine the effectiveness of the program while concurrently exploring the phenomenon of "nature deficit disorder" and the influence of non-cognitive traits, such as attitudes, beliefs, and norms, that were believed to be psycho-social correlates of nature based play and nature appreciation. The concurrent procedures involved coverging qualitative and quantitative data in order to provide a comprehensive analysis of the research problem (Creswell, 2003, p.16).

Creswell (2003) suggested several criteria should be given consideration when selecting an approach for the design of a research proposal. The personal experiences, the audience, and the research problems have been identified as impacting the choice of the researcher when reflecting on what design a research proposal will employ for the perspective study (Chatterji, 2005; Creswell; Mason, 2006; McMillan, 2004; Rich & Ginsburg, 1999). The notion of personal experiences relates to the background of the researcher, such as what previous experiences or training has the researcher had with different research approaches. This in turn may impact the level of comfort that the

researcher may have with each of the approaches and therefore guide the researcher towards a particular approach. Furthermore, the researcher needs to consider the audience to whom the study will be reported. Determining who will benefit from and utilize the results of the study will influence the approach taken.

A research problem is an issue or concern that needs to be addressed (Creswell, 2003; Johnson & Christensen, 2004; McMillan, 2004). In the social and behavioral sciences specific approaches are warranted for certain types of research problems. The use of a quantitative approach is typically regarded for problems related to the efficacy of an intervention, identifying factors that influence an outcome, or understanding the best predictors of outcomes (Crewswell). Qualitative approaches are exploratory in nature, and support the researcher when the variables to be examined are unknown (Creswell). This may include the relative novelty of the topic being studied, as well as the topic never having been addressed with a certain sample or group. The use of mixed-methods serves to capture the best of both quantitative and qualitative approaches. The problem may be an issue of wanting to generalize the findings to a population while developing a detailed view of the meaning of a phenomenon or concept for individuals. In this case the use of collecting both closed-ended quantitative data and open-ended qualitative data would provide support for gaining an understanding of the suggested problem (Creswell).

Leech and Onwuegbuzie (2007) indicated that most of the published mixed methods studies have been utilized to answer questions that could not be answered by one paradigm alone. This is supported by Miller and Gatta (2006) who suggest that any given mixed methods design or approach is considered a distinct unit of analysis, and possesses its own internal logic specifically formulated to best handle a given research question.

The stated purpose of the completed study was to assess the impact of an after-school and summer recreation program that was intended to provide opportunities for youth to increase nature based play and nature appreciation by combining immersion in nature with physical activity behaviors in outdoor settings. The curriculum was implemented at recreation centers in the cities of St. Paul, Minnesota, and San Francisco, California. Additional recreation centers in Kettering, Ohio, and Leesburg, Virginia, beta tested the program but are not included in the formalized research study. Recreation centers in each city were selected to serve as a control groups, where the intervention was withheld until after the data collection process was completed. The study included an examination of the lived experience for the phenomena that has been termed nature deficit disorder, or a disconnect between youth and nature.

In order to provide the most comprehensive view of the phenomena and to increase the potential credibility of the results, multiple sources of evidence, both quantitative and qualitative in nature, were collected. The belief posited was that the combined use of methodologies would provide a more thorough recognition of the benefits associated with a structured, integrative nature immersion and wellness program implemented in an out-of-school setting. This belief is expanded to incorporate the notion that this milieu can play a significant role in helping young people adopt habits and behaviors that foster a sense of connection with the natural world and provide opportunities to be more physically active. The work of numerous pragmatists in the field of social and behavioral sciences indicates that mixed methods that unify the quantitative and qualitative research paradigms are advantageous for the pluralistic approach that these methods take in deriving knowledge (Creswell, 2003; Johnson &

Onwuegbuzie, 2004) and in examining human behavior, such as those inherent in youth development and recreation. Pragmatism emphasizes the research problem, and is concerned with the application and solutions that relate to that problem in the contexts in which these happen (Creswell; Johnson & Onwuegbuzie; Mason, 2006; Sale, Lohfeld & Brazil, 2002). The study sought to examine behavior as those behaviors take place, in the "real life" context of recreational settings, while exploring the lived experiences and attitudes, norms and values of children and adolescents that contribute to a connection with nature and influence physical activity. The primary researcher therefore suggests that the literature reviewed provided support for utilizing a mixed methods research design in the study.

Sampling and Curriculum Design

The study utilized a mixed purposeful sampling technique (Johnson & Christensen, 2004, p.222) that included a convenience sample and typical-case selection for both treatment and control sites. The experimental group consisted of students enrolled in an after-school and/or summer recreation program. Participants were asked to volunteer to participate in the study as a condition of enrollment in the recreation program, or simply asked to volunteer in centers that do not have a defined recreation program.

Prior to curriculum design, staff from the Säjai® Foundation, in conjunction with the primary researcher, conducted several focus groups to determine the characteristics that define nature immersion and physical activity behaviors of the "average or typical child, aged 6 to 11, in an after-school school recreation program". Focus groups involved recreation program staff as well as youth in the target age range. The recreation program

staff all served in administrative positions, and are responsible, to some degree, in providing front-line staff with required trainings at the particular locations which they serve. Several key themes emerged from the time spent with these administrators, including: direct experiences with nature during formative years of development (all recalled, vividly, experiences as a child or adolescence); differing experiences of being in nature (rural versus urban definitions); and, noticeable lack of comfort amongst staff in being and/or doing activities outside with youth.

Focus groups with youth provided an opprotunity to explore youths' views on a variety of ideas, such as comfort level in being outside, time spent being physically active, conceptions of nature, family and peer involvement in physical activity and being outdoors, and perceived access. These sessions were conducted with both urban and suburban groups of youth who attend recreation centers with varying degress of access to 'natural' environments. The information gathered during those focus group sessions supported the recruitment of recreation centers to implement the curriculum. The researcher believed that defining those characteristics would ultimately support the potential for generalizing to a larger population of youth.

Site Selection

Recreation centers sought for participation in this study as treatments and control sites were identified by the City of Saint Paul Parks and Recreation Department and the San Francisco Department of Recreation and Parks. These cities were selected based on established partnerships with the National Recreation and Parks Association (NRPA) and the Säjai® Foundation, as well as access to and support from local research universities. Site selection was based on a purposive sample, with the determinant criterion being used

to evaluate recreation centers for inclusion in the study as incorporating the following: being located in the city, having a structured after-school and/or summer recreation program that serves children in the desired age range, and access to an on-site classroom, gymnasium, playground, and outside space. Additionally, the centers needed to serve a racially, culturally, and socio-economically diverse range of youth. Each center was required to provide an appropriate number of youth to maintain an adequate sample size for the project. A 95% confidence interval, with an established effect size of 0.80, was used to estimate the necessary sample size for the proposed study.

A total of 10 recreation centers and programs, five in each city, including one control site, were identified by the City of Saint Paul Parks and Recreation Department and the San Francisco Department of Recreation and Parks for participation in this study. The particpating centers in St. Paul included, (1) Battlecreek Recreation Center, (2) Dayton's Bluff Recreation Center, (3) Linwood Recreation Center, (4) McDonough Recreation Center, and (5) Hillcrest Recreation (control group). Participating programs in San Francisco included, (1) Crocker Amazon, (2) Midtown Terrace, (3) Visitacion Valley, (4) West Portal, and (5) West Sunset (control).

The following are brief demographic descriptions of the neighborhoods in which each of the aforementioned recreation centers are located. Information from the 2000 United States Census was gathered and compiled by the Ahmerst H. Wilder Foundation specific to the city of St. Paul. This information is available through the Wilder Research Center's Community DataWorks website (2005). Detailed demographic information by neighborhood for the city of San Francisco was not available. Information presented is a general overview of the zip code in which each program is located, and was compiled

using the 2000 United States Census data available from U.S. Census Bureau's website (n.d.).

Saint Paul

The Battle Creek Recreation Center is located in the Sunray-Battle Creek-Highwood neighborhood of St. Paul. The population in 2000 included 20,063 residents, 3,854 of which were school-age children (age 5-17). The neighborhood is primarily populated by caucasion (68%) and African American (13%) families, with 16% of the families reporting that a language other than English is spoken at home. Reports indicated that 32% of the households had children, with 57% of those children living in married-couple families, 33% in single-parent families, and 10% in other arrangements (typically grandparents or other relatives). A reported 65% of public school students in the neighborhood were children of color, and that for every 20 public school students living in the area eight were caucasian, six were African American, five were Asian, two were Hispanic, and fewer than one in 20 was American Indian. The median household income for the neighborhood was $40,414, and 21% of the households reported income less than $25,000. A reported 17% of families with children were living below the poverty level.

Dayton's Bluff Recreation Center is located in the Dayton's Bluff neighborhood of St. Paul. The population in 2000 included 17,758 residents, 4,551 of which were school-age children. The neighborhood is largely populated by caucasion (52%) families, with relatively equal distributions of Asian (19%), African American (12%), and Latino (11%) families. Twenty-eight percent of the families reported that a language other than English is spoken at home. Reports indicated that 40% of the households had

children, with 54% of those children living in married-couple families, 36% in single-parent families, and 11% in other arrangements . A reported 76% of public school students in the neighborhood were children of color, and that for every 20 public school students living in the area seven were Asian, five were caucasian, five were African American, and fewer than one in 20 were American Indian. The median household income for the neighborhood was $34,465, and 33% of the households reported income less than $25,000. Nearly one-quarter (23%) of families with children were living below the poverty level.

Linwood Recreation Center is located in the Summit Hill neighborhood of St. Paul. The population in 2000 included 6,741 residents, 890 of which were school-age children. The neighborhood is predominately caucasion (93%) families, with relatively equal distributions of African American (2%), Asian (2%), and Latino (2%) families. Only 7% of the families reported that a language other than English is spoken at home. Reports indicated that 18% of the households had children, with 78% of those children living in married-couple families, 15% in single-parent families, and 6% in other arrangements . A reported 22% of the public school students in the neighborhood were children of color, and that for every 20 public school students living in the area 16 were caucasian, two were African American, one was Asian, one was Hispanic, and fewer than one in 20 were American Indian. The median household income for the neighborhood was $48,689, with 19% of the households reporting income less than $25,000. Only 5% of families with children reported living below the poverty level.

The McDonough Recreation Center is located in the North End neighborhood of St. Paul, and serves youth living in the McDonough Homes family development. The

population of the neighborhood in 2000 included 24,654 residents, 5,524 of which were school-age children. The neighborhood is mainly populated by caucasion (55%) families, with relatively equal distributions of Asian (18%) and African American (15%) families, and a smaller percentage of Latino (7%) families. Twenty-six percent of all families reported that a language other than English is spoken at home. Reports indicated that 32% of the households had children, with 52% of those children living in married-couple families, 37% in single-parent families, and 10% in other arrangements . Approximately three-quarters (74%) of public school students in the neighborhood were children of color, and that for every 20 public school students living in the area seven were Asian, six were African American, five were caucasian, two were Hispanic, and fewer than one in 20 were American Indian. The median household income for the neighborhood was $32,164, with 38% of the households reporting income less than $25,000. Approximately one-quarter (27%) of families with children were living below the poverty level.

The Hillcrest Recreation Center was designated to serve as the control site in St. Paul, and is located in the Highland neighborhood. The population in 2000 included 23,202 residents, 3,076 of which were school-age children. The neighborhood is predominately caucasion (86%) families, with relatively equal distributions of Lation (5%), Hispanic (4%), and African American (4%) families. Sixteen percent of all families reported that a language other than English is spoken at home. Reports indicate that 22% of the households had children, with 78% of those children living in married-couple families, 19% in single-parent families, and 3% in other arrangements . Less than half (37%) of public school students in the neighborhood were children of color, and that

for every 20 public school students living in the area 13 were caucasian, three were African American, two were Asian, two were Hispanic, and fewer than one in 20 were American Indian. The median household income for the neighborhood was $47,217 with 25% of the households reporting income less than $25,000. Only 6% of families with children were living below the poverty level.

San Francisco

Midtown Terrace is located in the Parnassus Heights area of San Francisco. The population in 2000 included 27,897 residents, 2,549 of which were school-aged children age 5-17). The area was composed of primarily caucasion (69.3%) and Asian (16.4%) families, with smaller percentages of African American (4.8%), Other race not identified (3.9%), American Indian (0.4%) and Pacific Islander (0.2%) families. Approximately 5% of the population was identified as being of two or more races, and 11.7% of the total population were identified as being Hispanic or Latino of any race. Reports indicated there were 5,592 family households, which represented 40.4% of the total households in the area. Married couple families with own children under 18 years of age accounted for 10.9%, and Female households (no husband present) with own children under 18 years of age accounted for 2.5%. The median household income for the area was $76,044 with 8.3% of the households reporting income less than $25,000. A reported 175 families with children were living below the poverty level.

Visitacion Valley is located in the Visitacion Valley area of San Francisco. The population in 2000 included 40,134 residents, 8,086 of which were school-aged children. The area was composed of primarily Asian (51.5%) families, with equal relatively equal distributions of caucasion (18.9%), African American (12.8%), and Other race not

identified (10.4%) families. Smaller percentages of Pacific Islander (1.8%) and American Indian (0.4%) families were reported. Approximately 4% of the population was identified as being of two or more races, and approximately 20% of the total population were identified as being Hispanic or Latino of any race. Reports indicated there were 8,540 family households, which represented more than one-third (79.4%)of the total households in the area. Married couple families with own children under 18 years of age accounted for 25.8%, and Female households (no husband present) with own children under 18 years of age accounted for 8.1%. The median household income for the area was $54,342 with approximately 15.6% of the households reporting income less than $25,000. A reported 1,458 families with children were living below the poverty level.

West Portal and West Sunset are located in the Parkside area of San Francisco, but are identified by two zip codes. The population in 2000 where West Portal is located included 20,624 residents, 3006 of which were school-aged children. The area was composed of primarily caucasion (62.2%) and Asian (25.2%) families, with smaller percentages of African American (5.2%), Other race not identified (2.9%), American Indian (0.2%) and Pacific Islander (0.2%) families. Approximately 4% of the population was identified as being of two or more races, and 8.2% of the total population werre identified as being Hispanic or Latino of any race. Reports indicated there were 5,003 family households, which represented 65.5% of the total households in the area. Married couple families with own children under 18 years of age accounted for 21.4%, and Female households (no husband present) with own children under 18 years of age accounted for 2.5%. The median household income for the area was $95,313 with just

over 10% of the households reporting income less than $25,000. A reported 86 families with children were living below the poverty level.

The population in 2000 where West Sunset is located included 55,492 residents, 6,764 of which were school-aged children. The area was composed of primarily caucasion (47.2%) and Asian (45.8%) families, with noticeably smaller percentages of African American (1.5%), Other race not identified (1.5%), American Indian (0.2%) and Pacific Islander (0.2%) families. Approximately 4% of the population was identified as being of two or more races, and 5% of the total population were identified as being Hispanic or Latino of any race. Reports indicated there were 11,827 family households, which represented approximately 55% of the total households in the area. Married couple families with own children under 18 years of age accounted for 17%, and Female households (no husband present) with own children under 18 years of age accounted for approximately 3%. The median household income for the area was $60,733 with 18.4% of the households reporting income less than $25,000. A reported 492 families with children were living below the poverty level.

Crocker Amazon is located in the Crocker Amazon area of San Francisco and was designated to serve as the control site in San Francisco. Issues with recruitment and retention of participants actually provided Crocker Amazon the opportunity to implement the curriculum. The population in 2000 included 73,104 residents, 12,995 of which were school-aged children. The area was composed of primarily Asian (44.9%) and caucasion (28.9%) families, with smaller percentages of Other race not identified (13.9%), African American (6.3%), Pacific Islander (0.5%), and American Indian (0.4%) families. Approximately 5% of the population was identified as being of two or more races, and

27.8% of the total population were identified as being Hispanic or Latino of any race. Reports indicated there were 14,881 family households, which represented 73.9% of the total households in the area. Married couple families with own children under 18 years of age accounted for 24.5%, and Female households (no husband present) with own children under 18 years of age accounted for 5%. The median household income for the area was $57,629 with 15.7% of the households reporting income less than $25,000. A reported 1,126 families with children were living below the poverty level.

Study Recruitment Procedures

"Kick-off" meetings and informational sessions with youth, parents, and recreation center staff were held at each recreation center to explain the parameters of the study and outline what would be asked of their particpation. A brief outline of the curriculum was discussed at this time, and parents and youth were provided with an opportunity to ask questions. Staff at each center made the information available to parents who were not in attendance, and asked for their particpation at that time. After agreeing to participate in the study, a parent or guardian was asked to provide consent for their child's or children's participation (see Appendix A for copy of Institutional Review Board (IRB) authorization letter).

Program Design, Implementation and Training

Wise Kids® Outdoors is a 10-week program which offers children ages 6 to 11 an opportunity to explore the natural while being taught about the importance of living a healthy lifestyle. The curriculum is specifically designed to be implemented in out-of-school time settings with a recreation focus. *Wise Kids® Outdoors* connects nature to

health so that youth learn the importance of a balanced life that includes being active outdoors and eating well. Youth learn through a series of 20 supervised outdoor adventures. Each program session sends participants and staff on an outdoor adventure mission. Missions are experientially based, and afford participants the opportunity to learn about such topics as animals, insects, plants, the weather, how to safely explore in the outdoors, stewardship principals of reducing and reusing, and caring for the earth. The concept of *Energy Balance* is woven into each lesson to inspire wise activity and nutrition choices. The overall goal of the program is to support youth in gaining an increased recognition of how both humans and nature need to live in balance to be healthy. In addition, by engaging with the curriculum youth will get outside and begin to reconnect to the world around them.

Wise Kids® Outdoors was designed to be implemented over a 10-week span, two-to-three times a week in one hour intervals after the pre-assessment. The curriculum follows a *Learn-Do-Explore* format, such that during each mission youth first *learn* about nature, environmental stewardship and wellness concepts, and then *do* activities related to those concepts. Lastly, the curriculum provides youth the chance to actively *explore* nature and investigate the world around them.

Wise Kids® Outdoors focuses on three primary learning tracts: (1) Being Prepared Outdoors; (2) Having Great Outdoor Experiences; and (3) Making Outdoors, Health and Stewardship Everyday. The scope and sequence of missions were designed so that the content presented builds off of previous learning. In this regard the overall program is broken down into a set of *Core* missions, with two supplementary modules available to further the exposure to the content and provide additional experiences. The core and

modules with associated content strands are outlined in Figure 2. In the current study each participating recreation center and program was expected to implement all 20 missions. Based on the nature and duration of the individual sites involved in the current study, flexibility was afforded to recreation center staff in relation to the actual implementation, provided that the curriculum was implemented with fidelity.

Figure 2. *Wise Kids® Outdoors* scope and sequence

Core Stewardship	**Outdoor Skills and Adventure**	**Intro to Environmental Education**
6-Weeks *Energy Balance* *Reduce/Reuse/Recycle* *Stewardship* *Food & Nature* *Being Prepared* *Map & Compass* *Critters* *Insects*	**8-Weeks** *CORE* + *Geocaching* *Climbing* *Camping*	**10-Weeks** *CORE* + *SKILLS & ADVENTURE* + *Organic Food* *Fossils & Rocks* *Birds* *Seasons*

The curriculum delivery and current study was launched in June 2008. A total of 21 staff and adminstrators at the 10 recreation centers were trained in *Wise Kids® Outdoors* approximately one month prior to delivery of the curriculm. An in-depth overview of the 20 missions was presented, with an opportunity for staff to pose questions regarding content and process. In addition, all data collection procedures were

addressed during these trainings. Participating centers were provided at this time with study guides, supporting materials, and assessment instruments. These ancillary materials included the following:

Youth

- Adventure notebook
- Backpack
- Tools (e.g. compass, pencil)

Leaders

- Training manual & CD
- Activity tools
- Backpack

Recreation Center/Program

- Evaluation Tool & Report
- Marketing Elements
    - Parent newsletters
    - Press Release
    - Posters/Flyers

Instrumentation

Theory of Planned Behavior was used as a theoretical guide in developing items to assess the attitudes, social norms, perceived behavioral control, valuation, behaviors, and intentions of the participants in the program on physical activity, nature appreciation, and healthy dietary choices (see Appendices E and F for the Instrument used to assess these latent constructs). The TPB was utilized because the social norms construct is an important aspect of predicting behavior (Armitage & Conner, 2001). Items were asked consistent with the TPB constructs and are further outlined below.

Measuring Attitudes, Social Norms, Beliefs, Values, Intentions and Behaviors

An instrument containing items relevant to youth ages 6 to 11 years old was developed to assess latent constructs comprising key variables in the TPB. The design of the instrument is similar in structure and content to the assessment developed and tested by Russell, Lewis and Petit (in review) to investigate the premise that a structured integrative health and wellness program in an out-of-school setting can play a significant role in helping young people adopt healthy eating and physical activity habits and behaviors. The design of the instrument used in the 2007 study by Russell et al. was based on suggestions by Baker et al. (2003) in their study utilizing the TPB framework to assess eating and activity behaviors of adolescents. In addition the researcher identified Musser and Malkus' (1994) *Children's Attitudes Toward the Environment Scale (CATES)* (as cited in Musser and Diamond, 1999), Leeming, Dwyer and Bracken's (1995) *Children's Environmental Attitude and Knowledge Scale (CHEAKS)* (as cited in Walsh-Daneshmandi & MacLachlan, 2006), and Bunting and Cousins' (1985) *Children's Environmental Response Inventory (CERI)* (as cited in Zimmerman, 1996) as instruments that provide further suggestions for the construction of questions aimed at assessing attitudes, norms, and values in children, as well as content knowledge. All three scales have been demonstrated to be reliable and valid. The CERI is indicated as being appropriate for children nine years and older, and has been validated for children in grades four through 10 (Zimmerman). Items were adapted in order to make the constructs relevant and meaningful for youth ages 6 to 11 years old.

The instrument was pilot-tested with a sample of youth fitting the same demographics and final changes were made based on feedback received from the pilot

test. In addition, basic demographic information, including gender, age, grade, and ethnicity were collected. Evaluation of these latent constructs were conceptualized and operationalized in the following ways.

Attitudes

Items to assess attitudes were rated on a three-point Likert scale that ranges from 1 (Not True for Me) to 3 (Very True for Me). The questions were used to address various reasons for choosing to be outside or being physically active. Example items describing why a youth would choose to be outside or choose to be physically active include the statements "Because I enjoy it"(nature immersion) and "Because it is fun" (being physically active).

Social Norms and External Perceived Behavioral Control

Social norms were assessed by asking respondents to rate respective agreement on a three-point Likert scale that ranges from 1 (Not True for Me) to 3 (Very True for Me). Statements posed to the respondents provided an opportunity for youth to reflect on the attitudes and behaviors of "people who care about me" and "my friends" regarding nature immersion and physical activity. This follows findings that norms are reasoned to be stronger if the questions address both a perceived behavior (i.e.: being physically active) and attitude (not like me or like me) (Hogg & Terry, 1996). Included in this section were questions related to internal perceived behavioral control (IPBC), such "I like or want to do certain things" (internal). The inclusion of IPBC was based on the notion that internal decisions in this population are often constructed as a response to social norms of the family system rather than complete volitional control.

External Perceived Behavioral Control

External perceived behavioral control (EPBC) was assessed to determine the respondents' social motivation to engage in nature immersion and physical activity. Motivation is typically a dichotomous construct, delineating between "internal" and "external" factors that affect the degree to which children are likely to adopt a behavior. The Multi-CAM instrument developed by Little and Wanner (1997) is designed to assess children's action-motives, beliefs and behaviors. This instrument was used as the basis for creating the questions related to this construct. Questions in this section were designed to gauge whether respondents want to be immersed in nature or physically active because of peripheral factors, such as "the people who care about me, friends, time restrictions, or access" (external). Responses were rated on a three-point Likert scale that ranges from 1 (Not True for Me) to 3 (Very True for Me).

Values

The values section included questions that asked respondents to evaluate the degree to which they place value or worth on such things as being physically active, improving health and physical condition, and being outside. Responses were rated on a three-point Likert scale that ranges from 1 (Not True for Me) to 3 (Very True for Me).

Intentions

Intentions regarding nature immersion, outdoor play, and physical activity were posed to respondents as a means to focus on what they believe they will do during the upcoming week. Respondents were asked to rate 10 items on a three-point Likert scale that ranges from 1 (Hardly Ever) to 3 (Almost Always), with regards to how much they

planned to engage in particular behaviors related to nature immersion, outdoor play, and physical activity in the coming week. An example of these items would be a question that asked respondents to think about how often in the next week they would "Limit the amount of screen time" or "Do something physically active outside with their friends every day." A time period of one week was selected because this time frame is reasoned to be feasible for a youth to plan for the up-coming week, with guides and specific suggestions as to how much nature immersion, outdoor play, and physical activity they think they would engage in. Intentions were included in the administrations of the post- and six-week follow-up surveys.

Behaviors

Nature immersion, outdoor play, and physical activity behaviors were assessed at pre- and post-intervention, as well as at the six-week follow-up. Respondents were asked to reflect back on the previous week, and answer questions on the relative frequency that they engaged in a given behavior. Responses were gauged on a three-point Likert scale that ranges from 1 (Hardly Ever) to 3 (Almost Always). Respondents were asked to consider in the previous week how often they "did something physically active with your friends during your free time", "walked or ride my bike to school," "spent time outdoors", "explored new places", and "spent time outside rather than being inside watching TV or playing video games". These assessments are not considered to be exact assessments of behavior, primarily because of the belief that these questions may in fact be too obtrusive. This belief is based on the notion that there are possibly languages besides English being spoken in their house holds. Due to the exploratory nature of the

program, these measures are reasoned to be best guess estimates of youths' nature immersion, outdoor play, and physical activity patterns throughout the week.

Observations, Focus Groups, and Semi-structured Interviews

Observations

Observations provided an opportunity to view the process of program implementation across program sites. This included youth interaction with the program curriculum during and after each activity along with the youths' attitude towards the curriculum itself. Attitudinal observations of youth during the activity sessions focused on body language and non-verbal indicators in conjunction with verbal identifiers. In addition, specific and general comments made by youth that connect the curriculum with everyday life activities were recorded. Staff delivery of the program, including adaptations and modifications, were noted as well.

The researcher, or designated research support staff, was scheduled to conduct a minimum of three observations at each intervention site during the implementation phase. These observations centered on the following four items: (1) Youth interaction with program curriculum during/after each physical or "classroom based" activity; (2) Youth attitude towards the curriculum; (3) Staff delivery of the program, including any adaptations and modifications; and (4) Youth comments that referenced how the program was impacting their lives at school, with their friends, or at home. Observations provided additional opportunities for researchers to speak directly with staff regarding their assessment of the curriculum and associated activities.

Focus Groups

Two sets of focus groups were conducted at the conclusion of the program implementation. The first set involved recreation center staff that were responsible for implementing the program. One session was scheduled to be conducted in St. Paul, and a second session was scheduled to be conducted in San Francisco. Staff were asked to offer feedback and suggestions in the following areas: (1) Strengths and weaknesses of the program; (2) Improvements to the overall program; (3) Strengths and weaknesses of the curriculum and its individual components; (4) Modifications and adaptations employed at individual centers; (5) Additional resources utilized or would be beneficial for future implementations; (6) Challenges to implementing the program; and (7) Average time spent preparing to implement each mission. Following the recording of responses for Questions 1, 2 and 5, staff was asked to indicate a level of importance for each recorded response, which was then ranked. Discussion and feedback from the focus group session was audiotaped, transcribed, coded, and is included in the final report. Staff unavailable to meet during the pre-determined time slot were provided with the discussion topics and asked to submit responses to the researchers. These responses were added to those garnered during the focus group session and included in the final report.

A second set of focus groups was conducted with participants of the program. One session was scheduled to be conducted in both St. Paul and San Francisco, with flexibility provided to conduct additional sessions based on the number of participant volunteers. Participants were asked to offer feedback and suggestions in the following areas: (1) What did you enjoy most about the program; (2) What did you least enjoy about the program; (3) What did you learn by completing the program; (4) What things

do you wish you could have learned more about, or would want to learn; (5) What activities, if any, would you feel more comfortable doing on your own or with your family; (6) Would you recommend this program to a friend, and what are the reasons you would/wouldn't; and (7) How would you describe nature. Following the recording of responses for Questions 1 and 2, participants were asked to indicate a level of importance for each recorded response, which was then ranked. Discussion and feedback from the focus group session with participants was audio taped, transcribed, coded, and is included in the final report.

Interviews

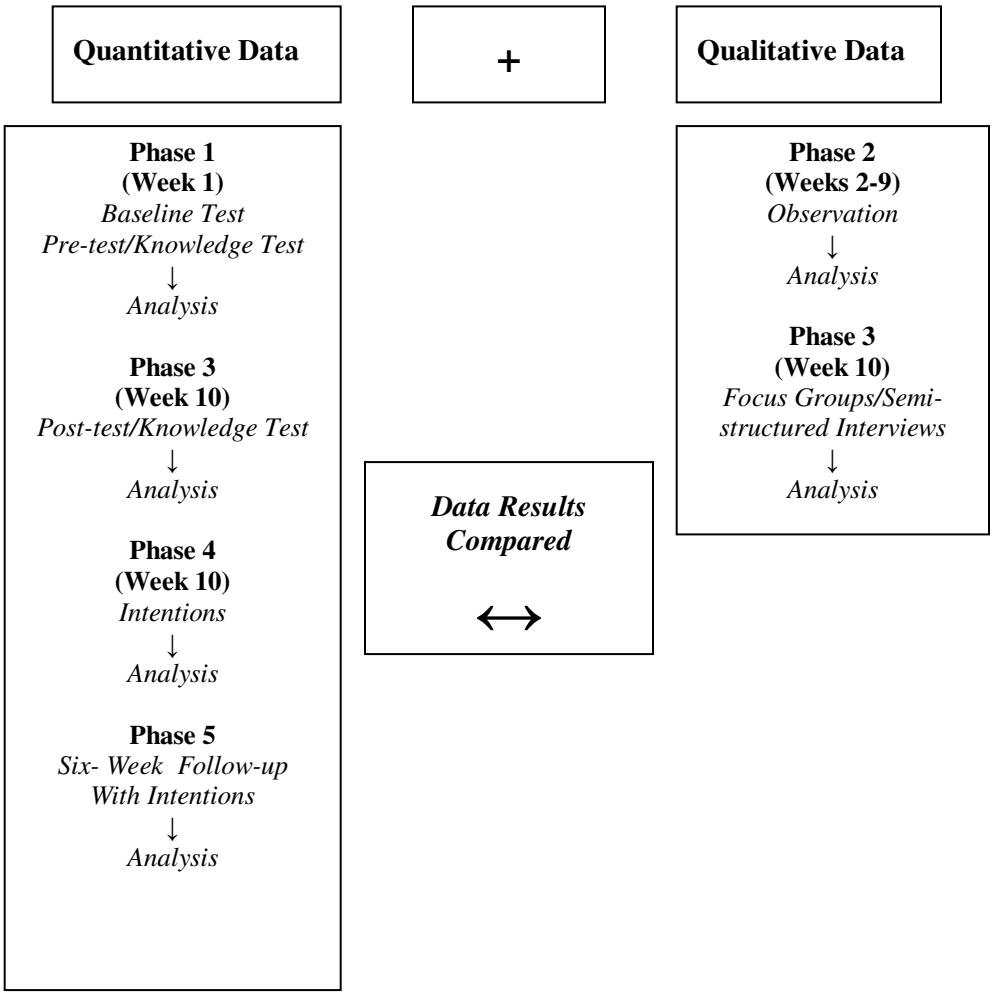
Semi-structured interviews were designed to be conducted with parents of program participants at the conclusion of the program implementation. Parents were sought to volunteer approximately 30 minutes to complete the interview, which would be recorded and transcribed. These interviews were designed to afford an opportunity for parents to voice their comments, concerns, and suggestions regarding their child's overall participation and satisfaction with the curriculum. Questions for the semi-structured interviews included: (1) What did your child learn as a result of the program; (2) What changes, if any, have you noticed in your child as a result of participating in the program; (3) Would you enroll your child in this program again; (4) What would you suggest the program include in subsequent deliveries; (5) What is your overall satisfaction/dissatisfaction with the program; and (6) Would you recommend the program to other families. Interviews with parents were to be coded and included in the final report.

Data Collection

The implementation of the program in multiple cities required contracting additional research staff to assist with the implentation of the data collection process. Faculty and graduate students from the Department of Recreation, Parks, and Tourism at San Francisco State University (SFSU) served in the role of research support staff. SFSU was chosen due to established relationships with San Francisco Department of Recreation and Parks. One faculty member and one graduate student from SFSU assisted the primary researcher with the administration and collection of registration forms, parental consents, and child assents. In addition, they administered pre-, post-, and follow-up surveys to participants, conducted observations, and led focus group sessions with both participants and staff at recreation centers in San Francisco. SFSU faculty provided a summary report of the overall implementation as well at the conclusion of the program. Research support staff were trained approximately one month prior to program implementation, but were not asked nor did not they assist with the analysis of the collected data.

Data collection was conducted in five phases. Based on the mixed-methods research design both quantitative and qualitative procedures were utilized. Emphasis was placed on the collection of quantitative data with comparison and triangulation of qualitative data to support and enrich the findings. In this study the data collection process can be best described as a variation of the concurrent triangulation strategy in mixed-methods research (Creswell, 2003, p.214). Quantiative and qualititative data were collected concurrently throughout most phases of the implementation of the program (see Figure 2), with repeated measures being used in quantitative data collection.

Figure 3. Logic Model of Data Collection Methods



Phase 1 occured during the first week of the program. Participants completed the researcher designed instrument in order to gather baseline information on demographics, *attitudes*, *social norms*, *perceived behavioral control*, *valuation*, and current *nature immersion and physical activity behaviors*. A preliminary knowledge content survey was adminstered as well in order to gather baseline data on previous participant knowledge. The instrument was composed of questions related to the content areas identified by the program designers as being embedded within the program curriculum. Phase 2 (Weeks 2-9) included participant observations of the program at each of the intervention

recreation centers to observe youth interaction with the program leaders, their peers, and the material. Each center was scheduled for a minimum of three observations by the researchers and foundation staff during the course of the ten-week program. The duration of progamming at recreation centers in San Francisco, however, afforded fewer opportunities to observe program implementation. Therefore, a minimum of one observation was conducted at each of the participating recreation centers in the city.

Phase 3 (Week 10) was conducted at the immediate conclusion of the program and involved reassessing *attitudes*, *social norms*, *perceived behavioral control*, *values*, and *nature immersion and physical activity behaviors* to determine program impact on these areas. The researcher designed instrument was re-administered at this time. In addition, the assessment of knowledge questionnaire associated with the program content was provided to participants to complete as means of determining what aspects of the program were salient for participants in the areas of nature immersion and physical activity.

Two sets of focus groups were conducted as a component of Phase 3. Recreation center program directors were asked to submit a list of staff who delivered the program and participants involved in the program to be included in the focus group discussion; these individuals were in turn be requested to volunteer to be a part of the focus group process. Each recreation center was expected to provide an appropriate number of staff and participants based on the total number of individuals involved with the program at each site. The first set of focus groups involved youth who participated in the program. Two recreation centers were chosen in St. Paul based on their varying program structure. One center served a “regular” group of youth who were signed up for summer

programming whereas the other served primarily “drop-in” youth, who chose when and if they wanted to participate. The numbers at these two centers resulted in two groups of girls and three groups of boys. In San Francisco only one co-ed group of participants was used in the focus group process. The focus group process for participants afforded an opportunity for participants to discuss their individual experiences with the program implementation, curriculum, and associated materials.

The second set of focus groups was designed to involve recreation center staff that were responsible for implementing the program. One session was conducted in St. Paul, and involved administrators and area coordinators as well as recreation center staff. A second session was scheduled to be conducted in San Francisco, but due to issues with administrative scheduling staff was simply asked to provide feedback to the outlined questions and submit these responses to the researcher. The focus group process for staff asked for perceptions of the program and observable impacts on youth participants, as well as provided an opportunity for staff to identify strengths and areas for improvement related to the program curricula. In addition, staff were asked to describe any adaptions that were incorporated at each recreation center while delivering the curriculum. .

An additional component of Phase 3 was designed to include semi-structured interviews with parents of participants in the program. The interview process was included to provide an opportunity for parents to offer their views on the program implementation and curriculum. This component, however, was not completed based on difficulties with recruiting parents to volunteer and therefore is not included in the final analysis.

Phase 4 occurred simultaneously with Phase 3 (Week 10). Participants were asked to describe their behavioral intentions regarding nature immersion and physical activity for the subsequent seven-day period. Questions related to behavioral intentions will be imbedded in the researcher designed instrument. A follow-up assessment using the researcher designed instrument was completed at six-to-eight weeks post-intervention in Phase 5. This included a reassessment of *attitudes*, *social norms*, *perceived behavioral control*, *valuation*, and *nature immersion and physical activity behaviors* to identify longitudinal outcomes of the project. Assessments were designed to be brief, and the majority of respondents spent no longer than 20 minutes completing the survey during all phase of the project.

Data Analysis

Data analysis was conducted in three phases. The first phase assessed the reliability and validity of the measured constructs. The second phase consisted of assessing the structural relationships of the Theory of Planned Behavior constructs. The final phase concerned a descriptive reporting of nature based play as this relates to the phenomenon *nature deficit disorder*.

Instrument Reliability and Validity

Instrument reliability and validity were assessed using the Cronbach's alpha coefficient for total scale and subscale reliability associated with each subscale using SPSS Statistics 17. Confirmatory factor analysis with good-fit indices using the AMOS™ program for SPSS was not utilized due to insufficient sample size across the three administrations of the instrument. The Cronbach's Alpha coefficient tests the internal

homogeneity of the total scale as well as all the items in the instrument subscales. The test estimates the proportion of variance in the test scores that can be attributed to true score variance, or more simply is used to estimate the proportion of variance that is systematic or consistent in a set of test scores (Brown, 2002). Values of Cronbach's Alpha range from 0.00 (if no variance is consistent) to 1.00 (if all variance is consistent). If the Cronbach's alpha for a set of scores is .90, the score can be interpreted as meaning that the test is 90% reliable, and by extension that the test is 10% unreliable (100% - 90% = 10%) (Brown). The desired Chronbach's Alpha for the instrument is one (or at least close to one), which will indicate a good fit (Nunnally & Bernstein, 1994; Santos, 1999). Subscale reliability scores were calculated for the following: Attitudes, Norms/External Perceived Behavioral Control (PBC), Internal PBC, Values and Behaviors.

Participant Change due to Treatment

Independent variables to be examined in the analysis were (a) age, (b) gender, (c) and ethnicity. Dependent variables to be included in the analysis were mean scores on the six constructs relevant to the TPB: (1) attitudes; (2) norms and external perceived behavioral control; (3) internal perceived behavioral control; (4) values; (5) intentions; and (6) behaviors. Additional analysis was to include the use of multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) to examine differences in scores for each of the latent constructs of the TPB. The multivariate and univariate test functions for the General Linear Model in SPSS Statistics 17 were to be used in running the analyses.

Issues with attrition, however, resulted in a decreased sample size and a set of scores from only the treatment group. These limitations reduced the potential for

achieving valid results through the use of difference scores in MANOVA and ANOVA. The significant attrition from pre-/post-measures to follow-up measures necessitated an examination of non response between groups as well as a determination of normality of the data. Consequently, one-way *t* tests were conducted to examine means across the three survey administrations to determine potential differences as a result of being exposed to the program. The Wilcoxon signed-rank test, a non-parametric statistical hypothesis test for the case of two related samples or repeated measurements on a single sample, was used in the analysis. The Wilcoxon signed-ranked test can be used as an alternative to the paired Student's *t*-test when the population can't be assumed to be normally distributed (Howell, 2007).

Correlations between Intentions and Behaviors

Intention has been indicated as having a critical role in comprehending behaviors in the TPB model. Therefore the correlation between intentions and behaviors is of vital importance as this relationship should be significant in order to support the proposed relationships between attitudes, values, norms and perceived behavioral control. Intentions were assessed in the 10th week of the program, and at the six-week follow-up. Participants were asked to describe the likelihood that they would engage in a variety of behaviors in the subsequent week.

Youth were asked at the conclusion of the program (Week 10) to what degree they actually engaged in these behaviors, as well as to what degree they intended to engage in those same behaviors. Correlations were calculated using SPSS Statistics 17 to determine if statistically significant Pearson correlations were evident between intentions to commit certain behaviors in the upcoming week and assessments that specifically

asked about those behaviors that occurred in the following week. Additional were calculated between intentions and the follow-up behaviors assessed six-weeks after the program was completed. The alpha-level for these correlations was set at .05 to decrease the likelihood of making Type I errors. Statistically significant correlations were determined as those with a probability (*p*) less than or equal to .05 of the results occurring simply by chance. Correlations were calculated for the treatment group only as attrition and administrative error led to insufficient sample sizes in the designated control groups.

Trustworthiness

Patton (2002) claims that in order for research to be deemed of value, the research needs to provide the audience with evidence of rigor in design, systematic data collection and analysis, and a neutral approach to the phenomena being studied. The proposed study is best described as a mixed-methods approach, utilizing both quantiative and qualitative research procedures. The concurrent procedures involved coverging qualitative and quantitative data in order to provide a comprehensive analysis of the research problem (Creswell, 2003, p.16). In any qualitative research study validity, considered as the notion of trustworthiness, should be established prior to the data to be analyzed is collected in order to ensure that the evidence is consistent with the use of the results obtained (Johnson & Christensen, 2004; McMillan, 2004).

This researcher considered and employed several strategies as a means to increase the trustworthiness of the qualitative findings of the research process. These included (a) member checking, (b) triangulation, (c) neutrality, and (d) transferability. Due to the nature of multiple recreation centers being included in the implementation of the program, observation, interview, and focus group protocols were standardized. The use

of multiple observers required training related to the implementation of these approaches, and a conscious effort to create checklists for observations, as well as a systematic, detailed format of interview questions to be asked to individuals and during focus groups (Johnson & Christensen, 2004). In addition to observations, weekly progress assessments were utilized to gather feedback from staff implementing the program. This added an additional layer of description and detail by getting the insights of individuals who see the participants on a daily basis. These progress assessments were standardized so that staff at each location will record findings on the same criteria. The use of multiple observers required the need to assess inter-rater reliability as well (Onwuegbuzie, 2000).

Discussion and feedback from interviews and the focus group sessions was audio-taped, transcribed, coded, and is included in the final report. The information garnered during this process was reviewed for significant statements that support or refute the effects of the treatment. These significant statements were interpreted as a way to create meanings. The themes, descriptions, and meanings that resulted from analysis were scheduled to be checked for accuracy by using a process called member-checking. The process was to involve having participants review the themes or descriptions to ensure that they were accurate and thus served to support the establishment of validity (Creswell, 2003; Johnson & Christensen, 2004; Onwuegbuzie & Leech, 2007; Rich & Ginsburg, 1999). The meanings constructed from these significant statements, in addition to the significant statements, were examined for themes or trends. This process enabled inferences and conclusions to be made based on the collected data, including similarities and differences between the experiences of the various participants. While the desire was to use member checking, the researcher did not have access to all the individuals

involved in the qualitative methods used for data collection, and thus was unable to provide themes, descriptions, and meanings that resulted from analysis to those individual participants.

Triangulation was utilized in the ongoing and concurrent analysis of data. Triangulation is an analytical technique used to enhance the credibility of a qualitative study (Chatterji, 2004; Creswell, 2003; Diefenbach, 2008; Gray & Densten, 1998; Johnson & Christensen, 2004; Mason, 2006; McMillan, 2004; Miller & Gatta, 2006; Moran-Ellis, Alexander, Cronin, Dickinson, Fielding, Sleney, et al., 2006; Onwuegbuzie & Leech, 2005, 2007). The process of triangulation involved combining and synthesizing multiple methods of gathering data in order to compare different approaches toward examining the same thing or phenomenon (Bryman, 2006; Chatterji; Diefenbach; Gray & Densten; Hanson, Plano Clark, Petska, Creswell & Creswell, 2005; Mason; Meijer, Verloop & Beijaard, 2002; Moran-Ellis et al.; Onwuegbuzie & Leech, 2005, 2007; Rich & Ginsburg, 1999). The primary researcher continually sought to triangulate observations with other data sources as a means to corroborate the research findings. This is referred to as triangulation by method, such as observations and interviews (Johnson & Christensen; Meijer et al.). Due to the nature of using multiple sources of data, triangulation by method is typically referenced in literature as methodological or multi-method triangulation. Staff, participants, and parents who participated in these strategies were asked to provide feedback on the accuracy of responses in order to ensure validity of the interpretations and conclusions posited by the researcher. When the results of several methods of collecting data agree, convergence of the data is reached, and the finding is judged to be credible (Meijer et al.; McMillan, 2004, p.278).

Efforts to maintain neutrality required that the procedures used to report the results of the study assured the reader or audience that bias did not influence the results because the researcher served as an observer and an interviewer. The study design included the use of observations, interviews, and focus groups. The primary threat to internal validity related to observational approaches being used was researcher or observer effects. Prior to conducting observations in the field there was a need to identify what personal characteristics that the principal observer possessed in regards to the topic of interest and the population being examined (Creswell, 2003; Onwuegbuzie & Leech, 2007). These included an assessment of personal beliefs, attitudes, values, and assumptions related to nature, physical activity, health/wellness, and children and adolescents. Previous experience working with related programs in youth development and outdoor education, as well as experience with program and curriculum development, were the primary sources of potential bias. The researcher maintained and acknowledged awareness of these potential sources of bias throughout the collection of observations and during the focus group process. This assessment is included as a means to support the credibility or trustworthiness of the results (Creswell; Onwuegbuzie & Leech).

In addition, there was the necessity to generate well written, detailed, and descriptive field notes during the observations. Detailed field notes have the potential to diminish the effect of the researcher's subjective opinions (McMillan, 2004). Furthermore, validity is enhanced by abundant use of detail. This detail included as much verbatim language from the participants as possible (Graziano & Raulin, 1997; Onwuegbuzie & Leech, 2007). The detail included in the field notes described the process that was used in the observation, as well as aspects of the participants and the

setting. This was considered in order to provide a framework for which the context can be understood. During data analysis of these descriptions the researcher made appropriate efforts to consider bias in order to decrease the likelihood of influencing the creation of themes and codes (Onwuegbuzie, 2000; Onwuegbuzie & Leech). In this study youth interaction with the program curriculum during and after each activity along with the youths' attitude towards the curriculum itself was examined. Attitudinal observations of youth during the activity sessions focused on body language and non-verbal indicators in conjunction with verbal identifiers. In addition, specific and general comments made by youth that connect the curriculum with everyday life activities were noted.

Sufficient time was spent conducting the observations in order to provide an opportunity to collect detailed information regarding what has been observed. In this study a minimum of three observations were scheduled to be completed at each of the recreation centers that are implementing the program. There were several reasons that formed the basis for repeated observations. Repeated observations allowed for an adequate amount of time to be spent collecting data. Onwuegbuzie and Leech (2007) suggest the more time that is allotted to observing behaviors that occur the more plausible that the inferences made can be considered valid. Conducting more than one observation had the potential to reduce potential short-term maturation effects, such as boredom or fatigue, that could have been evident at one time, but not at another. Furthermore, patterns that would otherwise not be reported if only one observation had been conducted may have been seen with multiple observations. Repeated observations at the recreation centers where the participants were engaged in the program delivery provided a natural

setting where behaviors were more likely to be viewed (Elmes, Kantowitz & Roediger, 2003; Graziano & Raulin, 1997; Johnson & Christensen, 2004; McMillan, 2004).

Patton (2003) indicates that the concept of transferability has often been seen in qualitative research as a parallel concept to generalizability in quantitative research. Generalizability is the notion of how to determine if the interpretations and findings of a study may be related to others. Previously noted, the study included purposive sampling in order to obtain specific characteristics to be explored. Although the ability to generalize from a sample to a population utilizing this method is limited (Johnson & Christensen, 2004), the nature of the participants and organizations included in the study allowed for comparisons with, and assumptions about, how the overall curriculum being implemented could be made with similar out-of-school-time programs.

Observation, Focus Group, and Semi-structured Interview Results

The researcher utilized an inductive approach in order to indentify emerging patterns and to be come acquainted with the data as a means of interpreting the findings (Christensen & Johnson, 2004; Creswell, 2003). Inductive reasoning, by its nature, is more open-ended and exploratory, particularly at the beginning (Trochim, 2006). An inductive approach involves a thee-step process: (1) reducing data through the identification of what data are similar, such as coding and categorizing; (2) searching for and describing patterns and relationships between these codes and categories; and (3) revisiting data to provide more intricate layers of comprehension, associations to elements described, and to supply new or additional comprehension from the data (Christensen & Johnson; Creswell; Patton, 2002; Thomas, 2006). The process concluded

with the integration of researcher reflection and insight from observation field notes and focus groups, which added further depth and insight to the findings (Gray, 2004).

Observations were first examined in total, and then each case was compared in a cross-case analysis for similarities or patterns that ran across the cases, as well as for differences (Christensen & Johnson, 2004, p.379). The researcher used multiple methods of triangulation, including data and methods triangulation, as strategies to promote qualitative research validity. The findings of the cross-case analysis are included in the final report as a means to present a detailed and holistic description of nature based played as this relates to the phenomenon of *nature deficit disorder*.

Discussion and feedback from the focus group session with participants was audio-taped, transcribed, coded, and is included in the final report. Information gathered during the focus group sessions was reviewed for significant statements relevant to nature based play and the phenomenon of *nature deficit disorder*, as well as for significant statements that support or refute the effects of the treatment. These significant statements were interpreted by the researcher as a way to create meanings, which in turn were to provided to the participants for review in an effort to guarantee accuracy, a process called member-checking (Christensen & Johnson, 2004, p.367). The meanings constructed from these significant statements, in addition to the significant statements, were examined for themes or trends. This process enabled the researcher to offer conclusions based on the collected data, including similarities and differences between the experiences of the various participants.

The researcher continually sought to triangulate observations with other data sources as a means to corroborate the research findings. The intention of the researcher

was to have staff and youth who participated in these strategies provide feedback on the accuracy of responses in order to ensure validity of the interpretations and conclusions posited by the researcher. A lack of access to these individuals, however, precluded the use of member checking from being utilized in analysis of the data. Information gathered during the focus group sessions was provided to the program designers in order to be utilized in the curriculum revision process.

Limitations to the Study

Limitations in this study warrant discussion, as these potentially impacted the overall validity of the research. The study is best described as a mixed-methods approach, utilizing both quantiative and qualitative research procedures. The concurrent procedures involved coverging qualitative and quantitative data in order to provide a comprehensive analysis of the research problem (Creswell, 2003, p.16).

The primary threat to validity in this study was selection. The concept of experimental control in research refers to the systematic methods employed by the researcher to reduce threats to the validity of the study posed by extraneous variables on the behavior of both the participants and the observer (Graziano & Raulin, 1997, p.64; Onwuegbuzie, 2000). Experimental control is typically achieved through the use of probability sampling procedures, such as the use of simple random sampling. A random sample of participants, however, was not utilized in the study. Rather, the study utilized a mixed purposeful sampling technique (Johnson & Christensen, 2004, p.222) that included a convenience sample of intact groups and typical-case selection for both treatment and control sites. The experimental group consisted of youth enrolled in an after-school and/or summer recreation program. Participants were asked to volunteer to

participate in the study as a condition of enrollment in the recreation program, or simply asked to volunteer in centers that did not have a defined recreation program. Inherent in the use of this sampling technique is implicit bias, such that participants self-selected into the program. These participants therefore may have had more motivation or incentive to be engaged in the curriculum being delivered, were simply in a geographical region where the program was being implemented, or based on the nature of the age range of the participants, had no choice but to be included as a result of being "signed up" by a parent or guardian. The curriculum was implemented at recreation centers and programs where youth were available, and thus a random sample could not be established within individual centers. Consequently, there is difficulty with determining causation due to self-selection bias.

The use of convenience sampling techniques suggested a need to address the potential differences in the participants involved in the study. A program registration form was administered to collect baseline information, including age, gender, and ethnicity, prior to the participants being introduced to the program components. Graziano and Raulin, McMillan (2004), and Onwuegbuzie suggest the use of a pretest in the research design to assist with controlling for potential differences between the groups. The baseline pre-test thus serves as an effort to "normalize" the groups involved in the study by demonstrating that there are no significant differences between the groups designated as treatment and control (Graziano & Raulin; McMillan).

Furthermore, the inference was made that "normalizing" the groups would decrease the potential influence of maturation effects for participants in both the treatment and control groups. Growth and development are naturally occurring

processes, particularly in samples that include children and adolescents (Graziano & Raulin, 1997; Onwuegbuzie, 2000). The potential for children and adolescents in one group to demonstrate changes other than being involved in the treatment was considered in the desire to obtain baseline information prior to being exposed to the program. While there is certainly no means of stopping the natural process of long-term maturation from happening, the intention was to include, if possible, children and adolescents that indicated similar characteristics at the onset of the program (Graziano & Raulin; McMillan, 2004; Onwuegbuzie). Due to logistical constraints, registration information was the only baseline measure used as a means to compare characteristics between treatment and control groups. Short-term effects, such as fatigue or boredom, were considered in the overall program design, necessitating the need for the inclusion of activities that were experientially based and fun. In this regard, focus groups were conducted prior to the program design process with children and adolescents in the target age range to discuss activities, topics, and issues that are relevant, of interest to, and enjoyable for youth.

Staff were identified and trained in the implementation of the program, and were expected to commit to the delivery of the curriculum. Staffing issues, such as turnover and personal commitments outside of program responsibilities, did occur over the course of the curriculum implementation. This may have resulted in inconsistencies and variations of program delivery. Furthermore, the personality characteristics of individual staff members, relationships that had been previously formed or formed over the course of the treatment, or relational disconnect between staff and participants had the potential to influence the results. Recognition is given to the fact that not every issue that relates to

staff can be eliminated, and careful consideration was given to the development of staff training so that an emphasis is placed on all staff being equipped with the same resources to implement the program. This included an ability to create and foster supportive relationships with participants and sensitivity to the diverse needs of the youth involved in the program.

Issues regarding the use of a questionnaire in this study were considered in relation to the target sample. Careful thought was given to the construction of the questionnaire to minimize these potential threats related to the use of a survey (see Johnson & Christensen, 2004; de Leeuw, 2001). A review of reliable and validated instruments that have been used to measure similar constructs of interest was completed in order to determine relevant concepts and limitations that must be considered when assessing the non-cognitive traits of attitudes, norms, values, and intentions that were being examined in the study. Clear operational definitions of these traits or constructs were provided in order to decrease the complexity and inconsistency that previous research regarding the psycho-social correlates of physical activity has indicated (see Barr-Anderson et al., 2007; Deforche et al., 2004; Elder et al., 2007; Heitzler, Martin, Duke & Huhman, 2006; Kahn et al., 2008; King et al., 2002; Sallis et al., 1996; Sherwood et al., 2004; Springer et al., 2006; Trost et al., 1999).

Language and reading ability were potential barriers based on the presumed diverse make-up of participants and parents/guardians involved in the study. A pilot-test of the questionnaire with a sample of youth who were approximately equivalent to the participants to be included in the study was conducted as well. The pilot-test was used to ensure that the questions included were easy to read and comprehend for a child or

adolescent in the target age range, that there were no leading or loaded questions and the length of the questionnaire was appropriate. The possibility existed, however, that due to the diversity of culture and ethnicity in the cities of implementation that for some participants English was not the primary language written, read, or spoken. This required the translation of questionnaires by experts in the identified languages, and included guides and directions on how to administer the questionnaire for staff in those recreation centers. Furthermore, the age range targeted for the study, ages 6 to 11, may have included youth participants who were at a reading comprehension level below other youth in the same age range. In these instances staff was asked to support and assist with the completion of the survey. What is not known, but is acknowledged, is the idea that this assistance may have directed youth toward certain responses. Complete comprehension of the survey questions therefore could only be inferred.

An additional limitation in this study related to instrumentation includes the use of self-reports and standardization of the administration process. While typically considered an acceptable and cost-effective method of obtaining participant information, particularly with the target population, the use self-reports as a methodological approach has greatly inhibited the ability to make causal inferences between potential determinants of physical activity and physical activity behaviors. In regards to standardization, research support staff and recreation center staff that were responsible for administering the questionnaire were provided with appropriate training to ensure that administration procedures were standardized across all program sites. The desired intention was to have the same staff members assist with the survey process across all administrations of the survey. The reality, on the contrary, was that due to staffing issues, such as turnover based on staff

leaving during the implementation phase and staff not being available after the completion of the program, certain staff initially trained and involved at the pre-testing were not present during subsequent administrations. This may have had an effect on the efficacy of administrations across the later phases of qualitative data collection.

Although the reality is that in the normal course of a study participants will often drop out for different reasons, significant attrition in the overall number of participants did occur across the five phases of assessment. Factors that contributed to this attrition included issues related to the nature of the individual recreation centers selected, the characteristics of the clientele being served, the structure of the individual programs, the numerous opportunities available to youth during the summer months (e.g.: family vacations; registration in additional camps and programs), organization and support for implementation of recreation program administration, and the transient nature of summer populations, which comprised youth who do not normally live in the geographic boundaries of the recreation center. Statistical power was used to determine the appropriate sample size for both the treatment and control groups, and efforts were made to guarantee that the recreation centers being recruited would have the required number of participants to meet the necessary sample size. This resulted in 10 recreation centers and programs in the cities of St. Paul and San Francisco being selected for inclusion in the curriculum implementation.

Examination of recreation centers during the recruitment process was used to assist with determining who their primary clientele were as a means to avoid the inclusion of sites that serve large populations of transient youth. The intention was to have centers which serve primarily "drop-in youth," those who may periodically drop by

the recreation center throughout the week and are not part of a structured day-care, pre- and after-school program, or summer program, excluded from inclusion in the study. Two centers in St. Paul that serve this population were, however, included at the request of administration in the Department of Parks and Recreation. In truth these two centers had fairly consistent attendance. This may be attributable to the lower socio-economic status of these youth who potentially lack the resources necessary resources to engage in supplementary opportunities, such as formalized camps or summer programming, that youth from more affluent or stable families posses. Youth at these centers were in turn more easily accessible following the conclusion of the program for the six-week post-treatment survey; whereas youth participants in established summer programming were more difficult to access based on particular centers not offering programs for those youth who participated in the treatment during the school year. This issue was not considered prior to implementation based on the assumption that the recreation centers identified would have or be able to provide access to all youth who participated received delivery of the curriculum. In turn, this potentially contributed to the attrition exhibited from the post-intervention survey administration to the six-week follow-up.

Significant differences were noted in the implementation of the curriculum across both St. Paul and San Francisco, which additionally supported the resulting level of attrition. Neither city was able to secure a "control" group for inclusion in the study. This may be attributed to lack of communication with staff designated to assist in the administration of the survey process, as well as a lack of organizational structure, particularly in the city of San Francisco. Personal communications (A. Suren, January 25, 2009) with research support staff indicated a lack of organization, dedication and

energy to implement the curriculum, in addition to a breakdown in leaderhip. Although a general excitement was noted among youth participants, staff did not demonstrate the same level of enthusiasm at the designated recreation programs. The suggestion was made that the potential re-structuring of the department, union issues, lack of directive authority from administration, and a general level of "non-interest" may have contributed to the failure of implementing the curriculum at two of the selected programs, including the designated control site, and variations in the fidelity of curriculum implementation at three additional sites. While several issues have been proposed that relate directly to "departmental factors" as reasons for the levels of attrition within San Francisco, research support staff posit that part of the breakdown in communication may be attributable to staff training. There is reason to believe that assumptions were made that recreation center staff "appreciate" nature and the outdoors themselves. Yet in reality this may not be a skill set that these staff members possessed, and thus recognition and acknowledgment must be given to the notion of how training can bridge this gap. The limitations posed by attrition and lack of fidelity in San Francisco give caution to the ability of comparing results across both cities.

The possibility existed that participants in the geographic areas being targeted could include those classified as learners for whom English was not the primary written or spoken language. Efforts were made to provide verbal translations of written materials, such as program handouts, parental consents, and child assents, in order to ensure comprehension. Written translations of these materials was dependent on the ease in which alternative languages were able to be translated to English. Certain ethnicities, such as Hmong, are difficult for written translations to be completed. In these instances

staff interpreters were utilized to assist with the language barriers. The nature of the constructs being examined, however, may have prevented full comprehension in these translations, and therefore the researcher acknowledges that youth participants may have lacked full recognition of what was being asked such that the information presented was lost in translation.

In regards to data analysis, two limitations should be noted. First, confirmatory factor analysis (CFA) was included in the design for data analysis to examine whether the individual items developed to represent each latent variable in the TPB model were appropriate to include in the analysis of change in latent constructs. Fit indices should show that each of the latent constructs (*Attitudes, Norms, PBC-Internal, PBC-External, Values,* and *Behaviors*) have sufficient to good fit indices as determined by CFA. Indices that were to be used to determine goodness-of-fit include the NFI, ISI, CFI and RMSEA. The full structural equation model would ideally represent all latent structures in relation to one another. The desire was to have the overall theoretical model fit being calculated as at least adequate, with a preference for an excellent fit. As previously noted, CFA was not utilized in the data analysis of this study due to insufficient small sample size across the three phases of instrument administration.

The second limitation related to data analysis involves content analysis of the qualitative data. This includes observations, focus groups, and supporting documentations, such as weekly feedback reports and administrative summaries. The development of categories, codes, and subsequent themes was based solely on the interpretations of the primary researcher. Hayes and Krippendorf (2007) claim that the key to reliability is the agreement observed among independent observers. No additional

coder, however, was utilized in the analysis. Consequently there is no way to establish intercoder reliability, which refers to consistency among different coders (Johnson & Christensen, 2004). The more observers agree on the data generated, the more likely the data is exchangeable with data provided by other observers, reproducible, and trustworthy (Hayes & Krippendorf). The primary researcher thus acknowledges that there could be additional or other interpretations of the data.

Ethical Considerations

Approval from the University of Minnesota's Institutional Review Board (IRB) was awarded May 22, 2008. The program, as previously noted, was designed for children between the ages of six and 11, which required informed consent and assent to be obtained from all parents and children, respectively. A parent or guardian who agreed to allow their child, or children, to take part in the study was asked to provide consent for their child's, or children's, participation. Children were instructed to read and ask any questions or voice any concerns that they may have before signing the child assent form. In addition, a parent or guardian was asked to sign the assent form as witness. In some instances recreation center staff assisted children with the child assent form, and therefore signed as a witness.

The researcher did not foresee any significant risks to participants or families involved in the evaluation. Potential issues may have arisen, however, in youth who spoke about the family norms when they began to become aware of nature immersion and physical activity habits during the program implentation. These issues should have been openly addressed in the family as well as by staff working at each of the recreation centers selected to participate in the study. Discussions of this nature should have been

facilitated in the after-school and/or summer program during the delivery of the curricula. Participants should recognize that their answers were kept confidential, and that they remained anonymous throughout the course of the study. The primary researcher, along with research support staff and recreation center staff, communicated to the participants that responses on any assessment and observed behaviors would not be used against them or "get them in any trouble." These potential psychological effects were monitored throughout the duration of the study implentation, and staff at each program was asked to mediate any concerns that arose with individual participants based on their established realtionships with participants.

Prior to the commencement of the study, the primary reseacher considered the potential risk for a breach of confidentiality. In oder to protect against this risk, the primary researcher ensured that responses were held in the possession of staff at each recreation center in a secure place and then delivered to the university, or to research support staff. Names were removed from all research materials. In any future publication or public statement based upon the study, all names, or other potentially identifying information, will be omitted or changed; names will not be attached to any direct quotations from participants, parents, or staff. The hope is that participation in the study will be beneficial insofar as providing an opportunity for participants and family units to examine nature and wellness issues together. Furthermore, participation assisted a study that may eventually lead to greater recognition and comprehension of ways to foster a relationship between children and nature, accomplished through increased awareness of nature immersion and physical activity behaviors.

The researcher was conscious of the IRB's adherence to Federal Guidelines which emphasize the importance of assuring that there are no conflicts of interest in research projects that could affect the welfare of human subjects. This study did not involve or present a potential conflict of interest.

CHAPTER IV

RESULTS

Overview

The purpose of the completed study was an evaluation to explore, investigate and interpret the process in which *Wise Kids Outdoors* curriculum is implemented at recreation centers and programs in the cities of St. Paul and San Francisco. This chapter reports the results from the mixed methods approaches (quantitative and qualitative) that were utilized in the collection of data. Included are assessments of the three administrations of the survey instrument, observations conducted at each recreation center and/or program site, and focus groups with youth and staff. Pre-, post- and follow-measures were analyzed and reported together to examine potential impacts and participant changes based on curriculum delivery. In order to examine program impacts, a series of nonparametric statistical tests were conducted based on the conclusion that the data were non-normal and that sample sizes for the various groups (age, gender, ethnicity and center) were relatively small and violated additional key assumptions (ordinal level data, assumption of independent samples) required for parametric statistical testing (Howell, 2007). Observations were reviewed and analyzed in total for meaningful statements, coding elements, and resulting themes. This analysis included examination of youth and staff interaction with program content and activities, program development and implementation strengths, limitations, and modifications, and relevancy and application to youths' lives.

Triangulation of the results as a whole of the *Wise® Kids Outdoors* curriculum implementation provided the foundation for Chapter Five, with detailed discussion

interpreting the implementation process and impacts as well as the development of recommendations and further programming considerations.

Quantitative Data

An overview of youth participant demographics is presented first and includes sample distribution between cities, gender, age, and ethnicity. Results of quantitative analysis follow in addressing three specific research aims: (1) to assess change in youth functioning based on the latent constructs inherent in the Theory of Planned Behavior (TPB), including attitudes, norms and external perceived behavioral control, internal perceived behavioral control, values, intentions, and behaviors; (2) to examine the reliability of the subscales in terms of how well the set of items measured the latent constructs predicting and/or influencing behaviors; and (3) to examine the relationship between intentions and behaviors to determine the consistency of being predicative and/or influencing.

Research Aims and Hypotheses

Specific Aim 1. To assess baseline and subsequent change in youth functioning based on the latent constructs of the Theory of Planned Behavior (TPB) (including attitudes, norms and external perceived behavioral control, internal perceived behavioral control, values, intentions, and behaviors) (Ajzen, 1991; Armitage, 2005; Baker et al., 2003; Russell et al., in press) over time.

> H_o1: Youth participating in the *Wise Kids Outdoors* program will experience no difference in scores on pre-, post-, and six-week follow-up measures as assessed by the six subscales.

Specific Aim 2. To examine the reliability of the subscales in terms of how well the set of items measured the latent constructs predicting and/or influencing behaviors.

H_o2: Questions posed in the survey instrument for each subscale will not be predictive of the latent construct to which they are related.

Specific Aim 3. To examine the relationship between intentions and behaviors to determine the consistency of being predictive and/or influencing one another.

H_o3: There is no relationship between the intention to engage in a specific behavior and the actual engagement in that specific behavior.

Participant Demographics – Quantitative Measures

Initial enrollment in the study encompassed 254 youth in the cities of St. Paul and San Francisco, with 218 of these youth completing pre-test measures. Actual enrollment in the program implementation across both cities included 170 youth ages 6 to 12 from diverse socio-economic and cultural backgrounds. Pre-measure scores were eventually removed for participants in one of the recreation programs in San Francisco, as well as the designated control site for this city, as participants did not complete any additional measures nor did they receive the curriculum delivery. Pre- and post-measures for the research study were thus completed by 115 participants. The pre- and post-measure scores for seven of these participants were removed as they represented members of the proposed control group in St. Paul, which was not included in the analysis due to issues with attrition and implementation (see *Limitations* in Methodology). In addition, one participant's pre- and post-measure scores were removed as the participant was significantly outside the target range for the program delivery (age = 15 years old). The removal of these participants resulted in a subset of 107 pre- and post-measure scores, with 67 participants completing the six-week follow-up measures (see Table 1).

Table 1. Attrition rates across all phases of *Wise Kids® Outdoors* implementation

	Initial	Pre-measures	Post-measures	Follow-measures
City				
St. Paul	120	114	55	43
San Francisco	134	104	60	24
	254	218	115	67

The subjects in the study (N = 107) were youth enrolled in summer programming at five recreation centers in the city of Saint Paul (n = 52), and youth enrolled in summer programming at three recreation programs in the city of San Francisco (n = 55). Gender was roughly equivalent, with 54.2% (n = 58) of the youth being male and 45.8% being female (n = 49). Youth ranged in age from 6 to 13 years old, with a mean age of 9.13. Ages with the greatest concentration included nine year olds (17.8%), 10 year olds (17.8%), seven year olds (15%), and 11 year olds (11.2%). Ethnicities self-identified in the study included Caucasian, African American, Asian (including Hmong), Hispanic/Latino, and Other/Mixed. Asian (n = 41, 38.3%) and Caucasian (n = 37, 34.6%) were the largest ethnic groups represented in the study, with relatively equal distributions of African American (12.1%), Hispanic/Latino (8.4%) and Other/Mixed (5.2%). Socio-economic status was not included as part of the demographic information collected, but economic indicators related to neighborhoods (St. Paul) and areas (San Francisco) can be found in *Site Selection* of Methods.

Table 2. Demographic profile of respondents in St. Paul and San Francisco who completed the program.

	Frequency	Percentage (%)
City		
St. Paul	52	48.6
San Francisco	55	51.4
	107	100.0
Gender		
Male	58	54.2
Female	49	45.8
	107	100.0
Age		
6	8	7.5
7	16	15.0
8	10	9.3
9	19	17.8
10	19	17.8
11	12	11.2
12	9	8.4
13	2	1.9
Missing	12	11.2
	107	100.0
	Mean age: 9.13	
Ethnicity		
African American	13	12.1
Hispanic/Latino	9	8.4
Asian	41	38.3
African	1	0.9
White/Caucasian	37	34.6
Other/Mixed	6	5.6
	107	100.0

The design of the completed study included a collective (multi-site) case study technique. Demographic information broken down by city is included to provide an overall representation of who the participants were in each city. In addition, the differences in age, gender and ethnicity may support potential variations that existed among the youth in regards to changes and experiences with the curriculum implementation.

City of St. Paul

Pre- and post-measures of the study were completed by 52 youth from the city of St. Paul, with 43 completing six-week follow-up measures. The following demographic information represents those youth who completed pre-, post- and follow-up measures. In St. Paul there were a greater numbers of males (n = 25) than females (n = 18) who completed pre-, post-, and follow-up measures. Youth ranged in age from 6 to 12 years old, with a mean age of 8.98. Ages with the greatest concentration included seven year olds (20.9%) and 10 year olds (20.9%), followed by nine year olds (16.3%) and 11 year olds (14.0%). There were equivalent distributions of six, eight and 12 year olds (9.3%). Caucasian (55.8%) was the most represented ethnicity among youth participants, followed by African American (25.6%) and Asian (16.3%). In St. Paul the majority of youth (60.5%) involved in the study were enrolled at recreation centers with established programming; this compares to 39.5% who received the curriculum at recreation centers that primarily serve "drop-in" participants.

Table 3. Demographic profile of youth respondents in St. Paul who completed *pre-*, *post-*, and *follow-measures*.

	Frequency	Percentage (%)
Pre-Post-Follow		
Complete	43	82.7
Incomplete	9	17.3
	52	100.0
Gender		
Male	25	58.1
Female	18	41.9
	43	100.0
Age		
6	4	9.3
7	9	20.9
8	4	9.3
9	7	16.3
10	9	20.9
11	6	14.0
12	4	9.3
13	0	0.0
	43	100.0
	Mean age: 8.98	
Ethnicity		
African American	11	25.6
Hispanic/Latino	1	2.3
Asian	7	16.3
African	0	0.0
White/Caucasian	24	55.8
Other/Mixed	0	0.0
	43	100.0
Site		
Battle Creek	18	41.9
Dayton's Bluff[a]	8	18.6
Linwood	8	18.6
McDonough[a]	9	20.9
	43	100.0

[a]. indicates recreation center serving primarily "drop-in" youth.

City of San Francisco

Pre- and post-measures of the study were completed by 55 youth from the city of San Francisco, with 24 completing six-week follow-up measures. The following demographic information represents those youth who completed pre-, post- and follow-up measures. In San Francisco there were slightly more females (n = 14) than males (n = 10) who completed all three measures. Youth ranged in age from 6 to 12 years old, with a mean age of 9.59. The greatest concentrations included nine year olds (25.0%) and 10 year olds (16.7%) with equal distributions of eight, 11, and 12 year olds (8.3%). Asian (70.8%) was the most represented ethnicity among youth participants, followed by equal distributions of Hispanic/Latino (8.3%), Caucasian (8.3%), and Other/Mixed (8.3%).

Table 4. Demographic profile of youth respondents in San Francisco who completed *pre-*, *post-*, and *follow-measures*.

	Frequency	Percentage (%)
Pre-Post-Follow		
Complete	24	43.6
Incomplete	31	56.4
	52	100.0
Gender		
Male	10	41.7
Female	14	58.3
	24	100.0
Age		
6	0	0.0
7	1	4.2
8	2	8.3
9	6	25.0
10	4	16.7
11	2	8.3
12	2	8.3
13	0	0.0
Missing	7	29.2
	24	100.0
	Mean age: 9.59	
Ethnicity		
African American	1	4.2
Hispanic/Latino	2	8.3
Asian	17	70.8
African	0	0.0
White/Caucasian	2	8.3
Other/Mixed	2	8.3
	24	100.0

Response Bias

The significant level of attrition across the three survey administrations left disparate sample sizes (n = 107 for pre/post measures; n = 67 for pre/post/follow-measures) for analysis examining change in key constructs related to program implementation. An examination of non-response bias was conducted to determine if comparable groups existed between those who completed all three measures and those who completed only pre- and post-measures. Non-response bias between youth who

completed pre-, post-, and follow-measures (i.e., complete data sets) was compared with youth who completed only pre- and post-measures using one sample *t*-tests (significant at $p = .05$). Table 5 outlines the values from the resulting tests.

Youth demographics and response on key constructs were quite similar for those completing all three measures compared with those completing only pre- and post-measures. Participant mean scores were not found to be significantly different between those participants with complete ($n = 67$) and those with incomplete data sets ($n = 40$). Non-response analysis suggests limited bias between complete and incomplete data sets, but does not attend to the potential biases created by attrition between participants who completed all three measures of the study and those participants who did not complete all three measures. Furthermore, caution should be given when interpreting these findings as an approximate 2:1 ratio existed in the number of participants who completed pre-, post-, and follow-measures in St. Paul ($n = 43$) to those in San Francisco ($n = 24$).

Table 5. Examination of non-response bias to determine if comparable groups exist between youth completing *pre-*, *post-*, and *follow-measures* and youth completing only *pre-* and *post-measures*.

	Levene's Test for Equality of Variances				
	F	*p* value	*t*	*df*	*p* value
Attitude					
Pre	6.592	.012	.847	99.399	.399
Post	1.068	.304	.755	104	.440
Norms & External PBC					
Pre	.647	.423	.726	104	.470
Post	.271	.604	.024	104	.981
Internal PBC					
Pre	.019	.891	1.347	104	.181
Post	.370	.544	.100	104	.921
Values					
Pre	3.926	.050	1.056	94.806	.294
Post	.012	.914	1.023	104	.309
Behavior					
Pre	1.374	.244	1.760	104	.081
Post	.019	.892	.595	104	.553

Reliability

Subscale reliability scores were calculated for each administration of the survey instrument. Table 6 displays the individual Cronbach's alpha for each subscale across all three administrations. Cronbach's alpha measures how well a set of items (or variables) measures a single unidimensional latent construct (Nunnally & Bernstein, 1994). Alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from dichotomous (questions with two possible answers) and/or multi-point formatted questionnaires or scales (e.g. rating

scale: 1 = poor, 5 = excellent) (Santos, 1999). In general terms, the higher the score the more reliable the generated scale is said to be.

The alpha coefficients were found to be fairly consistent for each round of survey administration for each of the constructs being examined. Subscale reliability scores are reported in the following manner: construct (pre-, post-, follow-measure): Attitudes (.739, .827, .827); Norms & External Perceived Behavioral Control (PBC) (.791, .835, .837); Internal PBC (.554, .646, .690); Values (.840, .870, .813); Intentions* (.831, .820); and Behaviors (.757, .766, .782). Nunnally and Berstein (1994) indicated that .70 is an acceptable reliability coefficient but note that lower thresholds are sometimes used in the literature. The alpha coefficients for subscales were consistently above .70 for all measures except Internal PBC. Although alpha coefficients for this subscale were in the lower range, they were considered acceptable for research purposes given that this was an exploratory study with a small sample size and the majority of the subjects were between the ages of 6 and 13 years old.

Table 6. Chronbach's alphas assessing subscale reliability scores of each latent construct for *pre-*, *post-*, and *follow-measures*.

	Cronbach's Alpha
Attitude	
Pre	.739
Post	.827
Follow	.827
Norms & External PBC	
Pre	.791
Post	.835
Follow	.837
Internal PBC	
Pre	.554
Post	.646
Follow	.690
Values	
Pre	.840
Post	.870
Follow	.813
Intentions	
Post	.831
Follow-up	.820
Behavior	
Pre	.757
Post	.766
Follow	.782

Descriptive Statistics

Means and standard deviations were calculated for each of the constructs across pre-, post-, and follow-measures. Table 7 displays the associated means and standard deviations for each construct across all three administrations of the survey instrument. In addition, these were categorized according to whether the items referenced a focus on physical activity, nature immersion, or nature appreciation behaviors. Youth were asked to respond using a three-point Likert scale. Responses

for attitudes, norms and external PBC, internal PBC, and values ranged from 1 (*Not True for Me*) to 3 (*Very True for Me*). Behaviors and intentions were measured on a three-point Likert scale as well, with values that ranged from 1 (*Hardly Ever*) to 3 (*Almost Always*).

The mid-point or median response (2.0) for both scales denoted the idea of *Sometimes*. This value should be noted as the mean for each construct was identified as being significantly different ($p < .05$) than the mid-point of the scale. This held across pre-, post-, and follow-measures, although slight differences can be seen between each period. An examination of the means indicates the possibility that youth participants had strong positive attitudes, feelings or beliefs about each particular construct at each survey administration.

Table 7. Mean scores and standard deviations for *pre-*, *post-*, and *follow-measures* on subscales comprising a three-point scale.

	N	Mean	SD
Attitude			
Pre	66	2.4338*	.37167
Post	66	2.3515*	.43225
Follow	67	2.4433*	.38660
Norms & External PBC			
Pre	66	2.3429*	.36407
Post	66	2.3543*	.40166
Follow	66	2.4432*	.36782
Internal PBC			
Pre	66	2.3347*	.30052
Post	66	2.3354*	.33794
Follow	65	2.2000*	.34550
Values			
Pre	66	2.5017*	.42354
Post	66	2.4726*	.47096
Follow	67	2.5439*	.38057
Intentions			
Post	68	2.3075*	.44565
Follow-up	68	2.4358*	.38491
Behavior			
Pre	66	2.2618*	.41379
Post	66	2.3306*	.39631
Follow	64	2.3949*	.38780

*. Significantly different ($p < .05$) than the mid-point of the scale (2.0 = *sometimes true* or *sometimes)*.

Normality

The significant level of attrition across the three survey administrations yielded a relatively modest sample size ($n = 67$) of youth participants who completed pre-, post-, and follow-measures. In conducting most statistical procedures an assumption is made that the population of observations is normally distributed (Howell, 2007; Tabachnick & Fidell, 2007; Trochim, 2006). Normality of the data

was assessed in order to conduct statistical analyses to examine changes related to program implementation.

Measures of central tendency are considered the set of measures that reflect where on the scale the distribution is centered (Howell, 2007). These include the mean and the median, and for the analysis were calculated in SPSS Statistics 17. The mean refers to the average, or the sum of the scores dived by the number of scores; whereas the median refers to the score corresponding to the point at or below which 50% of the scores fall when the data are arranged in numerical order (Howell; Tabachinck & Fidell, 2007; Trochim, 2006). In addition, skewness and kurtosis were calculated for each construct and for each point of survey instrumentation administration. The skewness and kurtosis provide an idea of the relative shape of a distribution, where the normal distribution is said to be symmetric, such that there is the same shape on both sides of the center point (Howell; Tabachinck & Fidell). Table 8 displays the mean, median, skewness, and kurtosis for each construct at each administration of the survey instrument.

An examination of the scores for measures of central tendency and shape indicate that the sample has an approximate normal distribution. In each case the mean and median of the scores are roughly equal. This is an indication that the scores are generally clustered around a central point and have fairly equivalent distribution from that point. The values of skewness and kurtosis, although predominately negative, are almost all less than ±1. Thus while there is a slight negative skew in most instances, except for Internal PBC – Follow, which has a slight positive skew (.029), these values do not indicate a large variation from a normal distribution. Extreme values of kurtosis, either large or small in magnitude, have however been noted in the literature as being potential indicators of non-normal distributions. The

values of kurtosis in this data set are all of a small magnitude, ranging from .008 to 1.440, in both positive and negative directions.

Caution, though, should be given when interpreting these findings. The central limit theorem contends that as *n* increases, the shape of the sampling distribution approaches normal, whatever the shape of the parent population (Howell, 2007). The theorem claims that sample sizes of at least 30 are required before the means closely approximate a normal distribution. While the overall sample size (n = 67) in this study fits this condition, the sample size of the pre-, post-, and follow-measures is relatively small in relation to obtaining a power = .80, and thus decreasing Type I errors (Howell). Regardless, small samples will often pass the test for normality because the confidence interval is so wide due to the small sample size. Furthermore, the use of a non-random sample in the study further increases the possibility that the data does not have a normal distribution as the use of random samples is a critical assumption of normality (Howell).

In addition, most common statistical techniques, such as analysis of variance, *t*- tests, and regression, assume that the underlying measurements are at least of *interval*, meaning that equally spaced intervals on the scale can be compared in a meaningful manner (StatSoft, Inc., 2007). This assumption is very often not tenable, and the data rather represent a *rank* ordering of observations, considered to be *ordinal* in scale, rather than precise measurements (StatSoft, Inc.). Howell (2007) indicates that with ordinal data nothing is implied about the difference between points on the scale. In this study a 3-point Likert scale was utilized, such that participants ranked their responses for each question on a scale from one to three. No indication as to the difference between these ranks was provided, other than the labels for the ranks (e.g.

1 = Not True for Me). Considering these potential violations, primarily the use of ordinal level data, the use of non-parametric tests was warranted.

Table 8. Evaluation of the assumption of normality based on measures of central tendency.

	Mean	Median	Skewness	Kurtosis
Attitude				
Pre	2.4301	2.4000	-.410	-.098
Post	2.3623	2.4000	-.310	-.500
Follow	2.4443	2.4000	-.626	.573
Norms & External PBC				
Pre	2.3354	2.4167	-.705	1.440
Post	2.3574	2.3333	-.483	.644
Follow	2.4631	2.5000	-.311	-.573
Internal PBC				
Pre	2.3234	2.3636	-.232	-.248
Post	2.3271	2.4000	-.434	-.443
Follow	2.1952	2.1818	.029	.341
Values				
Pre	2.5173	2.4444	-.755	.425
Post	2.4804	2.5556	-.850	.632
Follow	2.5519	2.5556	-.527	-.654
Intentions				
Post	2.3075	2.2727	-.384	-.304
Follow	2.4358	2.4545	-.600	.610
Behavior				
Pre	2.2505	2.1818	-.078	-.646
Post	2.3323	2.2727	-.132	.008
Follow	2.3934	2.3636	-.339	-.475

Impact of Treatment Exposure

The Wilcoxon matched-pairs signed-rank test is a non-parametric statistical hypothesis test for the case of two related samples or repeated measurements on a single sample (Howell, 2007). The test is often used as an alternative to the paired *t*-test when the population cannot be assumed as having a normal distribution. The Wilcoxon matched-pairs signed-ranks test tests the null hypothesis that "two related (matched) samples were drawn either from identical populations or from symmetric populations with the same mean" (Howell, p.654).

The Wilcoxon matched-pairs signed-rank test was used to test the hypothesis that youth participating in the *Wise Kids Outdoors* program will experience no difference in scores on pre-, post-, and six-week follow-up measures as assessed by the six subscales. This non-parametric test was used based on the possibility that the data did not meet the assumptions of normality required for using a paired-samples *t*-test. Three sets of paired samples were defined for each latent construct, with grand means at each survey administration being used to run the analysis: (1) Pre → Post; (2) Post → Follow; and (3) Pre → Follow. In the case of the construct *intentions*, only one set of paired samples (Post → Follow) was used as intentions were only measured at post- and follow-up administrations of the survey. Test statistics, including z-scores and p-values are displayed in Table 9, with ranks identified in Table 10.

No statistical differences were found on pre-treatment to post-treatment measures for norms and external PBC ($z = -.285$, $p = .776$), internal PBC ($z = -.027$, $p = .979$), values ($z = -.489$, $p = .625$), or behavior ($z = -1.439$, $p = .150$); attitudes ($z = -1.854$, $p = .064$) did, however, approach near significant results. In all cases the

results indicate a failure to reject the null hypothesis Although not significant, based on mean ranks, post-norms and external PBC scores are likely mostly higher than pre-norms and external PBC scores (32.36 positive compared to 29.85 negative), as are post-internal PBC scores in comparison to pre-internal PBC scores (27.63 positive – 26.39 negative) (see Table 10).

No statistical differences were found on post-treatment to follow-up measures for norms and external PBC (z = -1.595, p = .111), values (z = -1.375, p = .169), or behavior (z = -1.051, p = .293); attitudes (z = -1.896, p = .058) did, however, present near significant results. In these cases the results indicate a failure to reject the null hypothesis. Although not significant, based on mean ranks, follow-attitude scores are likely mostly higher than post-attitude scores (30.15 positive compared to 24.77 negative), as are follow-norms and external PBC scores in comparison to post-norms and external PBC (31.03 positive compared to 25.13 negative), follow-intentions scores to post-intentions scores (31.03 – 24.29), follow-values scores to post-value scores (28.29 – 27.57), and follow-behavior scores to post-behavior scores (29.05 – 28.94). Statistically significant differences were identified in post-treatment to follow-up measures for internal PBC (z = -3.005, p = .003) and intentions (z = -2.357, p = .018), which supports rejecting the null hypothesis that no difference in scores exist from post-measure to follow-measures on these constructs.

Statistically significant differences were identified in pre-treatment to follow-up measures for internal PBC (z = -2.612, p = .009) and behavior (z = -2.354, p = .019), which supports rejecting the null hypothesis that no difference in scores exist from pre-measure to follow-measures on these constructs. No statistical differences were found on pre-treatment to post-treatment measures for attitudes (z = -3.83, p = .702), and values (z = -.903, p = .366); norms and external PBC (z = -1.797, p = .072)

did, however, approach near significant results. In these cases the results indicate a failure to reject the null hypothesis regarding differences. Although not significant, based on mean ranks, follow-norms and external PBC scores are likely mostly higher than pre-norms and external PBC scores (31.97 positive compared to 26.00 negative), as are follow-behavior scores in comparison to pre-behavior (32.06 positive compared to 24.14 negative).

Table 9. *Z*-scores with associated *p* values for the Wilcoxon matched-pairs signed-rank test assessing difference scores from *pre-* to *post-measures*, *post-* to *follow-measures*, and *pre- to follow-measures*.

	Z-score	*p* value
Attitude		
Pre → Post	-1.854[a]	.064
Post → Follow	-1.896[b]	.058
Pre → Follow	-.383[b]	.702
Norms & External PBC		
Pre → Post	-.285[a]	.776
Post → Follow	-1.595[b]	.111
Pre → Follow	-1.797[b]	.072
Internal PBC		
Pre → Post	-.027[b]	.979
Post → Follow	-3.005[a]	.003
Pre → Follow	-2.612[a]	.009
Values		
Pre → Post	-.489[a]	.625
Post → Follow	-1.375[b]	.169
Pre → Follow	-.903[b]	.366
Intentions		
Post → Follow	-2.357[b]	.018
Behavior		
Pre → Post	-1.439[b]	.150
Post → Follow	-1.051[b]	.293
Pre → Follow	-2.354[b]	.019

[a]. based on positive ranks.

[b]. based on negative ranks.

Table 10. Mean Ranks and Sum of Ranks for the Wilcoxon matched-pairs signed-rank test assessing difference scores form *pre-* to *post-measures*, *post-* to *follow-measures,* and *pre-* to *follow-measures*.

		N	Mean Rank	Sum of Ranks
Attitude				
Pre → Post	Negative Ranks	32	32.02	1024.50
	Positive Ranks	24	23.81	571.50
	Ties	10		
	Totals	66		
Attitude				
Post → Follow	Negative Ranks	22	24.77	545.00
	Positive Ranks	33	30.15	995.00
	Ties	11		
	Totals	66		
Attitude				
Pre → Follow	Negative Ranks	24	28.02	672.50
	Positive Ranks	29	26.16	758.50
	Ties	13		
	Totals	66		
Norms & External PBC				
Pre → Post	Negative Ranks	33	29.85	985.00
	Positive Ranks	28	32.36	906.00
	Ties	5		
	Totals	66		
Norms & External PBC				
Post → Follow	Negative Ranks	24	25.13	603.00
	Positive Ranks	32	31.03	993.00
	Ties	9		
	Totals	65		
Norms & External PBC				
Pre → Follow	Negative Ranks	24	26.00	624.00
	Positive Ranks	34	31.97	1087.00
	Ties	7		
	Totals	65		
Internal PBC				
Pre → Post	Negative Ranks	27	26.39	712.50
	Positive Ranks	26	27.63	718.50
	Ties	13		
	Totals	66		
Internal PBC				
Post → Follow	Negative Ranks	38	29.68	1128.00
	Positive Ranks	17	24.24	412.00
	Ties	9		
	Totals	64		
Internal PBC				
Pre → Follow	Negative Ranks	39	30.56	1192.00
	Positive Ranks	19	27.32	519.00
	Ties	6		
	Totals	64		

Values				
Pre → Post	Negative Ranks	27	27.50	742.50
	Positive Ranks	25	25.42	635.50
	Ties	14		
	Totals	66		
Values				
Post → Follow	Negative Ranks	22	27.57	606.50
	Positive Ranks	33	28.29	933.50
	Ties	11		
	Totals	66		
Values				
Pre → Follow	Negative Ranks	23	24.65	567.00
	Positive Ranks	28	27.11	759.00
	Ties	15		
	Totals	66		
Intentions				
Post → Follow	Negative Ranks	21	24.29	510.00
	Positive Ranks	35	31.03	1086.00
	Ties	12		
	Totals	68		
Behavior				
Pre → Post	Negative Ranks	20	31.10	622.00
	Positive Ranks	36	27.06	974.00
	Ties	10		
	Totals	66		
Behavior				
Post → Follow	Negative Ranks	24	28.94	694.50
	Positive Ranks	33	29.05	958.50
	Ties	6		
	Totals	63		
Behavior				
Pre → Follow	Negative Ranks	22	24.14	531.00
	Positive Ranks	35	32.06	1122.00
	Ties	6		
	Totals	63		

Correlations between Intention and Behavior

The Theory of Planned Behavior provided a reasoned explanation of why individuals engage in a certain behaviors. Research contends that an individual is more likely to *intend* to engage in a behavior, such as physical activity, if the individual is positively disposed toward the behavior, if the individual perceives social pressure to engage in the behavior, and if the individual believes that he or she will be successful in the completion of the behavior (Armitage, 2005; Armitage & Christian, 2003; Frenn & Porter, 1999). Intentions are thereby assumed to play a critical role in comprehending behaviors in the TPB model. The correlation between intentions and behaviors therefore is significant as this relationship should be strong enough to support the proposed relationships between attitudes, values, norms and perceived behavioral control.

Intentions were assessed at two points during data collection. The first was during the post-test administration of the survey instrument in which youth were asked to indicate the likelihood that they would engage in a variety of behaviors in the following week. During the post-test administration youth were asked to indicate as well to what degree they actually engaged in those behaviors. This pattern was repeated at the six-week follow-measure, where youth were again asked in one section to indicate the likelihood that they would engage in particular behaviors in the following week as well as to what degree they actually engaged in those behaviors.

Table 11 shows that moderate-to-strong and statistically significant Pearson correlations were noted between intentions to commit certain behaviors in the upcoming week and assessments that asked specifically about those behaviors in the following week. The Pearson correlation coefficient measures the degree or

magnitude of relationship between data sets. The correlation coefficient ranges between -1 and 1, such that the closer the value is to ±1 the stronger the relationship (Howell, 2007; R. delMas, EPsy8261, Fall 2007; Tabachinck & Fidell, 2007). Positive and negative signs are indicators of the relationship's direction, and a correlation of 0 denotes no relationship. The strongest correlation identified was the follow-up intentions construct which was strongly correlated to behaviors assessed at follow-up ($r = .843$, $p < .001$). In addition, a strong correlation was indentified between post-treatment intentions and post-treatment behaviors ($r = .808$, $p < .001$). Moderate significant correlations were noted between the follow-up intentions construct and post-treatment behaviors, assessed six-weeks after the program was complete ($r = .565$, $p < .001$), and the post-treatment intentions construct and follow-up behaviors ($r = .490$, $p < .001$). Behaviors post-treatment and at follow-up displayed a weak-to-moderate correlation ($r = .423$, $p < .001$), suggesting consistency in the assessments.

Table 11. Correlations between intentions and behaviors *post-treatment* and at the *six-week follow-up* period.

		Intentions (post-treatment)	Intentions (follow-up)	Behaviors (post-treatment)	Behaviors (follow-up)
Intentions (post-treatment)	Pearson Correlation	1	.565**	.808**	.490**
	Sig. (2-tailed)		.000	.000	.000
	N	67	67	67	64
Intentions (follow-up)	Pearson Correlation	.565**	1	.514**	.843**
	Sig. (2-tailed)	.000		.000	.000
	N	67	67	67	64
Behaviors (post-treatment)	Pearson Correlation	.808**	.514**	1	.423**
	Sig. (2-tailed)	.000	.000		.000
	N	67	67	67	64

**. Correlation is significant at the 0.01 level (2-tailed).

The following tables display the correlations between intentions and behaviors of individual items on the survey instrument. Table 12 shows correlations for measures at post-treatment, whereas Table 13 shows correlations for measures at the six-week follow-up. Previously noted, correlation coefficients range between -1 and 1, such that the closer the value is to ±1 the stronger the relationship (Howell, 2007; R. delMas, EPsy8261, Fall 2007; Tabachinck & Fidell, 2007). The expectation was that correlation values for each individual question for the latent construct *intentions* would display at least a moderate relationship with the corresponding questions for the construct *behavior*. In addition, clusters or groups of questions related to assessing intentions to engage in a particular behavior and the actual engagement of that behavior were posited to have at least a moderate relationship as well. Individual questions from the survey instrument and the corresponding construct are identified in Appendix D.

Questions on the survey instrument in these latent construct subscales were aimed at assessing physical activity/play, time spent in the outdoors, nature appreciation, and healthy eating patterns. The two construct subscales mirrored one another in regards to the format and order in which the questions were asked. Questions 2, 4, 7, 9, 10 and 11 were designed to assess physical activity patters, while Questions 1, 2, 4, 6, 10 and 11 were designed to assess time spent in the outdoors. Overlap can be identified for several questions (2, 4, 10, and 11) which had elements of both physical activity and time spent in the outdoors. Questions 5 and 8 examined behaviors that could be identified as demonstrating nature appreciation, with Question 3 assessing healthy eating patterns.

In Table 12, which displays correlations between intentions and behaviors for post-treatment measures, Question 3 ($r = .482$, $p \leq .001$), which assessed healthy

eating patterns, was identified as having a moderate correlation between constructs, while Questions 5 ($r = .625$, $p \leq .001$) and 8 ($r = .525$, $p \leq .001$), which assessed nature appreciation, were consistently correlated with moderate correlations. Questions related to physical activity and time spent in the outdoors followed a fairly consistent pattern such that most individual questions had relatively moderate-to-strong relationships between intentions and behavior, although several indicated no significant relationship. Question 1, for example, which assessed time spent in the outdoors, showed a relatively weak but significant relationship ($r = .335$, $p \leq .001$), whereas Question 7, which assessed physical activity, showed a significant but rather moderate relationship ($r = .446$, $p \leq .001$). Question 6, on the other hand, assessed time spent in the outdoors and showed a strong and significant relationship ($r = .705$, $p \leq .001$). Questions that concerned the overlap between physical activity and time spent in the outdoors displayed a fairly consistent pattern as well in regards to the correlations between individual questions, with significant correlations ranging from relatively weak (e.g. Question 10: $r = .985$, $p \leq .001$) to moderate (e.g. Question 2: $r = .558$, $p \leq .001$). In addition, the correlations between questions assessing this overlap were fairly consistent and significant, ranging from relatively weak-to-moderate.

Table 12. Correlations between *post behavior* and *post intentions* indicating the relationship of individual items on the survey instrument.

	Behavior 1	Behavior 2	Behavior 3	Behavior 4	Behavior 5	Behavior 6	Behavior 7	Behavior 8	Behavior 9	Behavior 10	Behavior 11
Intention 1	.335**	.172	.415**	.165	.249*	.436**	.257*	.010	.129	.341**	.310*
Intention 2	.072	.558**	.202	.344**	-.130	.182	.154	.183	.242*	.295*	.284*
Intention 3	.143	.185	.482**	.114	.257*	.457**	.143	.353**	.419**	.346**	.269*
Intention 4	.304*	.301*	.205	.523**	.088	.297*	.281*	.263*	.102	.306*	.369**
Intention 5	.218	.090	.327**	.359**	.625**	.281*	.135	.213	.099	.206	.025
Intention 6	.052	.243*	.474**	.086	.237	.705**	.194	.117	.355**	.595**	.421**
Intention 7	.127	.071	.326**	.168	.274*	.334**	.446**	.267*	.199	.081	.282*
Intention 8	.309*	.194	.291*	.263*	.536**	.393**	.250*	.525**	.130	.105	.127
Intention 9	.130	.241*	.502**	.282*	.221	.511**	.228	.204	.464**	.460**	.567**
Intention 10	.174	.181	.385**	.397**	.109	.277*	.086	.184	.337**	.385**	.390**
Intention 11	.036	.205	.411**	.169	.115	.437**	.075	.253*	.549**	.506**	.500**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 13, which displays correlations between intentions and behaviors for follow-up measures, similar patterns were evident as to those identified in the post-treatment measures. Question 3 ($r = .549$, $p \leq .001$), which assessed healthy eating patterns, was identified as having a moderate correlation between constructs. Questions 5 ($r = .245$, $p < .001$) and 8 ($r = .463$, $p \leq .001$), which assessed nature appreciation, were consistently associated with weak-to-moderate correlations, as well as non-significant correlations, indicating a difference from post-treatments measures. Questions related to physical activity and time spent in the outdoors again followed a fairly consistent pattern such that most individual questions had relatively moderate-to-strong relationships between intentions and behavior, with several indicating no significant relationship. Question 1, for example, which assessed time spent in the outdoors, showed a relatively weak but significant relationship ($r = .406$, $p \leq .001$), whereas Question 9, which assessed physical activity, showed a significant but rather moderate relationship ($r = .556$, $p \leq .001$). Questions that concerned the overlap between physical activity and time spent in the outdoors displayed a fairly consistent pattern as well in regards to the correlations between individual questions, with significant correlations ranging from relatively weak (e.g. Question 4: $r = .304$, $p \leq .005$) to strong (e.g. Question 11: $r = .799$, $p \leq .001$). In addition, the correlations between multiple questions assessing this overlap were fairly consistent and significant, although varied, ranging from relatively weak-to-strong.

These two tables suggest that there was consistency in the relationship between what youth *intended* to do in regards to behavior with what youth *actually* indicated as having done. Yet consideration must be given to the reality that intentions and behaviors were measured *at the same time* during the study on both post-treatment and follow-up measures. Therefore, a direct relationship between

youths' intentions and the actual behaviors reported may not truly exist as numerous factors and/or barriers may be enacted in the time frame between when a behavior was considered or intended, and the behavior was actually executed.

Table 13. Correlations between *follow behavior* and *follow intentions* indicating the relationship of individual items on the survey instrument.

	Behavior 1	Behavior 2	Behavior 3	Behavior 4	Behavior 5	Behavior 6	Behavior 7	Behavior 8	Behavior 9	Behavior 10	Behavior 11
Intention 1	.406**	.333**	.243	.260*	.337**	.235	.234	.300*	.140	.294*	.390**
Intention 2	.213	.595**	.319*	.295*	.449**	.260*	-.070	.217	.220	.329**	.324**
Intention 3	.175	.388**	.549**	.179	.055	.199	.122	-.002	.380**	.385**	.483**
Intention 4	.250*	.462**	.467**	.304*	.414**	.379**	.177	.273*	.296*	.424**	.505**
Intention 5	.349**	-.078	.192	.300*	.245	.034	.129	.285*	.095	-.205	.038
Intention 6	.241	.286*	.170	.383**	.219	.527**	.118	.127	.344**	.319*	.326**
Intention 7	.142	-.021	.226	.106	.275*	.072	.531**	.147	.210	.072	.142
Intention 8	.436**	.089	.256*	.268*	.359**	.116	.511**	.463**	.091	-.048	.008
Intention 9	.058	.258*	.485**	.145	.302*	.302*	.286*	.182	.556**	.484**	.586**
Intention 10	.253*	.438**	.582**	.193	.199	.391**	.225	-.030	.445**	.578**	.636**
Intention 11	.136	.347**	.523**	.270*	.318*	.343**	.141	.202	.456**	.614**	.799**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Qualitative Data

The following section is divided into several elements. The first is an overview of qualitative data collection process and results of the implementation of the *Wise Kids® Outdoors* curriculum at recreation centers and programs in St. Paul and San Francisco. This is followed by a summary of the focus group process and discussion for both youth participants, and recreation center and program staff and administrators. Lastly is a synthesis of the two qualitative methodologies utilized, which resulted in the generation of themes and further questions for inquiry.

Findings emerged from analysis of (a) 16 observations of youth and staff interaction with curriculum implementation at recreation centers and program in St. Paul and San Francisco, (b) six focus groups with youth participants encompassing a total of 40 youth, (c) one focus group consisting of nine recreation center staff and two administrators, and (d) a review of written reports, weekly updates, and feedback provided by recreation center and program staff.

Research Questions

The investigation of the *Wise Kids® Outdoors* implementation was driven by the examination of the following questions in effort to assess the entire program implementation process.

1. What *impact* did the *Wise Kids® Outdoors* curriculum have on participants?
2. To what extent was the *Wise Kids® Outdoors* curriculum being *implemented* with fidelity?
3. What *strengths* and modifications would *support* the potential effectiveness of the *Wise Kids® Outdoors* curriculum?

4. What are the *dimensions* of nature immersion and physical activity behaviors in outdoor settings?
5. Is nature deficit disorder a salient *determinant* of nature based play?

Observations

Observations provided an opportunity to view the process of program implementation across program sites. A minimum of three observations were conducted at each recreation center in St. Paul for a total of 12 observations. In San Francisco, four observations were completed at the three recreation programs involved in the study. During each observation a focus was placed on how youth *interacted with the program curriculum* throughout the activity or activities being implemented, along with the youths' *perceived attitude towards the curriculum* itself. Attitudinal observations of youth during the activity sessions focused on body language and other non-verbal indicators in conjunction with verbal identifiers. In addition, specific and general comments that were made by youth connecting the curriculum with everyday life activities were recorded. Staff delivery of the program, including adaptations and modifications, were documented as well.

The following four items guided each observation session:

1. Youth interaction with program curriculum during/after each physical or "classroom based" activity;
2. Youth attitude towards the curriculum;
3. Staff delivery of the program, including any adaptations and modifications;
4. Youth comments that referenced how the program was impacting their lives at school, with their friends, or at home.

Engagement

Observations indicated varying degrees of engagement by the participants across the sites, as well as different adaptations and modifications deemed appropriate or necessary by staff at each site. Staff used a variety of methods to get youth engaged in the process of learning. This included having youth read and complete activities in the workbooks provided, asking questions throughout the mission, reviewing core content, and having youth assist with preparations. These types of activities seemed to support the "hands-on" nature of the numerous activities presented in the curriculum. The activities, however, were met with both acceptance and resistance. Acceptance was demonstrated by a willingness to volunteer to read or assist with preparations, general and specific non-verbal indicators, such as body language displaying attentiveness, excitement, and patience, and participating in the activities as outlined and instructed.

Youth exhibited as well an interaction with staff and each other, which denoted attentiveness and acceptance. This was demonstrated through asking questions necessary to complete the mission, for example, "how much water do we need?", "why do we need a compass?", "where can we plant these?", "how long will it take to grow?", and "where do we find the worms?" These youth appeared to be engaged in the discussion, contributing to what was going on around them. One girl commented during a nature hike "wow, that's so beautiful" as the group stopped at an overlook, while another proudly exclaimed with a laugh, "my map is terrible!" There were common occurrences during observations to hear youth talk about what they found and to see what youth had created, such as nature collages or bird feeders. Furthermore, youth who were generally accepting of the program could be heard discussing the curriculum content not only

during the activity, but after the activity was completed. These youth were often the ones who appeared "lost in their own world", focused on the tasks to be completed, and engaged in the process of exploring and discovering. In turn they were usually the last to "finish up" as they typically were engrossed in the process, and needed to be redirected as they naturally "lagged behind" while on nature walks or while doing activities outside.

Resistance

Resistance, on the other hand, was manifested in behaviors indicative of fooling around or horse play. This included throwing pine cones, rocks and sticks at one another, playing with pencils, their backpacks, or other provided resources (e.g. compasses), and talking over one another, particularly while reading. In these instances youth were typically preoccupied with what was going on around them as opposed to being attentive to what was being asked of them. In missions, particularly those that involved nature walks or looking for different "things", such as bugs/insects, scat, or animal tracks, youth were seen walking aimlessly or without purpose, overheard chatting with friends and/or staff about topics and issues unrelated to the curriculum, and generally not displaying any interest in completing the mission. These youth appeared to be bored or frustrated with the materials and activities. Youth commented on several occasions how the program often seemed "like an extension of school" and stated that "this is boring", "this isn't any fun", and "this sucks". In addition they posed questions to staff indicating a dislike for the program in general; for instance, one boy asked "why do we have to do this stuff?" Another wanted to know "when is this going to be over?" some 15 minutes after an activity had started, while one of the girls queried "when are we going to be done with Säjai?" Questions related as well to an apparent dislike for particular activities, with one

participant being overheard saying, “Again? We always do nature walks… I don’t like Säjai”.

Despite the varying degree of engagement with the program, youth were observed on numerous occasions demonstrating a grasp of the material and that they were potentially internalizing the learning. This could be seen when youth were asked and responded to questions posed by staff before, during, and after activities. During question and answer session’s youth were often able to complete the learning challenges presented, yet there was little evidence of most youth connecting, or trying to connect, what was being learned for a particular session to their own lives. This may have been a function of the staff generally providing rather limited opportunities for reflection, and thus for application and transfer of learning to occur. Yet comments offered by several youth did demonstrate a sense of connection, particularly to the environment; for instance, one youth mentioned, in reference to recycling, that “I feel good because I’m helping the environment”, while another, in discussing cleaning and picking up trash that “it’s pretty good for the earth”. The staff at several centers did, however, typically spend time reviewing previous learning concepts with youth before beginning new missions. Reflection at the conclusion of a mission was rare, as staff often transitioned youth from *Wise Kids® Outdoors* directly into regularly scheduled daily programming. Some youth seemed fine with this, and seemed too easily “switch off and change gears”, while others took longer, potentially looking for support in processing the experience, or simply taking an opportunity to reflect on an individual basis.

Staff Implementation

The implementation of missions differed by recreation center in regards to the amount of time spent preparing, the time spent outdoors as opposed to time spent indoors, and the total time spent on completing the missions. Several recreation centers conducted the entire mission outside, including the activities and readings from the workbook. Youth observed at one of the centers that employed this method often displayed a mixture of engagement behaviors, as discussed previously. Other centers used a mixed approach, with reading and workbook activities typically completed indoors before going outdoors to complete other outlined activities. Youth at one of these centers was observed spending very little time outdoors during a mission, even though there seemed to be no reason why the activity, which was making bird feeders, could not have been completed outside. Additional methods of implementation included not having youth do anything with the workbooks, but rather staff covered key learning concepts, and then outlined and discussed the activities that would be done during the mission.

Staff interaction with the youth and the curriculum followed a similar pattern across all program sites. Many of the recreation staff members were observed as being engaged with the youth and with the material. They allowed the youth to be actively involved by providing opportunities to read the information or instructions written in the workbooks, yet there was only minimal evidence that you were given the chance to make choices regarding the activities to be completed for the day. One staff member did indicate that this was often a matter of "recognizing that sometimes they're (youth) just looking or wanting to do something else". In this regard staff was seen as being attentive to the needs of the youth, and realizing, as one staff member claimed, that "some things

they like, and some they don't". The opportunity to be outside was generally considered by the staff at most locations as being a "like", as were activities that were "hands-on", "active", and "didn't involve a lot of reading", even though some youth did prefer and enjoy the reading portions of the program. Furthermore, staff were commonly observed as being supportive, patient and encouraging as evidenced by comments such as "great job", "you can do this", and "that's a wonderful idea". They appeared to respond openly to youth questions and concerns, and looked to create a positive atmosphere that was both welcoming and inclusive. Numerous staff demonstrated care and concern for the youth, often making sure that all youth were involved throughout the process.

The level of staff commitment and willingness to be involved in the activities did, however, vary from site-to-site, and even then differed among the staff present. The staff at one site in particular was often overheard discussing topics not related to the curriculum, but did so with only a certain group of youth to the expense of including others. This included joking or fooling around, and encouraging or enabling disruptive behaviors. Additionally, staff at other locations was sometimes seen spending more time with staff as opposed to spending time interacting with the youth. Furthermore, staff that did not appear to be engaged with the youth did not appear to be engaged with the program. This was illustrated by a lack of organization and preparation that played out both before and during the missions, as well as the numerous "restrictions" that staff placed on the youth during missions; for instance, although youth were expected to have opportunities to explore and discover there were instances where staff were observed telling youth "not to put your hands in the puddle", "stay out of the trees", and "don't stop to look, just keep walking". One staff member, in fact, indicated in conversation

that there were days when "I go through the curriculum just to get through it." This seemed, however, to be more of an exception rather than the norm.

Numerous staff members at various recreation centers, however, were often seen as being extremely willing to be a part of the activities, interacting with youth one-on-one (when youth needed additional assistance or encouragement) or in small groups, and typically doing so with an upbeat attitude and energy. They brought humor into the discussions, yet looked to challenge the youth by posing questions that necessitated recall and application of content learned from the workbooks and through activities. These staff displayed a willingness to "get their hands dirty" and to be a part of the experience themselves. This included digging for worms, making GORP, going on and being attentive during nature walks, and creating art projects. In addition, staff engaged the youth in conversation that was specific to the curriculum and the activities. Staff in this manner demonstrated behaviors to be emulated, and thus served as positive role models. In these locations youth tended to display less disruptive behaviors, potentially due to the increased interaction with staff. Although not an overly widespread phenomenon, staff was repeatedly observed needing to change direction or pause program delivery in order to redirect youth with disruptive or discouraging behaviors. When these actions were necessary, however, staff did so in a supportive and positive manner, refraining from yelling or belittling youth.

In reviewing the observations in total, a sense of the varying degrees of how both youth and staff were experiencing the program was generated. This required the primary researcher to be a participant observer, such as giving consideration to be present in the moment while remaining as unobtrusive as possible. The observations provided a layer

of information that was detailed and descriptive, and added to the overall exploration of the program implementation.

Focus Groups

Focus groups were conducted with youth participants and recreation center and program staff. Seven total sessions were completed, six with youth and one with staff. Each session was conducted at the conclusion of program implementation and enabled youth and staff to offer feedback and suggestions in the several areas. The process for each session included brainstorming, ranking, and discussion. All sessions were audio recorded and transcribed. An overview of the focus group process and results are separated into sections by youth and by staff.

St. Paul and San Francisco Youth

A total of six focus groups were conducted with youth participants; five groups in St. Paul and one in San Francisco. Youth involved in the focus group process ranged in age from 6 to 11 years old, encompassing the total age range for which the program is designed. In St. Paul two recreation centers were chosen by the primary researcher to participate in the focus group process. This was based on the nature of the four St. Paul recreation centers involved in the study, such that one site serving primarily "traditionally registered" youth and one site serving primarily "drop-in" youth were selected. In San Francisco youth involved in the process came from two of the three participating centers. The primary researcher's previous experience with the process supported a belief that single-gender groups would be more beneficial, as would smaller group sizes. Based on these criteria, two groups of females and three groups of males participated in the

process, with each group consisting of approximately four-to-seven youth. The one group in San Francisco was coed, and consisted of 11 youth total.

Discussion and feedback from the focus group session with participants was audio recorded and later transcribed for analysis. The process involved initiating brainstorming and discussion relating to the questions outlined below. Following the recording of responses to Questions 1 and 2, youth were asked to indicate a level of importance by ranking each response. The questions posed to the groups were as follows:

1. What did you enjoy most about the program?
2. What did you least enjoy about the program?
3. What did you learn by completing the program?
4. What things do you wish you could have learned more about, or would want to learn?
5. What activities, if any, would you feel more comfortable doing on your own or with your family?
6. Would you recommend this program to a friend, and what are the reasons you would/wouldn't?
7. How would you describe nature?

Descriptive narratives are presented for all questions posed during the focus group process. Rankings related to *What did you enjoy most about the program?* and *What did you enjoy least about the program?* are reported in tabular format to preserve the integrity of each groups' responses. Tables for the remaining questions are presented as a

means to compare and contrast the experiences between youth in St. Paul and youth in San Francisco.

What Youth Enjoyed Most about the Program

Youth were asked to identify what they most enjoyed about the program, and then instructed to rank those items that had been listed. Themes that emerged from what youth most enjoyed about the program included the use of games and activities, connecting with nature, and the content and structure of the program. Several youth commented on how they "enjoyed reading in the book". These youth found the workbooks to have "fun activities and games", and as one youth stated "the reading challenged me and helped me learn more".

While the activities in the workbook and readings were noted by some, but not, all youth as being enjoyable, the opportunity to be outside "doing" activities was generally acknowledge by many of the youth as being something about the program they really enjoyed. Taking nature walks was "enjoyable" and "fun", particularly when, as one youth stated, "we got to look for 'stuff'". This "stuff" was defined to include several different things: (a) insects and bugs; (b) trees ("with honey!"); (c) rocks; (d) sticks; (e) leaves; (f) puddles; (g) scat; and, (h) animal tracks. A few of the youth discussed liking when there were scavenger hunts, with several talking about how much fun there was in "making maps so that we could hide and then find treasure". As one youth stated, "I didn't know how to use a compass before and now I do." Nature walks seemed to be well received by the youth, particularly one group of boys in St. Paul who all ranked nature walks as being something they enjoyed most about the program.

In addition to nature walks, activities that allowed you to be “physical”, to “run around”, and “to beat the other team and win”, were prominently mentioned. Several youth, in both St. Paul and San Francisco, discussed how they really liked the mission where they had to “roll down the hill”. One youth described the difficulty in “trying to get up and run forward (after rolling down). It was really hard to do cause you were dizzy.” Although physical in nature, hill rolling was only one of the activities mentioned in this category. The competitive nature of competing in “obstacle courses” was attractive to the youth, as noted by the comment “I like to win”. Furthermore, youth discussed how they just enjoyed the chance to “be outside” and “be in the fresh air”, while enjoying the opportunity to simply “play outdoors”.

These comments support the notion that for some youth there was a general appreciation for the opportunity to just be outside and “enjoy nature”. Numerous youth indicated that while they had not really paid much attention or looked at rocks or bugs or trees before being part of the program, they have a better idea of these “things” now. That meant for some getting the chance to “touch earthworms”, “watch apples ‘rotting’, which was really cool”, or “find the highest point on the playground to see everything”. Furthermore, youth noted an enjoyment for activities that although not physical in nature, gave them the chance to “do stuff”, or be “hands-on”. These included such activities as making bird feeders and nature collages, painting rocks, and, as one youth pointed out, “picking up trash”. Youth may therefore have appreciated not only the opportunities to be outside and to experience “nature” directly, but to be afforded the chance to engage in activities that were not solely “physical” in format.

Table 14. Ranked youth focus group responses to the question *What did you most enjoy about the program?*

City	Gender	N	Responses (Ranks)
St Paul	Females	7	Reading (3) Activities: bird feeders (2) Nature walks (2) Camping/surroundings (2) Activities (1) Digging for worms (1) Watching the apples 'rotting' (1) Animal tracks (1) Eating 'stuff' (apples) (1) Picnics (1) Making GORP (1) Rock searching (1) Looking for scat (1) Learning Looking for animal homes Looking for bugs Seasons What you need Bird watching Picking up trash
St. Paul	Males	4	Obstacle course (2) Making bird houses (2) Activities: running (1) Finding animal tracks (1) Treasure hunt (1) Planting seeds (1) Missions Projects Working together Taking turns reading Bug catching Picket signs: No Littering Battleship/maze Painting rocks
St. Paul	Females	6	Catching frogs (6) Making bug cages* (2) Making forts* (1) Water sports/water fights* (1) Taking heart rate (1) Nature walks (1) Hunting for 'treasure'*

			Making bird feeders Finding/painting rocks Finding animal tracks Rolling down/running up the hill Sitting in the shade Bird hunting Making nature collages Workbook readings
St. Paul	Males	6	Scavenger hunts (4) Looking for insects/bugs (2) Looking for trees (w/honey) (2) Exercise: running up the hill (1) Reading in the book (1) Looking for rocks (1) Rolling down the hill (1) Nature walks Playing outdoors: obstacle courses; playground Being outside: walking in the woods Looking for puddles Being in the fresh air Looking for sticks
St. Paul	Males	6	Nature walks (6) Nature collages (3) Activities from the book: did outside missions (2) Activities in the book (1) Looking for 'things' Reading about nature Planting corn Rolling down hill/running forward Running uphill
San Francisco	Coed	11	Eating GORP (2) Rolling in the grass (2) Activities outside Honeycomb beehive Compasses Map making Hiding treasure Nature: earthworms Nature: finding different leaves Going to the playground and find the highest point Sleepover/fake camp fire

*. Indicates activities that youth were interested in and/or looking forward to but were not provided an opportunity by staff to complete.

What Youth Least Enjoyed about the Program

Youth were asked to identify what they least enjoyed about the program, and then in similar fashion to the discussion on what they enjoyed most were instructed to rank those items that had been listed. Themes that emerged from what youth least enjoyed about the program were similar to those that were indicated as being enjoyed most, and focused on the use of games and activities, being in nature, and the content and structure of the program. Several youth commented on how they "didn't like reading in the book", as this was "too much like school". Some of these youth found the workbooks to be "too easy and not really fun", or as one youth stated "they were boring". Youth further commented on how they didn't like "when people were talking while someone was reading", and having to "wait for other people to finish reading", or "listen to people explain over and over again". A group of girls in St. Paul were in fairly in agreement that there was "more reading than doing". Several girls in this group additionally noted they "didn't get the chance to complete stuff", and that "staff told us we were going to do something and then we didn't". These comments were similar to ones made in San Francisco where there was mention by one youth that "we didn't do all the activities, only did 10, and I felt rushed reading".

In the discussion on what was most enjoyable, numerous activities that took place outdoors were listed. Yet youth discussed how many of these activities weren't well received or liked. Several youth in St. Paul didn't enjoy "sitting in the sun", or "on the hard ground", with one commenting on her distaste for "bugs crawling on us". Furthermore, some youth didn't like "walking in the sun", or taking nature walks as "that's all we ever did". One youth plainly commented that he "did not like to walk",

while another stated she does “not like to exercise”. Even finding “stuff” during nature walks was not overly enjoyable, particularly as youth noted that there were “no birds” to be seen while bird watching, “no animal homes” to be found when looking for them, and “no animal tracks” in the hard dirt. In addition several girls in St. Paul noted that looking for animal scat was “disgusting” and did not see the need to look for this.

Moreover, not all activities that allowed you to be “physical” or to “run around”, and to “be outside” were well received. Obstacle courses and scavengers hunts were met with mixed emotions by some. Several youth, particularly in St. Paul discussed how they really didn’t like the mission where they had to “roll down the hill”. They noted that “it made me dizzy”, and a group of boys, as well as one girl, complained of how the “grass made me itchy all over”. In being outside youth were exposed to “being with the ticks”, as well as other bugs. Youth commented on having to be out in the rain, one indicating “I didn’t like getting wet”, and still others noted while digging for worms “I got muddy”.

These comments support the notion that for some youth being outdoors was not nearly as enjoyable for some as this was for others. Nor were all youth “into” the program, particularly the “school stuff”, such as reading. In addition there seemed to be a disconnect in terms of the activities that youth had *wanted* to experience and were told they *would* experience, with what they actually *did* experience.

Table 15. Ranked youth focus group responses to the question *What did you enjoy least about the program?*

City	Gender	N	Responses (Ranks)
St Paul	Females	7	Looking for scat (4) Picking up trash (1) Digging for worms (1) Watching the apples rot: DISGUSTING (1) Too many big/little words Looking for rocks Don't like apples Bird watching: NONE Looking for animal homes: NONE
St. Paul	Males	4	Planting potatoes (2) Digging for worms: getting muddy (1) Bug catching (1) Obstacle course Reading a lot in the books Finding animal tracks Painting rocks Finding rocks: raining Doing missions 3x a week Maze
St. Paul	Females	6	Reading more than doing (5) Sitting in the sun (4) Bugs crawling on us (1) Didn't complete stuff (1) Rolling down the "big" hill (1) Being with the ticks Reading a lot Waiting for others (to finish) Walking in the sun Getting hurt Exercising
St. Paul	Males	6	Not holding frogs (5) Never got to build forts (4) Reading in the book (2) Nature walks (2) Didn't like walking Looking at trees Scavenger hunts Obstacle courses Spending time in 'time-out'

St. Paul	Males	6	Rolling down the hill (grass was itchy!) (8) Activities in the book were easy (3) When other people were talking when someone was reading (1) Sitting on the hard ground Finding mud puddles Walking Looking at things from different heights
San Francisco	Coed	11	Books: reading, listening to people explain over and over again Some activities were boring Didn't do all the activities – only did 10 and I felt rushed reading the book Missions were too long

What Youth Learned by Completing the Program

A variety of comments were made by youth regarding what they learned from the program. Identification seemed to be a fairly common theme, as multiple youth indicated that they learned about "different trees", "different bugs" and "different rocks", how different animals "eat and live", and what the differences were "in hibernation and migration". Additional comments focused on a greater recognition of what "nature" is, with one youth relating a need to "help the environment" and another stating that we "need to be nice to animals".

Several comments related to concepts prevalent in the youth development literature, such as communication and cooperation. One youth stated that "you always need to cooperate with people, even the ones you don't like." This statement was supported by another youth who claimed that you should "try to be nice to others", and one who voiced her opinion that the program helped teach "being able to work with

others". Some youth found the program to beneficial by providing further opportunities to develop reading skills, while others learned about the need to stay active.

While there was some agreement on learning gained from being exposed to the program, a dichotomy in responses was evident. One youth in San Francisco claimed that "nature is getting better", whereas another from San Francisco indicated that the "environment is not getting better and is dying". These may be a result of differing attitudes or social norms that the youth experienced outside the program setting, which potentially is supported by comments from several youth in St. Paul. There were indications that these youth "didn't learn that much because I already read about it", with one saying "my family goes on nature walks". This may be indicative of previous and/or ongoing exposure to nature, and the outdoors, through other elements of their environment, such as the family and/or school.

Table 16. Youth focus group responses to the question *What did you learn by completing the program?*

St. Paul	San Francisco
Nature	Nature
What an ecosystem is	Reading
Not that much b/c already read about it*	Nature is getting better
Different animals: eating & living*	Help the environment
Animal tracks*	Environment is not getting better & is dying
Different trees*	Animals: birds & words
Different bugs*	
Insect body parts	
Hibernation/migration et al.	
Writing	
How to swim	
How to prepare to go camping	
Campsite survival	
Different kinds of rocks	
Be nice to animals	
Having fun	
Staying Active	
Being able to work with others*	
What you need to be prepared	

*. Indicates responses that multiple youth provided.

Activities Youth Wanted to Learn More About

Youth indicated that there were a variety of activities that they wanted to learn more about, or would have wanted to learn. In reviewing comments proposed by youth, many of these activities related to actually spending time outdoors. These comments seemed to be connected to the idea of camping. In both cities youth discussed wanting to be able to "make camp fires". Several girls in St. Paul discussed wishing they "knew what to do if we were lost in the woods". They mentioned a desire for knowing how to "find food, like edible plants and berries", and to "build shelter". The idea of shelters was noted several times, including "building a tent", and seemed, based on previous

comments during the focus group, to be an activity that many youth did not get the opportunity to do. One youth indicated that she wanted more information "on constellations", with other girls in her group showing support and how this would help, particularly if "you got lost and needed to find your way". This was followed with suggestions of needing to have more information on how to use maps and compasses.

Fewer comments related directly to the idea of "nature", although youth in both cities did comment on wanting to know more about "exotic" animals, such as "African animals", "crocodiles and coyotes", or "other animals, besides cats, dogs, and birds". This may simply be due to the indirect exposure to various "exotic" animals that youth are often exposed to in books, school and TV. Kellert (2002) refers to these as symbolic or vicarious experiences. Along these lines, one youth commented that he thought that he thought there should be more on "how animals are affected by pollution", while others just wanted to know "more about insects and bugs". One group of boys discussed, rather passionately, a desire to know more about global warming, with specific mentions related to "levels of carbon dioxide" and "the ice caps melting".

The desire for more activities was evident by youth in both cities, but more concentrated and defined in St. Paul. A group of girls described how "field trips would be a lot of fun". When asked for examples the girls mentioned places such as "the recycling plant", "a petting zoo", and an additional location that through description was determined to be a nature center. According to one youth activities should be included that "allow us to practice what we learned", whereas another asked for more "obstacle courses and physical activities, like biking and running around… things that you need to do". Several youth agreed with this statement, but one noted wanting "activities such as

running around, but not obstacle courses. I don't want to pick things up; just want to run around and play."

In addition to the purely "physical activities" there was mention of wanting to do "projects", which were described as being art-related, such as nature collages and making bird feeders. The diverse range of activities desired by youth demonstrates a potential need for additional "hands-on" experiences. Theses would support the current curriculum as constructed, or could supplant the numerous readings contained in program workbooks.

Table 17. Youth focus group responses to the question *What activities do you wish you could have learned more about, or would want to learn?*

St. Paul	San Francisco
Constellations	Camping in-depth
Making a water balloon	More activities
Field trips	Insects/bugs
Building a tent	Other animals (besides cats, dogs, birds)
Making camp fires	
Space: planets, sun*	
What to do if lost	
Orienteering: map/compass	
How animals are affected by pollution	
Exotic animals*	
Physical activities (i.e. biking, running)*	
Art based projects	
Oceans	
Fish & dolphins	
Activities to practice what was learned	
Global warming*	

*. Indicates responses that multiple youth provided.

Activities Youth Feel More Comfortable with after Completing the Program

Youth indicated that there were a variety of activities that after completing the program they would feel comfortable doing by themselves or with their family. This included both physical activities, such as "rolling in the dirt", and more cognitive learning activities, such as "reading". Youth in San Francisco indicated that they had the opportunity to do a sleepover with a "fake campfire", and apparently enjoyed this activity as "building a campfire and make s'mores" were indicated as activities these youth would feel more comfortable doing either on their own or with their family. Additional comments supported the ideas of making GORP ("good old raisins and peanuts"), and doing art projects, like "making bird feeders". Several boys commented on how they would now feel comfortable "holding onto a frog", although previous notes indicated that some of these same boys didn't like looking for bugs or insects. Fewer comments related specifically to activities demonstrating an appreciation for nature, although several boys discussed that they would be "picking up trash in the neighborhood" and "recycling more". Additional comments from this group suggested that there was "too much garbage" around their homes and the recreation center, and "it needed to be picked up".

Youth in St. Paul, while expressing similar sentiments overall, displayed more sense of "independence" than youth in San Francisco. This was evident in comments that related to an increased level of comfort in "spending the night at a friend's house", "biking at night", or even "walking alone at night". These comments should be considered with a measure of caution as they may not truly reflect learning or skills gained from the program but could potentially be the result of naturally occurring maturation effects in the study sample. Relative to the program, though, were

suggestions of feeling comfortable "going for a hike (alone) or walk in the woods", and "playing in my backyard". In addition, one girl indicated that, "going someplace with my friends and not my parents, like the park". These statements may indicate maturation as well, although the content was more directly associated with activities found in the curriculum.

Table 18. Youth focus group responses to the question *What activities would you feel more comfortable doing on your own or with your family?*

St. Paul	San Francisco
Going someplace with friends (i.e. park)	Rolling in the dirt
Searching for rocks	Making s'mores
Making bird feeders	Building a camp fire
Making GORP	Treasure hunts
Biking during the day or at night	Reading
Walking at night	
Hiking/walking alone in the woods*	
Playing in the backyard	
Spending the night at other houses	
Playing on a playground	
Picking up trash in the neighborhood*	
Recycling	
Holding frogs*	

*. Indicates responses that multiple youth provided.

Recommending the Program

Youth provided mixed reactions related to whether or not they would recommend the program to a friend. While many indicated that they personally enjoyed the program, as evidenced by comments made throughout the focus group process, some did not believe their friends would. Reasons cited appeared to center around the comment "there is too much reading", and included "my friends don't want to do book activities, it's boring", the program is "boring, my friends would not read at all", and they are "not into

reading and want other people to read to them. They don't like going outside." One youth firmly stated that "if I didn't like it they won't like it, they are lazy like me". Another claimed that he "would mention it, but that my friends don't follow through on things."

Previous comments tended to focus on characteristics of youths' friends, and not programmatic elements. Numerous youth though commented on the "fun nature" of the activities that they were given the chance to do. While for some there was difficulty in pinpointing which activities in particular "made the program fun", others mentioned the chance to "go on field trips", "be outside", and "run around". One youth mentioned that there was "another program (in the area) that offers more activities", yet suggested that the program would be "more fun if we could take notes in a notebook rather than reading. Then we could write down what was important." Other youth agreed, and suggested additional ways to make the programming more appealing to youth, such as "if there was more activities and less reading", "not so much work in the book", and "more fun activities with less chapters, like four or five (chapters)".

A few youth responded that some of their friends like reading, and therefore may be willing to do the program. The focus of the responses to this question for many youth seemed to be less about the actual activities and more to do with the reading component of the program, which was previously indicated as being "too much like school". Youth at this stage of development are at a point as well where the transition tends to be from "family-oriented" to "peer/friend-oriented", which may be evident in the age range of the youth involved in the study. The impact that peers or friends have can therefore not be

overlooked, thus making these responses critical in recognizing the salient elements that may be inviting for youth to participate.

Table 19. Youth focus group responses to the question *What reasons would you or wouldn't you recommend this program to a friend?*

St. Paul	San Francisco
NO No particular reason* Other programs have more activities Just didn't like Boring Too much reading & writing* Friends • not into reading • would just get into trouble • don't follow through	NO Boring Too much reading Friends • not into reading • are lazy • don't like the outdoors • would just get into trouble
YES Activities were fun* Field trips Like going outside Wiling to tell friends about If there were more activities/less reading If could keep notes rather than reading More fun activities, less chapters Get good snacks Better than getting into trouble	YES Like to read

*. Indicates responses that multiple youth provided.

Nature Defined

The final question posed to youth during the focus group process asked youth to define and/or describe the term "nature". This question was presented to youth based on dialogue by Louv (2005), who suggested that the tendency has been to see the most significant nature as occurring somewhere else, typically away from where people live, and therefore a need exists to redefine the concept of nature such that nature is considered

closer to home. Louv proposes the backyard, a city park, a farm, an area of woods, or even a rooftop garden as examples of this "nature close to home".

Keeping this suggestion in mind youth were provided an opportunity to express their views, ideas and opinions. In general, responses were genuinely positive, with only one that could truly be interpreted as having a negative connotation. The responses were varied, indicating a very subjective and personalized view of the concept of nature, which is consistent with recent notions of nature being a broad and encompassing construct.

According to youth, *nature*…

"Good, plants help us to make things"

"Beginning of life"

"Good, because it helps us build stuff that we using today"

"If hurt will have not trees, and no apples or bananas"

"Good, some people want to live more and have a healthy life"

"Feeding animals, don't harm animals"

"Not to hunt down birds because it (birds) help us… they may eat something and poop it out so that it grows, like a seed"

"Trees help you breathe, soil helps people plant flowers"

"Gives you hope"

"Is fun"

"Outside… a fun place to be outdoors"

"Is therapeutic: get things from"

"Good hope… people get hope from"

"Nature walks"

"Plants, water, and animals"

"An ecosystem"

"Flowers"

"Animals, plants, trees… if it wasn't here we wouldn't be here"

And:

> "Boring, I don't like the outdoors: I would play video games indoors, watch TV and eat"

St. Paul Staff

One focus group was conducted with recreation center staff and administrators in St. Paul. Two representatives from each of the four sites involved in the study were present, with one site sending three staff, for a total of nine recreation center staff. In addition, two administrators from the City of Saint Paul Parks and Recreation Department were present. These individuals indicated that they were there to support staff, and to listen to the experiences that staff had in implementing the program in order to make internal recommendations within the Department. They did not actively participate in the focus group discussion. Consideration is warranted though as to whether or not the presence of these administrators at the focus group impacted the responses provided by individual staff members. The primary researcher noted their attendance but does not believe that there was a response effect which led to biased replies on the part of recreation center staff to the questions posed.

Discussion and feedback from the focus group session with recreation center staff and administrators was audio recorded and later transcribed for analysis. The process involved initiating brainstorming and discussion relating to the questions outlined below. Following the recording of responses to Questions 1 and 2 staff were asked to indicate a level of importance by ranking each response.

1. Strengths of the program;
2. Limitations to the program;
3. Improvements to the overall program;
4. Strengths and weaknesses of the curriculum and its individual components;
5. Modifications and adaptations employed at individual centers;
6. Additional resources utilized or would be beneficial for future implementations;
7. Challenges to implementing the program;
8. On average how much time did you spend preparing to implement each mission?

Descriptive narratives are presented for all questions posed during the focus group process. Rankings related to *Strengths of the program* and *Limitations of the program* are reported in tabular format to preserve the integrity of the responses provided by individuals within the group.

Strengths of the Program

Recreation center staff were asked to identify strengths of the program, and then instructed to rank those items that had been listed. Preliminary themes that emerged from the strengths of the program included curriculum elements and structure, inclusion of "hands-on" activities, reinforcement of key concepts and learning, and the ancillary resources provided. Staff indicated that these resources, such as backpacks and compasses, offered "something for the kids to own, and thus make a connection to the program", and that "every child had the same thing to work with". Furthermore, staff

was appreciative of the equipment and bags provided to implement the curriculum. The books "were very informative", as one staff commented.

Curriculum elements and structure, in addition to inclusion of "hands-on" activities were at the center of the discussion surrounding the strengths of the program. Structure, although not ranked high by many staff, served as the foundation for a curriculum that the majority of staff agreed had "detailed missions. The content was well laid out, and the objectives were easy to follow and understand." In addition, one staff member commented that the missions were "self-explanatory and detailed", while another agreed that "the missions were very detailed, so that it was easy to know what you needed to do and to get done". Staff believed that the structure enabled "flexibility" in each mission, and that "it was easy to 'add on' to the subject of the missions", and to review the "other options of what could be used or what could be done". Accordingly, the curriculum produced allowed for adaptations and modifications based on the needs of the center. In this regard there were alternatives that staff felt could be implemented based on their particular site and the resources that were available to them.

Furthermore, staff noted that the structure of the program, allowed for a "smooth order that flows". There was definitely a noticeable "succession in the program… (it) follows an order and is therefore not confusing." One staff member mentioned she,

> "…liked how the missions started 'big' and moved 'small'. There was this idea of talking about the Earth and then going into your neighborhood."

This progression was evident in the activities as well. Staff comments focused on how there are "plenty of 'doing' activities', and that there "was a sequence to the 'hands-on' activities". They indicated that there was an encouraging nature to the program yet the

program allowed for some degree of "healthy competition" to take place amongst the youth. Staff further noted that the re-enforcement and summaries of key concepts were valuable in supporting reflection on previous missions.

Table 20. Ranked staff focus group responses indentifying *Strengths of the program*.

Responses (Ranks)
Flexibility of missions (9)
Missions detailed (8)
• content
• objectives
Plenty of "doing" activities (4)
Progression of 'hands-on' activities (3)
Succession (1)
• follows an order/not confusing
Starts big and moves small (1)
• Earth → neighborhood
Structure (1)
Reiteration and summaries in the mission
Subject matter is spread out
'Smooth' order
• flows
Self-explanatory and detailed
Terms (bolded) were helpful
Equipment and bags provided
Ease of 'adding on' to subject of missions
Kids have 'something' to own
• backpack
• compass
• projects
Listed other options of what could be used

Limitations of the Program

Recreation center staff was asked to identify limitations in the overall delivery of the program. In similar fashion to the discussion on strengths staff was then instructed to rank those items that had been listed. The preliminary themes that emerged regarding potential improvements were centered on curriculum, activities, setting/location,

resources, and participants. The majority of recreation center staff indicated that there was too much reading involved with the program, such that they and the youth "thought it was *too much like school*, and therefore got turned off". The comments of one staff member were particularly relevant to this notion as she stated,

> "If there were just missions and less reading material that would go better with many kids... especially in the summer."

This idea of the program being "school-like" could be seen as well in responses regarding loss of interest, and vocabulary that was "too big for younger children", that was "not appropriate for the younger youth in our program" and that "our group of children was younger and had a hard time understanding what we were discussing on most days." The activities, in this regard, were "too repetitive. We constantly felt like we had to do nature walks and again, the kids loss interest." Other staff thought that while there plenty of "doing activities", as noted in the discussion on *strengths of the program*, there could have been more "art-based activities" aimed at youth "who don't like the competitive or physical kinds of activities." A desire for more "game-based" activities was mentioned as well. In addition, a request and/or need for more "fill in" types of activities, such as when there were restrictions or barriers to completing a mission as outlined, was indicated as something that would have been helpful.

Resources were another topic during the discussion on limitations. This theme encompassed a variety of areas, including how the activities "required materials that we didn't have, and therefore we had to make do the best we could. This limited us from time-to-time in how we were able to implement missions." Location and weather were additional factors related to limitation based on area. A few staff commented that they

didn't feel the program "fit with the inner city, that it didn't take into account the barriers we're working with". One staff member noted that,

> "…we don't have a location that really allows us to go on 'nature walks'. We're very limited in the space we have available to us. And you can only take the kids around the park so many times."

Several staff noted that while space was available, the summer weather "prevented us from being able to fully do certain missions. For instance, there were no animal tracks in the dry dirt around our center so the kids weren't able to see anything." Dry conditions were also to "blame" for issues with being successful in missions that involved planting and looking for fossils.

Staff further commented that there were issues with the materials provided not working, such as the compasses. Additional hands-on resources were expressed as possibly assisting in making the knowledge pieces "more interactive", and that more "visual materials" would have been nice to include for leaders to use. Although the comment was made and supported regarding youth "getting something" (e.g. backpacks, compasses), these "came apart… similar to how the book always fell apart or the page ripped out". The books would have been better if "there was something like a perforated or completely binded way to do it like a work book you would find in a store… that would be better." The comments offered by staff seem to suggest that while these supporting materials were a beneficial addition to the program, the quality was inferior, and that they were less helpful in actually completing missions when they did not work or if they fell apart.

Table 21. Ranked staff focus group responses indentifying *Limitations of the program*.

Responses (Ranks)
Too much reading = too much like SCHOOL (5)
Nature walks (4)
Materials (4)
• matching what rec centers actually have
Vocab too big (3)
Loss of interest (2)
Needs to fit w/inner city (2)
Not enough 'game-based' activities (2)
Need for 'art-based' activities (1)
Too repetitive (1)
Planting issues (1)
Location fit (1)
Not enough visual materials (1)
Seasonal factors (i.e.: couldn't find animal tracks) (1)
Issues with materials not working (i.e.: compasses)
Not enough 'fill ins'
Too much overlap in missions
Energy IN/OUT activities *not* prominent
Appropriate for age?

Improvements to the Overall Program

The primary researcher chose not to pose this question to staff participating in the focus group process. The question was considered unnecessary in the sense that responses being provided for other questions by staff were illustrating opinions, ideas, concerns, and suggestions for ways in which to improve the overall program, as well as specific missions and content of the curriculum. This information was gathered indirectly through these responses, and appears in the descriptive narratives related to individual questions.

Strengths and Weaknesses of the Curriculum and Individual Components

Discussion during this section of the focus group session centered on specific topics of the curriculum as well as issues youth, and staff, noted while engaged in or implementing curriculum topics. One of the common areas mentioned centered on restrictions at each of the individual recreation center sites. Several staff commented on the difficulty in conducting planting activities, particularly with saplings. As one staff member indicated, "we had nowhere to plant, and had to seek alternatives. We weren't allowed to do that at our site." This statement was supported by a staff member working at a different center, who noted that,

> "…we didn't have a place on site to do it, and youth can't plant at home. There wasn't relevance for the youth. We ended up planting along a state trail, but our access for caring was limited. The youth were concerned about the saplings but we couldn't always go there."

The idea of restriction was evident as well regarding other activities, such as going off the property for field trips, or taking nature walks. Several staff indicated the funding issues "prevented us from going to someplace like the zoo", although they were unaware that those resources may have existed. In later conversation staff mentioned that "it was hard to get youth to go on a field trip, even when it didn't cost anything".

Furthermore, a number of staff noted issues of access, claiming that there really wasn't an area for them to "walk with the youth that really was nature". This supports the idea of how staff was working with youth in defining the concept of "nature", and whether a small patch of land with a few trees, for example, could be described as being nature. Those staff that did have readily available access for "nature" walks noted that these were most effective when for youth when,

> "…they were more than just walking, had a purpose. When we gave our kids had a list of things to look for walks brought awareness to what was around. Our kids liked to look for things… spider webs, birds, other things."

Inconsistency with supporting resources, specifically the compasses provided, made a few missions "difficult to complete when they didn't work correctly".

An additional restriction indirectly related to access and activities had to do with the "public access" available on recreation center property. One center chose not to do composting, as there was "no secure area" to implement the activity, with one staff member indicating that "there are a lot of people who come to the facility. I can picture some of the youth in the neighborhood flinging the stuff at each other." This was true for picking up garbage as well. Staff at several recreation centers noted the common occurrence of youth finding "beer cans and other stuff you really didn't want the kids picking up", with one staff member identifying "cigarettes and cigarette cartons always lying around." Staff did note, however, that making activities "more competitive" often increased interest in activities such as picking up garbage, taking nature walks, and completing scavenger hunts.

Although not directly a result of the curriculum, dry conditions were frequently noted as a source of why certain activities were less successful. Staff frequently agreed that searching for "animal tracks was difficult, as the ground was dry and hard… and the only animals around our center are dogs and squirrels". One staff member thought of suggesting to her youth to "just draw the tracks, rather than looking at the few that were there". In addition, these conditions presented problems when "digging for worms, as there weren't any". In this instance one staff stated that "we went and got them from

Wal-Mart". Further issues concerning the dry conditions noted for being unsuccessful in missions that involved planting and looking for fossils.

Additional activities noted during the discussion included the use of art activities, such as "painting rocks *rocked*!", although staff did note that more of these types of activities would potentially improve the experience for some youth. The program suggestion of having youth "camp" in the recreation center overnight received a strong "thumbs down". Staff generally indicated that they "had no desire to do it, and didn't really propose this to the youth". They deemed this activity as having many issues, yet there was no elaboration on what those issues were. The mission regarding viewing the world from different heights worked, in the words of one staff, "so-so", as the "kids didn't take it seriously, didn't really get it". A number of staff indicated that "limited options existed in terms of what we could use for a variety of heights". This limitation, based on the layouts of each recreation center, may have been more perceived than actual, yet staff determined that there really weren't many alternatives available to them.

In addition, one of the early missions which had youth rolling down hills was discussed. Similar to other activities mentioned, there were "mixed reactions by our youth", as well as by staff at individual recreation centers. Some staff noted that the youth "got into it, especially trying to get up and sprint after rolling down". One staff member, however, expressed with a mixture of humor and concern that "our hill we used was really steep, people use it to go sledding in the winter. We were worried cause the kids couldn't stop!" The final activity mentioned concerned making GORP, or "good old raisins and peanuts". There seemed to be consensus among the staff present that this was a "great way to introduce alternative healthy snacks", and that the youth "really liked it".

Most of the staff was in agreement that they needed to “tailor the contents to meet the likes and dislikes of our kids”, but that this was a well received activity included in the curriculum.

Table 22. Staff focus group responses identifying *Strengths and weaknesses of the curriculum and individual components.*

Responses
Saplings • nowhere to plant • had to seek alternatives Scavenger hunt/treasure hunt • brought awareness • compass – worked vs. didn't work Making things competitive within missions Animal tracks • some were able to while others could not find Physical challenges Nature walks • works w/centers that have access Alternative activities • what is/isn't feasible (e.g. going to the zoo) Restrictions by location • what are/aren't allowed to do (e.g. going off property requires permission) Making compost • public access issues at rec center Camping • 'thumbs down' Fossils • none to be found in the summer time Painting rocks ROCKED! Digging for worms was tough • ground was too hard • imported from Wal-Mart GORP • liked it, loved it, want some more of it! Picking up trash • make it competitive • issues of what was being picked up (e.g. beer cans) Heights • only worked 'so-so' • didn't 'get it' Rolling down the hill • mixed reactions • both enjoyment & distaste

Modifications and Adaptations

Staff were encouraged and entrusted to make adaptations and modifications deemed appropriate or necessary to support program delivery at each individual recreation center. Specific suggestions were offered in regards to what adaptations and modifications they found to be appropriate, enjoyable and engaging. These included tailoring activities to meet the diverse needs of youth at each center. One activity mentioned by several staff was "making GORP… you had to know what your kids would eat, as well as what they couldn't. You wanted to make sure it was healthy too". In cases were adaptations were made, these were done with consideration of the resources available and the connection to the curriculum. A common modification was incorporating the idea of "teams and competition", so that youth were more interested and engaged in the activities and the process. In addition, one recreation center sought out a local organization (REI) to support and assist with the implementation of activities related to using maps and compasses. A few staff suggested that continually "varying between youth and adults reading", "presenting and reviewing key concepts", and "varying the schedule of when and how lessons are implemented" were modifications that increased levels of interest and engagement. In regards to the latter, staff implementing the program would use one day a weeks as an opportunity to review previous lessons and introduce the upcoming one, while using the second day to focus specifically on the assigned mission.

Few suggestions were offered during the focus group session, with many staff indicating difficulty with recall. In reviewing and analyzing the total responses, however, there is evidence that staff were making modifications and adaptations at their sites.

During this part of the session staff seemed to recall larger, overall modifications and adaptations as opposed to individual modifications and adaptations that were made during specific missions. This may be attributable to the timing of the focus group, as several recreation center staff had already transitioned into school or others jobs following their summer positions, to being more focused on the present group of youth which staff was working with, or the considerable number of missions that were completed at each recreation center over the course of summer programming.

Table 23. Staff focus group responses indentifying *Modifications and adaptations at individual centers*.

Responses
Creating partnerships with local agencies (i.e. REI)
Tailoring activities to meet needs of youth at center
Varying between youth & adults reading
Incorporating competition and teams
Presenting key concepts
Varying schedule of when & how lessons are implemented

Additional Resources Utilized or would be Beneficial for Future Implementations

Staff was asked to discuss additional resources that were utilized or that they believed would be beneficial for future implementations of the curriculum. Consistent with previous comments, differences in ability, particularly related to education level as a product of age, was noted by the staff. Reading ability was truly a noticeable difference between age groups, with one staff member suggesting a "need for more pictures and 'smaller words'. I have more little kids in my program and they struggled with this." The structure of the missions and resources were assessed as well, with one staff member indicating that,

> "…they (youth) often wouldn't remember what they had read while they were doing the missions. They forgot the reading. Pamphlets with general info for the youth would be great. I think it would be easier (for youth) to get into it if they knew more about it, and it was available to them. They would love taking info into the woods if they had it."

Similarly, the issue of needing additional flexibility was considered as being beneficial going forward. This was described as the particulars of implementing the program, such that "missions and the activities within those missions were outlined and detailed to be delivered in a certain manner". The staff member who mentioned this elaborated on her point, saying that,

> "…how you're teaching something, and need to be flexible. There's variety in learning styles in these kids. The workbook, the missions, they need to meet the needs of the youth learners to lessen the challenges. There's the 'Säjai way' of doing things, in a specific way. But that's not flexible for these kids."

These statements illustrate a dichotomy in program implementation, particularly as this relates to issues with program fidelity and needs of the program population.

There was a common concern and discussion regarding the idea of resources in general. Specifically mentioned was how some of the resources provided, namely the compasses were "inconsistent and didn't seem to really work well. Our kids were walking in all directions, sideways, and none seemed to match." There were additional resources, including magnifying glasses and bug catchers, that staff felt would be "helpful to have in order to complete the missions as stated". One staff member indicated that "our kids liked to look at things, especially bugs, and that (magnifying glass) would have been great for that". Staff further expressed concerns about "not having access to resources", and the inability to "get stuff you need, when you need it". The suggestion

was made to this point about the possibility of sharing resources, such that "enough supplies would be purchases for a larger group of youth. Each center would then implement the program on a given day rather than several times a week, and therefore everyone would have what they needed." This was generally met with positive acceptance, particularly by staff at those center which were "limited in certain areas because we're in the inner city. We couldn't get some things."

The idea of field trips was included in the discussion on additional resources. Staff was fairly in agreement that field trips would have been nice, but that there "wasn't a real feeling that these were a viable option" based on the availability of resources. Staff were not even sure how youth would embrace these, as staff members at one recreation center indicated that,

> "…we couldn't get kids to go, even to the Mall of America. It didn't cost the youth anything but the parents just wouldn't allow them to. We therefore didn't take them, and didn't really consider them to be an option."

These comments, coupled with others mentioned during this time, led the primary researcher to pose two additional but related questions that focused on how to get kids excited about being outdoors, and how might this be different based on the seasons. Staff indicated that weather played a big role, and that youth involvement, according to one staff member "was often dependent on the weather. If it was too hot, or rainy, that maybe we needed to have more indoor activities". This same staff member went on to describe youth in her program as being "outdoor kids… they're not playing video games or sitting around'. She claimed that the behavior of these youth was a function of "where they live,

which is public family housing, and they're just outside" because there are not other options available.

Additional responses offered by staff to these questions strongly suggested that,

> "…missions and activities *need* to be 'hands-on'. Youth have to be active, doing something. Such as with art or scavenger hunts, they should pick things up. That makes them feel/be involved."

There was agreement from all staff involved in the process that "hands-on" activities were very beneficial and supported the curriculum goals. Activities, for example nature walks, "should be done with a purpose… not just aimlessly or without reason". This is the way to get youth excited, and thus keep them engaged.

Table 24. Staff focus group responses indentifying *Additional resources utilized or would be beneficial for future implementations.*

Responses
Separate versions for age groups • more pictures • smaller words • too slow for a variety of ages • challenging for younger youth
Flexibility • more variation to meet diverse learning styles • ability to only implement certain core missions
Resources • alternatives for staff • things that worked consistently • magnifying glasses • bug catchers • consideration for certain areas (inner city) • pamphlets
Field trips • ability at local level to take

Challenges to Implementing the Program

Numerous challenges to implementing the program were discussed by staff. Challenges focused primarily on issues related to participants and participation, and the curriculum structure. The organization of the individual recreation centers varied from site-to-site. Staff at one center that served primarily "drop-in" youth indicated that,

> "…scheduling the program was often difficult. There were conflicts with other programs, the family, other events. Our kids are not used to coming regularly, so this was a change. There were different kids, so attendance varied… we were constantly reviewing due to attendance."

Staff at other sites, including one that served a "traditionally registered" clientele, noted similar issues with attendance. Staff at this center noted,

> "…kids came into the program late, like in the middle of July or midsummer. We had difficulty figuring out how to get the caught up without slowing the other kids down. It was tough in terms of doing the program."

The repetitive nature of the missions, while helping to potentially ease some of the attendance issues, did not support "keeping kids active; they often got bored easily and their interest declines". There was a challenge of "keeping interest levels high, which was sometimes difficult with the amount of reading and some of the activities being easy". This was especially true for "older kids, who didn't seem challenged", particularly as some of the missions "were too slow for a variety of ages, especially for such a wide age range as we had in our program". Yet on the other hand missions were viewed, at times, as being "too challenging for younger youth". This was often manifested during the process of reading, where younger youth or those with less reading ability "slowed things down… it wasn't their fault, there was just a range of ages" that

were involved. In addition, these youth potentially weren't "able to connect with the material" due to reading level and ability to comprehend the information being presented.

The mention of there being too many missions supported the notion of repetitiveness, and the suggestion of decreasing the number of missions, or decreasing the dosage may alleviate some of these issues. One staff member pushed the idea of delivering the curriculum "maybe once a week, with longer activities and more information about the activities. Then it would be seen as a reward, rather than the program being 'forced' on them." The issue of dosage, how much is too much/how much is not enough, was evident in these comments. Furthermore, staff found the sequence of activities sometimes didn't flow or work with the overall program. There were "abrupt changes between various program elements", such that "we were going from inside-to-outside, or from high level activities to low level activities". While these comments were acknowledged, there is a question of how much was given to the sequencing of activities from an organization standpoint by staff so that these potential issues would have been alleviated.

Concerns regarding resources and restrictions were once again mentioned during the discussion of challenges to implementing the program. Staff re-iterated the difficulty they faced sometimes "in getting or having the needed or necessary supplies" to complete missions. Restrictions, discussed by staff, included those related to policies, area or location, and the program. As one staff mentioned, "we need permission to do certain things and that wasn't always something we could get". These points did receive much elaboration, possibly due to previous time spent covering the issues. Although these remarks were repeated during several discussion of the larger focus group process, some

appear to be connected to lack of initiative and organization on part of staff in completing the responsibilities necessary for implementing the program.

Table 25. Staff focus group responses identifying *Challenges to implementing the program.*

Responses
Drop-in centers: • scheduling of program • conflicts w/other programs, the family, events • having different kids • attendance Attendance • kids who come into the program 'late' • how to get them caught up Age differences • too slow for a variety of ages • challenging for younger youth Keeping kids active • bored easily • interest declines Keeping interest levels • activities vs. reading Sitting in hot weather Abrupt changes between other program elements • going from inside to outside • highly active to low active Too many missions • lessen to decrease repetitiveness Time • too much vs. too less Getting/having the needed/necessary supplies Restrictions • policy • area/location • program

Preparation Time for Implementing the Program

Staff indicated that on average 15-20 minutes were spent planning and preparing for each mission. This was fairly consistent across all four recreation centers, with an indication from several staff that this "amount of time was sufficient" in the overall implementation process. A few staff noted that they would often try to "look ahead in order to determine what supplies would be needed", or go so far as to "ask for the necessary supplies when I knew that we didn't have them readily available." Others, however, noted that this was not always possible, and that they "felt rushed or not fully prepared to implement what the mission asked us to do… rather, we worked with what we had". As indicated previously in the discussion on *challenges to implementing the program*, staff at particular sites felt they were somewhat restricted in terms of what they could do based on the area or location, as well as being able to get the needed or necessary supplies. Common responses in those cases were to the effect of "we made do the best we could."

Building off of these responses the question of what was specifically challenging in the preparation process was broached to the group. Several staff agreed with the comment that, "It's difficult to set aside time during the day to prep, particularly when you have kids and/or an overall rec program to be concerned with." One staff member mentioned that "we had a limited number of staff and 30 to 40 kids at our site to work with." Yet several staff noted how "the missions were very detailed so it was easy to know what needed to be done". This brings up several potential issues, such as (a) whether there were enough staff available to be implementing the numerous programs at

each site, (a) whether staff was truly comfortable with the curriculum content and/or activities, and (c) whether staff had sufficient access to the necessary resources . What can be inferred from the responses related to preparation time is that staff only spent what equates to approximately one-quarter of the actual program time that was suggested to complete the missions (one hour) preparing to deliver the curriculum to youth at their recreation centers.

San Francisco Staff

Although staff in San Francisco did not participate in a focus group process (see *Limitations* in Methodology), several staff members took the opportunity to reflect on the experience and draft written responses and narratives using the focus group questions for reference. Staff thus covered a wide range of topics. Some of the insights offered by these staff members were comparable to those noted in St. Paul, suggesting that although the populations of youth being served may be dissimilar in regards to certain demographic variables, and that the structure and organization of the recreation centers and programs differed, staff in both locations had "shared" experiences and were able to make a positive impact on some level.

Relatively few comments, such as one stating the "time commitment was a lot more than I expected, especially to reach (a) level of understanding with/for the kids", indicated a dislike of the program. Rather, there appeared to be consensus among the staff that the program was generally well received, as one staff member indicated that "You know what, I really liked it and they (youth) like it too because it is pretty structured and to the point of what you guys want." In addition, remarks made in relation to the strengths of the programs were noted by one staff member as,

> "…making the youth more aware of the environment and the outdoors. We were able to really 'see' the world around us and all the life and critters we share it with."

In addition, this same staff member indicated that participation in the program,

> "…reinforced all the ideas and beliefs about our environment and the part each of us plays in it."

These thoughts were shared by staff at other programs as well. One suggested that the "benefit is getting them (youth) out more, outside of our outdoor area here because they get used to it and we're very lucky". Another indicated that "we have a lot of activities planned and stuff which we like to incorporate in our program. It has been great as far as doing the outdoor nature thing". While one other staff member claimed,

> "I liked the Säjai® program and I'm very glad we participated in it… I love the concepts of exploration, open-endedness, and 'energy balance' that run through the current program. And I appreciate that this program had me leading activities and encouraging kids to do things that otherwise we wouldn't."

An assertion can be made from these comments that the program afforded a sense of awareness and discovery that potentially had been lacking or had not been considered. This included behaviors related to physical activity, being in the outdoors, making healthy choices, and appreciating nature.

Additional comments by staff included,

> "By planting trees the children learned how to care for something and watch it grow, as their parents do for them. They learned where to put their plants to promote growth and took turns watering them."

> "They had a wild time with their compasses, venturing throughout the park. The children drew their own maps with a starting and finishing point. They explained to everyone outside of their groups where their maps took them."

> "The children also learned how to create healthy snacks to maintain energy balance and a healthy lifestyle. The group enjoyed making their own trail mixes and fruit salad."
>
> "The kids line-up and roll one-by-one as fast as they can from one boundary to the other. Then they get up and run back to the starting point. It was pretty hilarious to watch, the kids pretty quickly would regulate/space out themselves, as they loved the challenge of running dizzy…"
>
> "One of the favorite things they did down there was finding all the diverse animal life at the beach…I think they were really surprised at how much they got here, how diverse the jellyfish were, how many colors they came in, the different sizes and how they got here."

The program thus seemed to provide an opportunity for staff to initiate and implement activities with the youth that were "out of the box" of what may be considered their "normal programming".

The facilities and weather in the region my have supported the unique nature of the program. Staff noted there "are lots of opportunities for outdoor activities here. Huge green open spaces, lots of trees, sand box areas…" Multiple areas are available for exploration and discovery, including parks, the beach and ocean, and small patches of forest/trees. One staff member suggested that her facility "was ideal for a program like this one with over 50 acres to experience". Unlike the implementation in St. Paul, there seemed to be an element in San Francisco of "mobility", such that staff was able, and potentially encouraged, to bring youth to a variety of diverse areas within the city. Staff gave the impression through their comments that to truly get the most out of the program the youth needed the exposure to these diverse locations, and to be afforded an opportunity to explore in them.

Similar to comments shared during the focus group with staff from St. Paul, staff in San Francisco did suggest potential areas for improvement as well as barriers in implementing certain lessons. In regard to the issue of barriers, one staff member noted that,

> "…we didn't have the chance to do the planting of the trees due to location problems, but this was what they (youth) really wanted to do, but we didn't have a chance to plan the trees because of the way recreation and parks run some of their parks are different. The gardeners will allow you to plant trees in certain parts and stuff like that."

She reinforced the notion that the youth were genuinely disappointed they weren't able to plant trees by expressing that,

> "…most of these kids go to school here, the schools are fairly close and they always bring them to the park. The kids want to see something that's theirs."

This was comparable to the experiences of staff who in St. Paul, who indicated that missions involving planting, particularly the tree saplings, were difficult to complete due to regulations imposed by the park and recreation maintenance department regarding what and where flora could be planted, if at all. While not explicitly discussed, the inference could be drawn that youth in St. Paul may share the sentiment regarding "wanting to see something that's theirs", as the arrangement of recreation centers and parks in the city are such that sometimes the centers are connected to schools, or in close proximity, and programs are often attended by youth year-round.

Several staff noted as well that the structure of the curriculum was a barrier, and could be improved. Comments focused on the number of missions, the length of the program, the appropriateness of info related to ages involved in the program, and the

nature of activities. A common assertion was that "it is a lot of reading, it definitely is". One staff member indicated that she,

> "…would not repeat it in this same format; I think a lot of ideas, missions, concepts are adaptable to a program that would work better for me and our kids."

She went on to discuss how,

> "…this info worked great as it's written for my 4th and 5th graders. Older kids know a lot of this already and younger ones were lost and overwhelmed…. Could missions be rewritten so there's three different pages that could be used? Same info/ideas in all three but have it written at basic, medium, and advanced levels so the amount of details and explanations are geared towards a targeted age/grade level group."

As previously detailed, these sentiments were shared by peers in St. Paul, who also indicated that there were varying levels and degrees of difficulty and challenge for the fairly large range of youth involved in the program.

While there were areas that staff indicated as needing to be addressed, staff was willing to further describe how they either adapted the program, or to suggest ways in which modifications could be made to improve the overall effectiveness. One staff mentioned that,

> "…for us, the program was more effective to combine lessons and spend about 40 minutes. It would have been more difficult to fit each lesson into the busy summer schedules."

Similarly, a staff member at another location concluded that,

> "…when I first looked at how many lessons there were, and how many weeks we had, and how it would fit in, I thought we would be able to do three in a day, but because of the reading it's not possible. They (youth) don't want to read maybe more than one or two pages and then I get them out right away; if they could do it where it was

> just all missions… Right from the beginning I changed the writing to draw pictures, to draw a picture of their work."

While another noted that,

> "I would prefer to have Wise Kids in clusters, rather than beginning to end. For example, cluster around gardening… Having a project that our learning was focused around might've made the info seem more pertinent to the kids. Currently it's too much info on too many topics in too little time."

This same staff member made the suggestion to "lessen the number of challenges so they mean more to the kids and are easier to focus on...", which was shared by staff at other locations who agreed that there would be benefits to "combine lessons so it's over within eight weeks for summer."

In addition, several staff mentioned a desire for additional or more supplies, such as "bug jars and magnifying glasses" to support the activities and curriculum concepts. Another recommended that,

> "…a poster (or set of posters) with challenges for the week/two weeks… let the kids check off when they've done stuff so they track their own successes and get to see it in a physical and visual way".

This comment speaks to the need of addressing a range of learning styles, which are present in the diversity of the youth which recreation centers and programs serve. The notion of learning styles was addressed by staff in St. Paul as well, and was suggested as a topic the needed consideration when revising and implementing the curriculum. Further recommendations included having "parent supplements" for interested parents so "they have info on specific missions and ideas they can do, conversations, etc.", and the inclusion of "some smaller activities that they (youth) could do, something that they could take home with them."

An additional idea proposed for future implementation was that notion of taking,

> "…a couple of trips out of the city to really experience nature… depending on the time of year… something different and unique that would use what the kids learned into practice to really experience the great outdoors outside the city."

While acknowledgement is given to the notion of providing diverse opportunities for youth to have a variety of experiences, the same connotation regarding how nature should be viewed as "something out there" can be inferred from these comments. This was a sentiment shared by both staff and youth in St. Paul, and lends to the conclusion that staff are modeling the idea of direct experiences in nature as having to be in environments not found within the city, or away from the areas that are common to the youth who attend these recreation centers and programs.

Qualitative Themes

The process of data analysis in qualitative inquiry involves making sense out of the text data (Creswell, 2003; Johnson & Christensen, 2004). Patton (2002) suggested that using a combination of observations, interviews, and document analysis enables the researcher to utilize multiple data sources as a means to validate and crosscheck findings. The evaluation of the *Wise Kids® Outdoors* curriculum implementation therefore incorporated multiple sources of data collection, including observations, focus groups, and supporting documents, as a means to support the exploratory nature of the completed study. The entire process of collecting, organizing and analyzing the data ultimately influenced these results, revealing what was discovered (Patton). Interpretations based on observations, focus groups, and supporting documents were the result of inductive

analysis leading to the discovery of codes, categories, patterns, and themes, and emerged from the researcher's interactions with the data.

Analysis of the qualitative data included a thorough review, examination, and synthesis of the observations, focus groups, and supporting documents, which included weekly feedback reports and summaries from participating recreation centers and programs. Rossman and Rallis (1998) describe coding as the process of organizing the material into pieces before bringing meaning to those pieces (as cited in Creswell, 2003, p.192). This involves taking textual data, segmenting segments or paragraphs into categories, and then labeling those categories (Creswell). The analysis involved the use of open coding, wherein text was examined for distinct, separate segments, which were identified by type and coded individually (Patten, 2009). In order to discover or determine potential relationships or patterns which existed between the codes, the codes where re-examined. Coffey and Atkinson (1996) claim that exploration of how the codes and categories relate to original data, to other data, or to theoretical ideas is necessary in order to reduce the potential of information or data loss. The re-examination resulted in the formation of overarching categories under which these codes were inserted. The coding process provided a means of generating descriptions of the categories and themes that were used in the analysis (Creswell).

The use of a collective (multi-site) case study design further necessitated the need for cross-case analysis, which involved searching for similarities and differences across the cases, defined as being the recreation centers and programs implementing the curriculum Johnson & Christensen, 2004; Patten). During the cross-case analysis consideration was given to what elements of the text were converging or diverging with

the themes or categories that had been established (Johnson & Christensen). The sections of text that demonstrated regularities and/or patterns were viewed as converging, whereas diverging evidence was contradictory, with sections of the text indicating clear differences.

The process resulted in the creation of diverse yet interconnected themes related to and evident throughout the implementation process. The following section provides brief descriptions of these themes in order to provide the framework for interpretation and discussion of the data in Chapter 5. Table 26 displays a listing of the proposed themes. In addition, a list of questions generated during and after the completion of qualitative data collection is presented after these descriptive paragraphs for the purpose of illustrating the primary researcher's thought process as well as areas of emphasis in reviewing, reducing, and coding data. These questions may serve as potential foci for further research related to the current study.

Table 26. Qualitative Themes.

Themes	
Engagement	Reflection
Staff Characteristics	Organization
Dichotomy	Benefits
Delivery & Fidelity	

Engagement

Engagement measures the extent to which there is connection or attachment. In the present study engagement was explored through two lenses of experience: those of the youth, and those of the staff. Through these lenses engagement was discovered and observed as the interconnection and development of relationships between youth,

between staff, between youth and staff, and with the curriculum. The concept or notion of engagement is believed to be part the foundation for developing and implementing successful programs.

Staff Characteristics

Staff played a critical role in the implementation of the program, and was believed to have ultimately impacted the outcomes and individual levels of development for youth. The relationships that staff forms with youth are crucial in the engagement process, and in turn for impact to take place. In this regard, staff displaying certain characteristics, or sets of characteristics, may be afforded with an easier transition in creating those important relationships or bonds with youth in the program setting. Characteristics that staff consistently demonstrated to support this notion included behaviors which displayed patience, encouragement, support, guidance, and the ability to appropriately respond to apathy, lack of engagement, and necessary redirections. In addition, consideration was given to modeling that was deemed to be either positive or negative, the use (or non-use) of varied leadership styles (autocratic vs. democratic vs. free reign), and the enablement of behavior and activity not consistent with the program.

Dichotomy

Dichotomy referred to the dualistic nature of responses and reactions to the program, including curriculum activities, content, and structure. Differing opinions on nearly every topic of the program existed, which was not unusual nor to be unexpected. The level, however, appeared at times to follow very closely a 1:1 ratio of youth and/or staff who enjoyed or had a positive experience with the program to those who did not.

This was evident not only between activities, but recreation centers and programs in each of the cities involved in the current study as well as individual youth and staff. This dichotomy was manifested in the attitudes, values, and behaviors of participants (including youth, staff, and administrators), and demonstrated and exhibited in both verbal and non-verbal communication throughout the duration of the program implementation and research process.

Delivery and Fidelity

Program delivery concerned the fidelity of program implementation. Staff was systematically trained in the implementation process for the curriculum content and materials. In addition, staff was encouraged and entrusted to make adaptations and modifications which were deemed appropriate or necessary to support program delivery at each individual recreation center or program. The assumption was made that these adaptations and modifications were based on location, such as the surrounding environment and/or geography, and the availability of resources. The necessity exists to recognize the varying degree and forms of support that are accessible to individual staff and individual recreation centers and programs. These often were often dependent on the nature of the programs themselves, and were manifested in several ways. A mixture of methods and techniques were utilized in the implementation process of the curriculum as the curriculum is currently constituted. These were demonstrated in relation to the: (a) amount of time spent outdoors versus time spent indoors; (b) ability of youth to explore, particularly as a function of limits imposed by staff, resources, and/or location; (c) nature of offerings being youth-centered as opposed to adult-centered; and (d) use of resources presented.

Reflection

Reflection is the process of introspection or contemplation, the act of looking back on and reviewing an experience. Reflection has been considered as a catalyst for change, such that Dewey claimed that learning is in fact the process of thinking about an experience. Differing degrees of program and activity reflection were demonstrated and applied during the implementation and delivery process of the curriculum. A varying amount of time was spent reviewing and applying central concepts, as was there variety in how and when these were applied. This included both dynamic, in the moment, opportunities as well static ones, such as those occurring or taking place away from the program. The nature of these diverse styles may have differing degrees of impact on the overall transfer of key learning and meaning for individual participants.

Organization

Although a fairly consistent amount of time was indicated in regards to mission preparation, observation indicated that a wide-range of time was spent in the actual preparation and implementation of the curriculum. While overlap thus exists with the notion of program delivery, the notion of organization can be further separated when exploring the ideas of barriers to overall implementation, and implementing with fidelity. These barriers appeared to be rooted in the organizational structure of how individual recreation centers and programs were outlined in both cities directly involved with the current study. These barriers could be viewed and assessed as issues with staffing, resources, location, and administrative hierarchy. Inherent in these issues of organization were varying degrees of communication, in both positive and negative directions.

Benefits

The notion of benefits was witnessed in several elements. These included youth, staff, and program. Benefits were typically viewed as being of an intrinsic or extrinsic nature, and were most readily observable with youth participants. Varying levels were examined, ranging from the desire for wellness to the promotion of incentives to the meeting of basic needs. Benefits for staff and programs were considered as long-range outcomes for participating in the implementation of the curriculum.

The following questions were generated during and after the completion of qualitative data collection. These are presented to support and illustrate the process in reviewing, reducing, and coding data in order to interpret results.

- Consistency between observations and surveys?
- What differences exist between populations?
- What is the makeup of each center?
- How are programs structured?
- Differences between younger and older youth?
- Differences between boys and girls?
- Limitations at each center
- Staff turnover and issues
- Use of teachable moments?
- How much prep is going into lessons?
- Leader packs: which centers use - BC uses; LIN sometimes; DB/MC never
- How much time is spent outdoors related to curriculum: BC doing everything outside (no time spent indoors on missions)
- How much time is spent outdoors: lesson vs. 'normal' programming
- What local partnerships have been used/formed – BC: REI

- How long is the ‘average’ lesson?
- Being prepared: use of sunscreen? bug spray?
- Consistency in attendance?
- How much review of content is being done?
- How much is retained when youth read vs. when staff read?
- Evidence of ‘free exploration’?
- What did youth learn about ‘local environment’?
- What about modules for location – Midwest, Southeast,…

As previously indicated, an integration and synthesis of quantitative and qualitative findings is described in Chapter Five, with qualitative themes serving as the foundation for discussion and conclusions.

CHAPTER V

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Summary and Overview

This study explored the processes and outcomes associated with the implementation of an intentional, experientially-based curriculum for youth enrolled in out-of-school time programs. The study was designed to further investigate the premise that structured integrative health and wellness programs in this setting can serve a significant role in helping young people increase physical activity, nature based play, and nature appreciation. Several Research Aims and Research Questions were addressed:

> Specific Aim 1. To assess baseline and subsequent change in youth functioning based on the latent constructs of the Theory of Planned Behavior (TPB).
>
> Specific Aim 2. To examine the reliability of the subscales in terms of how well the set of items measured the latent constructs predicting and/or influencing behaviors.
>
> Specific Aim 3. To examine the relationship between intentions and behaviors to determine the consistency of being predicative and/or influencing one another.

1. What *impact* did the *Wise Kids Outdoors®* curriculum have on participants?
2. To what extent was the *Wise Kids Outdoors®* curriculum being *implemented* with fidelity?
3. What *strengths* and modifications would *support* the potential effectiveness of the *Wise Kids® Outdoors* curriculum?
4. What are the *dimensions* of nature appreciation, nature based play, and physical activity behaviors in outdoor settings?
5. Is nature deficit disorder a salient *determinant* of nature based play?

Surveys, observations, focus groups, and written reports were the sources of data collected during the study and served as the foundation for analysis of this evaluation. Triangulating data sources provided descriptive and detailed information to assess the implementation process in multiple layers as a means to provide a comprehensive examination of the process as a whole. The research and evaluation questions were critical for not only assessing the *Wise Kids® Outdoors* curriculum implementation, but for exploring ways to improve the initiative for promoting physical activity, nature based play, and nature appreciation in youth. Suggestions for improving the *Wise Kids® Outdoors* implementation process resulted from this overall assessment and exploration of various data sources. The completed evaluation study is significant in regards to demonstrating the needs, issues and challenges in implementing an intentional out-of-school time program focused on wellness and the natural environment.

Discussion on the need for Evaluation

Smith (2007) cites research that indicates evaluations of after-school settings have been mixed. Roth and Brooks-Gunn (2003) and Sloat et al. (2007) claim that the perceived conceptual and pragmatic difficulties associated with determining which outcomes are important and whether these can be measured validly and reliably, is a reason why evaluation of youth development programs have been problematic. Based on this finding, Sloat et al. suggest that most program evaluations focus on demographic characteristics of the population served, the type and frequency of services received, and the costs of delivering the program. Regardless of what approach is undertaken in the design, programs must be conscious of issues related to effectiveness, scale, and sustainability (Lerner & Thompson, 2002).

Program effectiveness is a determination of whether or not the program achieves the intended outcomes. Sloat et al. (2007) cite research that suggests two problems are inherent in conducting outcomes-based assessment. The first issue is that repeated measurement and longitudinal analysis are necessary for reliable assessment of children's progress through a program. Secondly, difficulty exists in identifying and assessing the outcomes of a control group, particularly as there is the potential that youth will change regardless of the intervention. This issue relates to the notion that other events typically occur during the intervention period, resulting in complexity to discern whether the program or the other events resulted in the desired effect. In addition, Lerner and Thompson (2002) cite research that indicates program effectiveness is often difficult to determine. A critical reason posited for this claim is that youth enter a program for a particular reason, typically based on previous experiences and/or current circumstances (Lerner & Thompson). The numerous reasons that an individual participates in a program may result in difficulty with determining whether change is the result of the program itself, is a product of the individual capabilities the individual possesses, or of outside factors unrelated to the implementation of the program. This issue was noted based on the self-selection of participants involved in the study (see *Limitations* in Methods).

Organizations must therefore consider the specific nature and needs of the individual youth that they serve, in addition to the interrelated factors that could affect these youth. Evaluations should consequently not be viewed with a "one-size fits all" mentality, but rather as a dynamic process that reflects on the variety and diversity of youth and the contexts which impact them. In considering this idea, multiple methods of

data collection were used in the completed study. These methods were utilized as a means of recognizing and acknowledging said variety and diversity of the youth involved in the program implementation, and making necessary adjustments based on the dynamic nature of the environments being explored. Evaluations of programs are thus conducted for a variety of reasons, and are completed at various stages of program development.

Formative or process evaluations are typically conducted while a program is being implemented. The use of formative evaluations enables program designers and those implementing the program to suggest changes to the program in midstream that serve to enhance the likelihood that outcomes will be achieved (Lerner & Thompson, 2002; Witt, 2005). Evaluations of this nature typically examine the quality of the program being delivered as well as the fidelity of program delivery, which concerns the extent to which the program content matches what the program design was intended to offer (Witt). Observations provided a means of witnessing the program being implemented and the direct experiences being had by participants and staff, while focus group sessions allowed for reflection on the same processes.

Summative evaluations are often completed at the conclusion of the program or at the completion of individual sections of a larger or longer program. These smaller sections may be learning or skill development modules that are components of the overall program. Summative processes seek to identify what changes occurred (if any), the reasons for those changes, and whether changes in participants occurred according to the goals outlined for the program (Lerner & Thompson, 2002; Witt, 2005). The use of summative evaluations serve to assist in ascertaining whether changes in an individual can be attributed directly to the program, or if there are other factors that may have

contributed to these changes. Summative evaluations thus serve as a means to determine whether a program is achieving desired outcomes (Witt). In the completed study quantitative measures were the primary source of data for conducting a summative evaluation. As stated previously, repeated measurement and longitudinal analysis are necessary for reliable assessment of children's progress through a program. Based on this notion pre-, post-, and follow-measures were collected to assess potential changes that may have occurred in participants, and to determine if these changes could be attributed to the implementation of the program.

A variety of techniques can be implemented to collect data for needs assessments, and formative and summative evaluations. Witt (2005) notes that these may include surveying participants, parents, staff, or other stakeholders; program observations, interviews, focus groups, or case studies; program attendance; and cost benefits analyses. Although any of these methodologies may be utilized, organizations must consider and determine the resources, such as ability and availability of staff, time, and funding, that are available to complete data collection and analysis as well as the types of information that these processes may yield.

Evaluations have the ability to empower the individuals who are delivering the program, as well as the youth who are participating in the program (Lerner & Thompson, 2002; Walker, 2007). Lakin and Mahoney (2006) cite the work of Zimmerman (1995, 200) and Zimmerman and Rappaport (1998) in stating that empowerment occurs when individuals, communities, or organizations attain a sense of mastery over their lives. Youth who are offered the chance to design, implement, and evaluate a program are afforded the opportunity to be acknowledged for what they have to offer, and supports

the ideas of feeling connected to and having ownership of the program in which they participate (Larson, Walker & Pearce, 2005; Nicholson et al., 2004; Witt & Caldwell, 2005). Walker cites the work of London, Zimmerman and Erbstein (2003) who suggest that youth provide an important and legitimizing perspective on the programs in which they are involved. Furthermore, involving youth in the evaluation process has the potential to enhance the understanding and interpretation of the youth experience, and may contribute to more valid and reliable findings. Seeking out the "lived experience" of the youth involved in the completed study supported these claims by providing an opportunity and invitation for youth to reflect on their experiences and offer their views, insights, concerns, and suggestions on not only the curriculum content, but the curriculum delivery as well. In this regard the youth involved in the completed study were an active part of the evaluation process, and considered to have "expertise" related to the goals of the curriculum as based on their individual experiences.

In this regard effective evaluations are those that consider and are aligned with the purposes of positive youth development. Youth development should be an interdisciplinary approach to working with children and adolescents, and incorporate families and communities in this process (Walsh, 2007). The perspective of positive youth development is characterized by a focus on building the competencies and skills necessary for being a successful, contributing, and thriving adult member of society. The design of the *Wise Kids Outdoors*® curriculum is aligned with these perspectives, and seeks to provide youth with an opportunity for individual growth and development to occur within a group setting.

Conclusions

Several conclusions were developed based on the results of this exploratory study regarding the impact of implementing an experientially based wellness program, specifically *Wise Kids Outdoors*®, that is aimed at increasing physical activity, nature based play and nature appreciation in a supportive out-of-school time (OST) program for youth ages 6 to 11. This pilot project demonstrated the feasibility of implementing programs of this nature in the OST milieu that serve youth, such as recreation centers and recreation programs. Recreation center and program staff appeared to be open-minded, both welcoming and embracing the idea of structured and intentional programming in OST settings that afforded opportunities for positive youth development to occur through exploration and discovery in "nature". In reality, the program was generally well received by administration in the City of St. Paul Parks and Recreation Department and the Department of Recreation and Parks in the City of San Francisco, recreation center and program directors, and recreation center and program staff, as well as numerous youth participants and parents from each of the participating sites. This was revealed through systematic observations, focus groups conducted with recreation center staff and participating youth, reports submitted by recreation program staff, and through formal and informal discussions with the youth and recreation center and program staff at each intervention site.

Conclusion 1. Behaviors that are associated with physical activity, nature based play, and nature appreciation are viewed by youth as being important and/or significant to them.

Results of the design, implementation, and evaluation of the *Wise Kids® Outdoors* program suggest that the program potentially had positive impacts on behaviors related to physical activity, time spent outdoors, and nature appreciation. The analysis indicated that youth involved in this particular study essentially partitioned into two groups, with participants assuming membership in one of these two groups. Youth with membership in the first group demonstrated relatively *higher* baseline scores associated with the constructs of attitudes, norms, values, volitional control and behaviors in relation to the outdoors, physical activity, and healthy eating. Those in the second group showed *lower* overall scores in regards to the same constructs at baseline. Analysis of the pre-survey participants indicated that youth mean scores for each construct were significantly different ($p < .05$) than the mid-point of the scale (2.0 = *sometimes true* or *sometimes)* indicating strong initial positive attitudes, feelings or beliefs about the particular item being assessed (see Table 6). Most youth were therefore already above the average response at the pre-survey administration, thus leaving little room for change to be demonstrated without simply regressing back to the mean score of 2.0. Although mean scores were shown to decrease at the post-measure, and subsequently increase at the six-week follow-measure, these differences were not shown to be significant, as indicated by the non-parametric Wilcoxon matched-pairs signed-rank test (see Table 8).

Research Question 1 of the completed study asked *What impact did the Wise Kids Outdoors curriculum have on participants?* Specific Aim 1 of the study was to assess

baseline and subsequent change in youth functioning based on the latent constructs of the Theory of Planned Behavior (TPB) (including attitudes, norms and external perceived behavioral control, internal perceived behavioral control, values, intentions, and behaviors) (Ajzen, 1991; Armitage, 2005; Baker et al., 2003; Russell et al., in press) over time. The significantly high mean scores and the non-significant results of Wilcoxon matched-pairs signed-rank test provide empirical support for the failure to reject,

> Ho1: Youth participating in the *Wise Kids Outdoors* program will experience no difference in scores on pre-, post-, and six-week follow-up measures as assessed by the six subscales.

The grouping of youth provides an indication that youth in this sample demonstrated an inclination toward wanting to play, explore, and be physically active outdoors, while generally choosing to eat healthy foods. This finding is very consistent with literature in the field as research contends that a connection to nature is biologically innate, such that humans have an affinity for the natural world ("Why Kids", 2005; Kellert, 2002; Kahn, 2001). Parents and adults often claim, however, that numerous barriers exist and are the reasons why youth are not outdoors or being physically active. Several recent studies, however, demonstrate and suggest that although children only play outdoors for limited amounts of time, they enjoy playing outdoors, and given more choice and/or opportunity, many would play outdoors more than they currently do (British Market Research Bureau, 2005; Ericson, 2001; White & Stoecklin, 1998).

While there was little statistical evidence to indicate that "change" had indeed occurred as a result of participating in the program, there are plausible explanations for why this change may *not* have been demonstrated through statistical procedures. In an experiment there is typically a lapse of time between the onset of the treatment and the

measurement of the dependent variable. This period of time is necessary for the independent variable to take effect and subsequently influence the participants. The lapse of time, however, potentially allows for other events or experiences to occur that may affect the dependent variable as well (Brown, 1997; Elmes et al., 2003; Graziano & Raulin, 1997; Johnson & Christensen, 2004; McMillan, 2004; Onwuegbuzie, 2000; Polson et al., 1998). History is considered to be the category of uncontrolled events that influence the dependent variable. Any event that occurs during the course of the study that is plausibly related to the dependent variable has the potential to impact the treatment, and thus may create difficulty in determining whether the independent variable, the event, or some combination of the two produced the end result (Graziano & Raulin; Johnson & Christensen; McMillan). Participants may be affected by something that happens during treatment, or the influences may come from outside the research setting.

In the current study numerous youth indicated during the focus group process that they did not learn anything because they already read about nature, with one youth indicating that his family regularly goes on nature walks. This may be indicative of previous and/or ongoing exposure to nature, the outdoors, and physical activity through further elements of their environment, such as the family, community, or school. In addition, staff from recreation centers and programs indicated that youth were often involved with other programs and activities throughout the course of the summer. They could not, however, specifically identify what those programs were or what those programs involved, but believed they were geared towards athletic camps, summer

school, family vacations, and other specialty camps or programs that would support physical activity in outdoor settings.

Furthermore, consideration should be given to the notion that behavior will naturally vary in frequency and/or intensity. Graziano and Raulin (1997) note that as time passes typical variation in behavior will demonstrate a return to normal levels. Statistical regression refers to the tendency of participants who score extremely high or extremely low on the pretest to score closer to the mean of both groups on the posttest, regardless of the effects of the treatment (Brown, 1997; Graziano & Raulin; Johnson & Christensen, 2004; McMillan, 2004; Onwuegbuzie, 2000; Polson et al., 1998). In this regard, very low pretest scores are likely to be higher on the posttest, and very high pretest scores are likely to be lower on the posttest. As previously indicated, mean scores for each construct were found to be significantly different than the mid-point of the scale on the pre-test measure. This trend held for the subsequent administrations of the survey measure as well. Additional reasons offered in support of the failure to demonstrate statistical change include the use of a survey instrument yet to be fully assessed for reliability and validity, differences and support in the survey administration at individual recreation centers and programs, and the relatively small sample size that resulted from attrition across the three phases of quantitative data collection (see *Limitations* in Methods). These methodological issues, in addition to the use of a non-random sample, lack of a non-equivalent comparison control group, and the use of ordinal level data, violated the assumptions of normality and warranted the use of non-parametric statistical tests.

In considering the statistical evidence, as well as observations and discussions concerning the lived experiences of youth, the conclusion was drawn that youth not only have a *desire* to be physically active, to spend time outdoors, and to enjoy nature, but that they are already *demonstrating* these types of behaviors. Research indicates that behaviors adopted early in the life span may persist into adulthood, and that childhood and adolescence is a time when many future health behaviors develop (Brodersen, Steptoe, Wardle & Williamson, 2005; Heitzler, Martin, Duke & Huhman, 2006; McGuire, Hannan, Nuemark-Sztainer, Cossrow & Story, 2002; O'Loughlin, Paradis, Kischuck, Barnett & Renaud, 1999; Stucky-Ropp & DiLorenzo, 1993; Trost, Saunders & Ward, 2002; Watkins, 1992). The possibility therefore exists that youth who showed a higher positive score towards the constructs measured at baseline, as well as at the end of implementation, will have a continued or greater desire or intention to spend time in the outdoors, thus leading to the potential for continued increases in physical activity. Furthermore, the continued and/or increased time spent in the outdoors may lend to a greater appreciation of the natural world (Louv, 2007). These conclusions thus support the notion that an increase in nature appreciation during the period of childhood and adolescence has the potential ability to support the creation of an enduring relationship with nature and the environment. Further examination of how these findings influence the formation and maintenance of relationships with the natural environment is recommended for future evaluation.

Conclusion 2. The Theory of Planned Behavior was a useful framework to explore how inherent psychosocial factors influence behavioral changes.

Ajzen (1991) claimed that explaining human behavior is a difficult task. The Theory of Planned Behavior (TPB) was used as a theoretical guide in developing items to assess the attitudes, social norms, perceived behavioral control, valuation, behaviors, and intentions of the participants in the program on physical activity, being in the outdoors, nature appreciation, and healthy dietary choices. The TPB was selected as a framework for several reasons, including the contention that the social norms construct is an important aspect of predicting behavior, as is the notion that intentions have a critical role in comprehending behavior (Armitage; Armitage & Conner; Rhodes & Plotnikoff, 2005; Webb & Sheeran, 2006). The TPB has been identified in the literature as supporting the evaluation of why individuals chose to engage in a particular behavior, or set of behaviors, including those related to healthy lifestyle choices (Ajzen, 1991; Armitage, 2003; Armitage & Conner, 2001; Baker et al., 2003).

Specific Aim 2 of the completed research study was to examine the reliability of the subscales in terms of how well the set of items measured the latent constructs that predict and/or influence behaviors.

> Ho2: Questions posed in the survey instrument for each subscale will not be predictive of the latent construct to which they are related.

Subscale reliability scores were calculated for each administration of the survey instrument. Pearson correlation coefficients were found to be fairly consistent for each round of survey administration for each of the constructs that were examined. A value of .70 is indicated in the literature as being an acceptable reliability coefficient, although

lower thresholds are used from time to time (Nunnally & Berstein, 1994). The alpha coefficients for subscales were consistently above .70 for all construct measures, except Internal PBC, which did not reach this threshold (see Table 5). While alpha coefficients for this subscale were in the lower range, they were considered acceptable for research purposes given the exploratory nature of the completed study, as well as the relatively small sample size and the use of a majority of subjects that were between the ages of 6 and 11 years old.

Specific Aim 3 of the completed study was to examine the relationship between intentions and behaviors to determine the consistency of being predictive and/or influencing one another.

> Ho3: There is no relationship between the intention to engage in a specific behavior and the actual engagement in that specific behavior.

As previously stated, intentions are posited as having a critical role in comprehending behavior (Armitage, 2003; Armitage & Conner, 2001). The correlation between intentions and behaviors is consequently of vital importance, as this relationship should be significant in order to support the proposed relationships between attitudes, values, norms and perceived behavioral control. *Intentions* were assessed during post-treatment and at six-week follow-up measures. In both administrations youth were asked to indicate (1) the likelihood that they would engage in a variety of behaviors in the following week, and (2) to what degree they actually engaged in those behaviors.

Moderate-to-strong and statistically significant Pearson correlations were found between intentions to commit certain behaviors in the upcoming week and assessments that asked specifically about those actual behaviors in the following week (see Table 10).

Strong correlations were established between the follow-up intentions construct and follow-up behaviors ($r = .843$, $p < .001$), as well as between post-treatment intentions and post-treatment behaviors ($r = .843$, $p < .001$). Moderate correlations were established between the follow-up intentions construct and post-treatment behaviors, assessed six-weeks after the program was complete ($r = .565$, $p < .001$), and the post-treatment intentions construct and follow-up behaviors ($r = .490$, $p < .001$), while a weak-to-moderate correlation ($r = .423$, $p < .001$) was found between post-treatment and at follow-up displayed. This suggests consistency in the assessments, as well as the existence of a relationship between the intentions and the behaviors of individuals in this sample.

Ideally, intentions to engage in a particular behavior, or set of behaviors, would be measured *prior to* assessing the actual level of engagement of those behaviors. The time frame between assessing the two constructs should match; for example, framing the questions such that participants are asked to consider the frequency of *how often you believe you* ***will do*** *each of these activities* ***during the next week*** and *how often you believe you* ***did*** *each of these activities* ***during the past week***. Although this format was utilized in the completed study, the time frame of the administrations should be noted. While a relationship may be inferred, this relationship may, however, be misleading or even indirect as consideration must be given to the fact that intentions and behavior were measured at the same point in time in the completed study. Additionally, the use of self-reports warrants attention, particularly as the utilization of self-reports has been indicated in the literature as a potential methodological limitation in conducting recall studies with youth (Barr-Anderson et al., 2007; Deforche et al., 2004; Heitzler et al., 2006; Kahn et

al., 2008; Sallis et al., 1996; Sherwood et al., 2004; Springer et al., 2006; Trost et al, 1999).

Conclusion 3. Out-of-school time programs that are intentionally designed to engage youth with concepts focused on wellness and the natural environment have the ability to serve as a gateway of opportunity for youth.

The completed study demonstrated the feasibility of implementing wellness and outdoor experiential programs in out-of-school time environments that serve youth, specifically for public park and recreation agencies. This supports the growing awareness and recognition of the important role that out-of-school settings can play in supporting youth with the critical resources necessary for growth and development. The reality is that public park and recreation departments seem welcome to the idea of more structured and purposeful programs targeting positive youth development. These findings were driven by the exploration of what recreation center and program staff, and indirectly youth, determined as being beneficial in regards to curriculum delivery. Research Question 2 evaluated the extent to which the *Wise Kids® Outdoors* curriculum was *implemented* with fidelity, while Research Question 3 focused on determining the strengths and modifications that would *support* the potential effectiveness of the *Wise Kids® Outdoors* curriculum.

The *Wise Kids® Outdoors* program was well received by recreation center staff and youth at each of the participating centers as evidenced through systematic observations and focus groups. Comments offered by staff on the strengths of the program centered on the depth and detail provided for each mission, the flexibility

afforded by the scope, structure, and sequence of the program, and the "hands-on nature" of the activities. Several examples of staff comments related to these findings included,

> "I love the concepts of exploration, open-endedness, and 'energy balance' that run through the program. And I appreciated that this program had me leading activities and encouraging kids to do things that otherwise we wouldn't." (staff, San Francisco, written summary)

And,

> "What I liked best was the kids were learning something new each and every day. And I was reacting along with the kids and learning new stuff, because as the kids learned so was I. Stuff I never knew about." (staff, San Francisco, written summary)

And furthermore,

> "Exploration deepens the experience, as just marching around doesn't count. The missions and activities *need* to be 'hands-on'. Youth have to be active, doing something. Such as with art or scavenger hunts, they should pick things up. That was what our youth wanted. That makes them feel/be involved." (staff, St. Paul, focus group)

Youth affirmed that the content covered and the activities implemented were strengths of the program. Specific highlights of the program identified were the number of activities offered including nature walks, identification of bugs/insects, trees and animal tracks, nature art projects, being active, and getting the chance to do 'outside stuff' in the form of missions. Youth, for instance, noted that taking nature walks was "enjoyable" and "fun", particularly when the youth were allowed the opportunity to look for a variety of "stuff". Although the statement can be made that "walking for the sake of walking" has inherent benefits related to health, youth in this age range often need stimuli to maintain interest and engagement levels. As Louv (2005) suggested, being outside in nature provides a setting that awakens the senses and offers an optimal environment for

development and learning to occur. Formal and informal interviews and discussions with the center staff and the youth at each participating recreation center supported these findings and generally indicated positive attitudes towards the program as a whole.

These conclusions are important when considering elements of program design and development. Recognition should be given to the notion that youth may indeed enter out-of-school time programs already possessing positive relationships with the natural environment, and/or positive views toward physical activity behaviors in general. The variety of constraints youth face when making decisions thus becomes critical, however, in reinforcing and enhancing early relationships. Youth, for example, may lack the opportunities necessary to support the continued existence of these positive relationships or views, or have limited chances to explore and discover how these relationships or views can assist them in developing positive, healthy lifestyles. Youth may also be confronted by the,

> "…problem (is) that many of these kids have never had someone introduce them to the outdoors, so they have little appreciation for the beauty and appeal of the natural world." (M. Hanson, personal communication, February 2009)

The *Wise Kids® Outdoors* program thus may provide a milieu for these relationships and behaviors to be explored, while bringing an awareness and recognition to the natural world in which youth live. This encompasses not only the youth, but the staff who are intimately involved with these youth. A member of the City of St. Paul Park and Recreation Department administration (K. Korum, personal communication, February 2009), indicated that,

> "The number one thing that we found was that they loved being outdoors, the kids *and* the staff. I believe that we have really lost two generations, the children *and* our leaders, to nature deficit disorder. We found that many of our leaders, who might be 18 to 24 years old, also knew very little about the outdoors, and we had to spend extra time preparing them for *Wise Kids® Outdoors* before they could lead the children. But for both groups it was well worth it. They absolutely loved learning together in the outdoors and both groups came away from the experience with a better outlook. It helped us realize that it is not so much that kids don't love the outdoors; it's that they don't *know* the outdoors. They don't know the difference between an elm and an oak, let alone the reasons why we must take care of the river and the land around it. *Wise Kids® Outdoors* is an important step in the right direction."

The program consequently supports the growing notion that recreation programs intentionally designed to engage youth with wellness and the natural environment in out-of-school time settings have the ability to not only serve as a gateway of opportunity for youth, but additionally to reinforce measures that are potentially being implemented at home, in school, and in the community.

Conclusion 4. Staff engagement is a salient determinant of observing and assessing youth interaction with program implementation and developmental outcomes related to wellness.

An ecological approach advocates the inclusion of a variety of numerous adults in the development of assets. Youth typically navigate among multiple yet dynamic environments, and the adults present in the environments in which youth live, including out-of-school time programs youth attend, are critical to assisting youth thrive (Grossman & Bulle, 2006; Noam & Fiore, 2004). Witt and Caldwell (2005) cite research which concluded that youth who have caring adults present and active in their lives are ones who are often resilient, and are able to thrive despite the presence of barriers and

obstacles. Relationships formed between youth and caring, nonparent adults are thus invaluable. Noam and Fiore suggest that after-school programs that are well attended exist in larger part because participants have created these meaningful relationships with peers as well as to one or more of the adults who work there. Consequently, the development of caring staff-youth relationships has been identified as one of the known critical elements to successful youth development programs (Anderson-Butcher, Cash, Saltzburg, Midle & Pace, 2004; Grossman & Bulle). McLaughlin (2000) contends that caring adults must be committed not only to the program goals, but to youth they serve, must be consistent in the messages they teach, and must communicate a sense of caring while setting clear boundaries, rules and expectations (as cited in Anderson-Butcher et al.). Noam and Fiore support this contention, by claiming that youth development programs provide the chance to place relationships at the forefront, and to promote the importance of supportive, encouraging nonparent adults in the lives of participants. Adults who are present and active are those who work in partnership with youth, serving as mentors, guides, and advocates, as opposed to making efforts to try and save, reform, or rescue youth from negative circumstances or outcomes. Grossman and Bulle also concluded that there is evidence that the positive relationships youth form with nonparent adults have the potential to improve health and wellbeing.

Analysis of the systematic observations and focus groups with both participants and staff revealed the extent to which staff engagement was important during program implementation of the *Wise Kids® Outdoors* program. The level of staff engagement is associated with overall participant satisfaction, and thus potentially impacted the maintenance of attitudes, norms, values, volitional control, and behaviors. Youth

involved in programs at recreation centers and programs where the staff was observed as being committed to establishing positive relationships with youth, as well as to the implementation fidelity of the *Wise Kids® Outdoors* program, demonstrated higher likelihoods to achieve positive outcomes. Staff at these locations noted that being a part of the exploration, and not simply a passive observer, afforded an opportunity to witness youth recognizing and truly 'seeing' the world around them. Although staff cannot be trained to have a different personality, per se, there are innate qualities that support the creation of relationships with youth, as well as tools that practitioners can use to help them better recognize and manage their interactions with youth (Noam & Fiore, 2004). During the curriculum implementation process, these qualities were manifested through actions and behaviors that signified patience, empathy, encouragement, attentiveness, and humor.

Furthermore, staff believed that they were able to assist with the reinforcement of ideas and beliefs that youth hold about the environment while examining the role that each individual has in being a steward of nature. In support of this belief, one staff member noted,

> "Overall, the program went very well and everyone learned from the experiences we all had. We all gained a better appreciation for ourselves, our environment, and the critters and creatures we share it with. All of us hope to make a difference." (staff, San Francisco, written summary)

This conclusion is vital when considering future implementation of intentional programming in out-of-school time settings. The recruitment and training of staff that are willing to support positive youth development is paramount for the overall success of these programs. When the *Wise Kids® Outdoors* program is implemented with fidelity by

staff who demonstrates a commitment to both the youth whom they serve and the overall program objectives, there is great potential to impact youth in a variety of areas connected to the concept of wellness.

Conclusion 5. Relationships with nature are diverse, and are a function of personal experience.

A central idea to the *Wise Kids® Outdoors* curriculum was the concept of affording youth-directed discovery, exploration and play, or what has been described by Robin Moore (personal communication, November 6, 2008) as 'free range childhood'. While youth were observed spending time outdoors, this was primarily during scheduled or intentional activities and usually under the direction and/or watch of staff. Research Question 4 was aimed toward exploring and appraising the *dimensions* of nature appreciation, nature based play, and physical activity behaviors in outdoor settings. Correspondingly, Research Question 5 was aimed toward evaluating whether nature deficit disorder was a salient *determinant* of nature based play.

While the program demonstrated potential in exposing youth to the wonders and benefits of nature, responses from youth participants fell along a continuum with end points posited as being "I don't appreciate being outdoors and/or nature" and "I appreciate being outdoors and/or nature". The diversity of responses regarding how youth define or describe nature, coupled with observations and discussion about the program in total, indicated a dichotomy not only between youth, but between the program activities. Although there were positive reactions to numerous experiences and activities, there were equivalent negative reactions for these same experiences and activities. That

is for each youth who offered encouraging responses, another youth had a disapproving reply or negative remark regarding that particular experience. Some youth, for instance, stated that,

"I liked being outside"

"I liked rolling the hill"

"I liked digging for worms and looking for scat"

"I liked reading and doing activities in the book"

Whereas others indicated that,

"I didn't like being hot or having bugs crawl on me"

"Rolling down the hill made me itchy"

"I didn't like getting muddy digging for worms"

"I didn't like reading so much".

Comments by a member of the City of St. Paul Park and Recreation Department administration (B. Bierscheid, personal communication, February 2009), further support this dichotomy, as,

> "We had a fairly typical bell curve response among the kids. Some kids were wildly enthusiastic, and really looked forward to learning each day about the outdoors. Their enthusiasm rubbed off on many of the other children, who gradually became engaged in the program. On the other end of the spectrum were small numbers of kids who took a long time to get comfortable in the outdoors, and they showed little interest in learning more. We realized that even a program like this won't turn things around for some kids, but for the majority it is a great way to build excitement."

This trend was even held among the views and beliefs of staff, who found at their individual recreation centers or programs that there were certain experiences and activities their youth, or they themselves, either enjoyed or gravitated to, and those they

suggested as needing improvement or to be excluded in the future. These comments demonstrate the relative difficulty in assessing what is deemed to be the very personal connection, or lack thereof, with nature.

In accordance to this finding, the importance of providing youth voice is critical to the success of programs. Youth who feel that adults plan *for them* rather than *with them* has the potential to create a sense of disconnect with the program and toward feeling that what they have to contribute is not worthy or valued. Thus youth should be acknowledged for the contribution that they can make in these areas and encouraged to offer suggestions. A youth-centered approach to program implementation, in addition to design, empowers youth and can foster a sense of autonomy or self-determination, which is critical for developing the competency and mastery needed to attain positive outcomes (see Witt & Caldwell, 2005). The lack of youth voice in a program setting, however, may be an indication that a program is not youth-centered, that the program is not appropriate for the audience for whom the program is being implemented, that the program is not reaching the youth who would benefit most from the stated outcomes, or that those responsible for program delivery find difficulty in involving youth (Gallagher et al, 2005; Lerner & Thompson, 2002; Walker, 2007). The mention of youth voice is important in considering the relationship youth have with nature, and is supported by the findings of this study in that there is a need to provide opportunities that afford autonomy and choice, and thus will support the creation of meaning and value of knowledge on an individual level.

Recommendations

Recommendations for program design and implementation

The following recommendations are based on the results of the evaluation and are presented to assist the Säjai® Foundation, as well as organizations that conduct programs in out-of-school time settings, specifically public park and recreation agencies, with more effectively implementing the *Wise Kids® Outdoors* curriculum on a broader scale.

1. The limitations and challenges to implementing the program in multiple cities suggests a need to receive continued buy-in from stakeholders, including park and recreation department administration, parents, community leaders, and youth, in order to ensure the program is introduced into a culture of acceptance in after-school settings. Furthermore, getting clear and consistent feedback from these stakeholders will support the assessment of whether goals aimed at positive youth development are being met.

2. In order to increase the potential impact for youth, recreation centers and programs should target youth participants that consistently attend structured out-of-school time programs so the messages can be delivered in a systematic way. Recreation centers that serve primarily "drop-in" youth, which therefore may have different groups of youth on any given day, have the added challenge of providing consistent program delivery with a dynamic and inconsistent audience.

3. Recognize and acknowledge that youth are part of a dynamic environment that includes their family, their school, and their community. Be conscious of programs and curricula that are currently being implemented in the target

location, particularly those offered in local schools. While these programs have the potential to support, or even promote, the *Wise Kids® Outdoors* curriculum, repetition and overlap of "re-learning" core content may increase the likelihood of youth to become disengaged from the program and from learning. Thus program content should be novel and interesting, with activities that are experientially based, unique, and differ from traditional learning opportunities.

4. If possible, every staff member at each center or program implementing the curriculum should be trained in the content and delivery of the curriculum. This supports the notion that a broad recognition by all staff of the program goals, objectives and content assists in the creation of a positive and welcoming environment and culture with shared and familiar norms and traditions. Furthermore, this invites staff, in partnership with youth, to take and exhibit ownership of the program.

5. Issues and assumptions related to staff in regards to previous knowledge and comfort with spending time outdoors should be addressed. This suggests a need for including discussion of these issues, barriers, and concerns during training in curriculum implementation, as well as providing ongoing support throughout the duration of curriculum delivery.

6. Based on feedback from staff and youth, integrate more 'hands-on' and 'active' activities, with less focus and time spent on structured 'reading' in the curriculum to get youth moving and engaged in the environment.

7. In order to enhance program delivery include more resources, materials and alternatives to deliver some of the core concepts of the curriculum. Excellent ideas and alternatives were suggested by staff regarding ways in which individual leaders at center and program sites had adapted, or considered adapting, a lesson plan to incorporate additional resources for the youth.

8. Provide increased opportunities for intentional reflection. Reflection is a process by which individuals are able to create meaning and knowledge that applies to the individual, and is central to experiential learning. Allowing youth to reflect on the experiences of the program not only affords youth with the opportunity to be engaged in the process of integration, but is a way to evaluate and provide youth with voice. A reflective component brings to life the lived experience of the individual, and can provide valuable insights into how, or if, the program is meeting the needs of the individual and the designated outcomes of the program.

9. Consider the development of additional modules that are specific to regions or climatic conditions. Staff was noted during the study as being curious to how some of the lessons in the curriculum could be adapted or modified in order to be implemented at various seasons throughout the year.

10. In order to support and assist with transfer of learning from the recreation center or program back to the family system, develop ways to involve and include family and community members in the program. Although this is a considerable challenge for centers and programs in certain locations, the role, impact and interconnectedness of youths' larger environment cannot be overlooked as a strong determinant in achieving positive outcomes and healthy development.

11. The target population for the program is at an influential stage in human development, particularly in relation to the adoption of behaviors that are associated with a healthy lifestyle. Program elements should be developed that assist youth in addressing the potential psychological and emotional repercussions from learning about these concepts and issues, particularly those that may be in conflict with traditional attitudes, norms, values, and behaviors of their family or peer systems.

Recommendations for future research

1. While the current study utilized multiple sites in multiple cities to increase the ability to generalize the findings, an effort should be made to examine independently the similarities, differences and challenges, in the delivery of the curriculum between the two cities. This should be framed as individual case studies within a collective (multi-site) case study. These case studies need to provide relevant and insightful observations, as well as descriptive depth and detail in assessing the potential impact the organization and structure of each individual recreation center and program had on the overall outcomes.

2. Independent variables in the completed study included gender, age, ethnicity, site and city. Although these demographics were collected as a means of supporting baseline and treatment comparisons, the independent variables were not examined discretely, but rather collectively as a means to determine if differences in youth occurred and if these could be attributed to exposure to the curriculum. This suggests a need to examine the following questions: (a) Were there treatment differences between males and females?; (b) Were there treatment differences

between younger and older youth?; (c) Were there treatment differences related to ethnicity?; (d) Were there treatment differences in relation to participation at a specific recreation center or program?; and, (e) Were there overall treatment differences between cities? Furthermore, consideration should be given to the potential interaction of these variables.

3. A central idea to the *Wise Kids® Outdoors* curriculum is the concept of youth-directed discovery, or what has been described as 'free range play'. Although youth were observed spending time outdoors, this was primarily during scheduled or intentional activities and usually under the direction of staff. Further examination should be geared toward exploring this concept, and the impact that youth-directed discovery can have on outcomes related to nature appreciation and nature based play.

4. There was little-to-no evidence of family system or community involvement in the implementation of the curriculum. The recommendation was made to develop ways in which family and the community can be involved and included as a way to support transfer of learning and in the adoption of behaviors related to living a healthy lifestyle. The role and interconnectedness of youths' larger environment in impacting healthy development in youth thus warrants further examination. This is particularly true when exploring relationships focused on the development of psychosocial correlates, such as attitudes, norms and values, which have been shown to develop within the structure of these environments.

5. In addition, methods for marketing and promoting family and community involvement should be assessed to determine 'better practices', with

recommendations provided for how these 'better practices' can be implemented in a variety of settings and locations.

6. Although an aim of the current study was to assess and explore the concept termed *nature deficit disorder* and its relationship to nature based play and nature appreciation, the methodologies utilized did not fully support this aim. Further research is warranted in exploring the lived experience of youth in regards to how nature based played and nature appreciation can increase the likelihood of creating a relationship with nature.

Final Reflections

The practice of engaging in reflection is a process by which individuals are able to create meaning and knowledge that applies to the individual. And as Itin (1999) suggests, this is central to the notion of experiential learning. A reflective piece brings to life the lived experience of the individual, and can provide valuable insights into how, or if, what was set about to be accomplished was actually reached. I therefore believe that the process of completing this exploratory study would be incomplete without taking the opportunity to reflect on the experience as a whole.

A mixed methods approach was chosen to investigate the growing awareness and recognition of the important role that out-of-school settings can play in supporting youth with the critical resources necessary for healthy growth and development. More specifically, the study was designed to explore the notion that out-of-school time programs that are intentionally designed to engage youth with concepts focused on wellness and the natural environment have the ability to increase the physical activity

behaviors, nature based play, and nature based appreciation. In doing so, programs of this nature potentially serve as a gateway of opportunity for youth. The implementation of the *Wise Kids® Outdoors* curriculum served as the medium for this evaluative and exploratory study.

The mixed methods approached proved to be demanding in task, yet truly rewarding and insightful in regards to outcomes. The process of gathering not only the lived experiences of participants but the measurable outcomes related to program implementation was supportive in providing a diverse recognition and comprehension of the results from each paradigm. While the quantitative results demonstrated limited significant outcomes, the qualitative results offered breadth and depth, and a descriptive analysis of the experience. Yet consideration is warranted to the reality that the abundant amount of data collected may not have been fully analyzed due to the constraints related to the time and energy necessary for completing the study.

The complexity of collecting both quantitative and qualitative data at multiple sites proved difficult and challenging, at best. In addition, negotiating the differences in administrative structure and organization was a monumental task, and the resulting limitations merit both consideration and caution when interpreting the results of the study. Even with standardized training for research support staff and recreation center and program staff, the human element cannot be understated. Furthermore, the significant amount of attrition, and lack of follow through, was certainly disappointing. Yet acknowledgement and recognition must be given to the numerous issues that are inherent in conducting applied research, particularly with samples of youth. Analysis of the data with a smaller sample size than proposed and anticipated certainly reduced the

statistical strength of some results, and there is a belief that an increased sample may have remedied some of the inconsistencies in the results between the quantitative and qualitative findings.

Yet even in the perceived 'darkness' there were rays of light and hope. The level of staff engagement, and the creation of caring relationships with the youth who were being served, demonstrates the willingness and acceptance of staff to have positive, lasting impacts. Empathy, care, concern, patience, attentiveness, and encouragement were just a few of the many characteristics displayed throughout the course of curriculum implementation. There is a belief that this is not an exception, but rather a norm of the culture created in these recreation centers and programs. Programs such as *Wise Kids®* *Outdoors* need to exist in order to provide chances for youth to experience the world around them, and to serve as gateways of opportunity for creating enduring relationships with the natural world. In doing so, youth will be encouraged, and hopefully inspired, to learn, grow, and develop in positive and healthy ways.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I. & Driver, B.L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research, 24*(3), 207-224.

American Institutes for Research. (2005). *Effects of outdoor education programs for children in California*. Palo Alto, CA: Author.

Anderson-Butcher, D., Cash, S.J., Saltzburg, S., Midle, T. & Pace, D. (2004). Institutions of youth development: The significance of supportive staff-youth relationships. *Journal of Human Behavior in the Social Environment*, *9*(1/2), 83-99.

Armitage, C.J. (2005). Can the theory of planned behavior predict the maintenance of physical activity? *Health Psychology, 24*(3), 235-245.

Armitage, C.J. & Christian, J. (2003). From attitudes to behaviour: Basic and applied research on the theory of planned behavior. *Current Psychology: Developmental, Learning, Personality, Social, 22*(3), 187-195.

Armitage, C.J. & Connor, M. (2001). Efficacy of the Theory of Planned Behavior: A meta-analytic review. B*ritish Journal of Social Psychology, 40,* 471-499.

Babey, S.H., Hastert, T.A., Yu, H.Y. & Brown, E.R. (2008). Physical activity among adolescents: When do parks matter? *American Journal of Preventive Medicine, 34*(4), 345-348.

Backman, D.R., Haddad, E.H., Lee, J.W., Johnston, P.K. & Hodgkin, G.E. (2002). Psychosocial predictors of healthful dietary behavior in adolescents. *Journal of Nutrition Education and Behavior, 34*(4), 184-193.

Baker, C.W., Little, T.D. & Brownell, K.D. (2003). Predicting adolescent eating and activity behaviors: The role of social norms and personal agency. *Health Psychology, 22*(2), 189-198.

Bandura, A. (1986). *Social learning theory.* Oxford, England: Prentice Hall.

Barr-Anderson, D.J., Young, D.R., Sallis, J.F., Neumark-Sztainer, D.R., Gittelsohn, J., Webber, L., et al. (2007). Structured physical activity and psychosocial correlates in middle-school girls. *Preventive Medicine, 44*, 404-409.

Bauman, A.E., Sallis, J.F., Dzewaltowski, D.A. & Owen, N. (2002). Toward a better understanding of the influences on physical activity: The role of determinants, correlates, causal variables, mediators, moderators, and confounders. *American Journal of Preventive Medicine, 23*(2S), 5-14.

Berger, R. (2006). Using contact with nature, creativity and rituals as a therapeutic medium with children with learning difficulties: A case study. *Emotional and Behavioral Difficulties, 11*(2), 135-146.

Berry, W. (1994). Conservation is good work. In *Sex, economy, freedom & community* (pp. 27-43). New York: Pantheon Books.

Bialeschki, D., Henderson, K. & James, P.A. (2007). The camp experience: An ACA perspective on developmental outcomes for youth. *Taproot, 17*(2), 5-13.

Biddle, S.J., Gorely, T. & Stensel, D. (2004). Health enhancing physical activity and sedentary behavior in children and adolescents. *Journal of Sports Sciences, 22*, 679-701.

Blanchard, C.M., Kupperman, J., Sparling, P., Nehl, E., Rhodes, R.E., Courneya, K.S., et al. (in press). Ethnicity and the theory of planned behavior in an exercise context: A mediation and moderation perspective. *Psychology of Sport and Exercise*.

Blissett, D., Jackson, A., McCarty, F., Rahotep, S., Resnicow, K., Wang, T., et al. (2005). Results of the healthy body healthy spirit trial. *Health Psychology, 24*(4), 339.

Blum, R.W. & Ellen, J. (2002). Work group V: Increasing the capacity of schools, neighborhoods, and communities to improve adolescent health outcomes. *Journal of Adolescent Health, 31*, 288-292.

Brastow, P. (2006, Summer). Nature in the city. *Earth Island Journal*, 21.

British Market Research Bureau. (2005, August). Playday 2005 report. Retrieved January 14, 2009, from http://www.playscotland.org/pdfs/Playdayresearchreport1.pdf.

Brodersen, N.H., Steptoe, A., Wardle, J. & Williamson, S. (2005). Sociodemographic, developmental, environmental, and psychological correlates of physical activity and sedentary behavior at age 11 to 12. *Annals of Behavioral Medicine, 29*(1), 2-11.

Browne, G., Gafni, A., Roberts, J, Byrne, C. & Majumdar, B. (2004). Effective/efficient mental health programs for school-age children: A synthesis of reviews. *Social Science & Medicine, 58*, 1367-1384.

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research, 6*(1), 97-113.

Burdette, H.L. & Whitaker, R.C. (2005). Resurrecting free play in young children: Looking beyond fitness and fatness to attention, affiliation and affect. *Archives of Pediatric Adolescent Medicine, 159*, 46-50.

Burke, C. (2005). "Play in focus": Children researching their own spaces and places for play. *Children, Youth and Environments, 15*(1), 27-53.

Burt, M.R. (2002). Reasons to invest in adolescents. *Journal of Adolescent Health, 31*(6S), 136-152.

Butcher, K., Sallis, J.F., Mayer, J.A. & Woodruff, S. (2008). Correlates of physical activity guideline compliance for adolescents in 100 U.S. cities. *Journal of Adolescent Health, 42*, 360-368.

California State Parks. (2005). *The health and social benefits of recreation.* Sacramento, CA: Author.

Cardon, G., Philippaerts, R., Lefevre, J., Matton, L, Wijndaele, K., Balduck, A., et al. (2005). Physical activity levels in 10- to 11- year-olds: Clustering of psychosocial correlates. *Public Health Nutrition, 8*(7), 896-903.

Carver, A., Timperio, A. & Crawford, D. (2008). Playing it safe: The influence of neighbourhood safety on children's physical activity. *Health and Place, 14*, 217-227.

Catalano, R.F., Hawkins, J.D., Berglund, M.L., Pollard, J.A. & Arthur, M.W. (2002). Prevention science and positive youth development: Competitive or cooperative frameworks? *Journal of Adolescent Health, 31*(6S), 230-239.

Centers for Disease Control (CDC) (2006). *Overweight and Obesity: Childhood Overweight: Contributing Factors.* Retrieved November 1, 2006 from http://www.cdc.gov/nccdphp/dnpa/obesity/childhood/contributing_factors.htm.

Chatterji, M. (2004). Evidence of "what works": An argument for extended-term mixed-method (ETMM) evaluation designs. *Educational Researcher, 34*(5), 14-24.

Chawla, L. (2007). Childhood experiences associated with care for the natural world: A theoretical framework for empirical results. *Children, Youth and Environments, 17*(4), 144-170.

Clark, S. (2007, April). No place to play. *Parks and Recreation*, 52-55.

Clemmens, D. & Hayman, L.L. (2004). Increasing activity to reduce obesity in adolescent girls: A research review. *Journal of Obstetric, Gynecologic, and Neonatal Nurses, 33*(6), 801-808.

Coffey, A. & Atkinson, P.A. (1996). *Making sense of qualitative data: Complementary research strategies*. Thousand Oaks, CA: Sage.

Cooper, R.J. (2000). The impact of child abuse on children's play: A conceptual model. *Occupational Therapy International, 7*(4), 259-276.

Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Courneya, K.S. & Bobick, T.M. (2000). Integrating the theory of planned behavior with the processes and stages of change in the exercise domain. *Psychology of Sport and Exercise, 1*, 41-56.

de Bruijn, G., Kremers, S.P.J, Lensvelt-Mulders, G., de Vries, H., van Mechlen, W. & Brug, J. (2006). Modeling individual and physical environmental factors with adolescent physical activity. *American Journal of Preventive Medicine, 30*(6), 507-512.

Deforche, B., De Bourdeaudhuij, I., Tanghe, A., Hills, A.P. & De Bode, P. (2004). Changes in physical activity and psychosocial determinants of physical activity in

children and adolescents treated for obesity. *Patient Education and Counseling, 55*, 407-415.

de Leeuw, E. (2001). Missing data in surveys: An overview of methods. *Quality & Quantity, 35*, 147-160.

Diefenbach, T. (2008). Are case studies more than sophisticated storytelling? Methodological problems of qualitative empirical research mainly based on semi-structured interviews [Electronic Version]. *Quality & Quantity.*

Dietz, W.H. & Robinson, T.N. (2005). Overweight children and adolescents. *The New England Journal of Medicine, 352*(20): 2100-2109.

Doherty, W. & Carlson, B. (2003). Overscheduled kids, underconnected families. In J. De Graff (Ed), *Take back your time* (pp. 38-45). San Francisco: Berrett-Koehler Publishers, Inc.

Dolesh, R.J. (2007, July). Advocacy update: Returning to nature. *Parks and Recreation*, 16-19.

Duncan, M.J., Mummery, W.K. & Spence, J.C. (2005). Perceived environment and physical activity: A meta-analysis of selected environmental characteristics. *International Journal of Behavioral Nutrition and Physical Activity, 2*(11).

Duncan, P.M., Garcia, A.C., Frankowski, B.L., Carey, P.A., Kallock, E.A., Dixon, R.B., et al. (2007). Inspiring healthy adolescent choices: A rationale for and guide to strength promotion in primary care. *Journal of Adolescent Health, 41*, 525-535.

Dunn, J.S., Kinney, D.A. & Hofferth, S.L. (2003). Parental ideologies and children's after-school activities. *American Behavioral Scientist, 46*(10), 1359-1386.

Durlak, J.A. & Weissberg, R.P. (2007). *The impact of afterschool programs that promote personal and social skills*. Chicago, IL: Collaborative for Academic, Social, and Emotional Learning.

Elder, J.P., Lytle, L., Sallis, J.F., Young, D.R., Steckler, A., Simons-Morton, D., et al. (2007). A description of the social-ecological framework used in the trial of activity for adolescent girls (TAAG). *Health Education Research, 22*(2), 155-165.

Elmes, D.G., Kantowitz, B.H. & Roediger, H.L., III. (2002). *Research methods in psychology* (7th ed.). Belmont, CA: Wadsworth/Thompson Learning.

Erickson, M.F. (2007, Fall). Leave no child inside. *Wellness Works, 2*(1), 12-13.

Erickson, R.J. (2001). Play contributes to the full emotional development of the child. *Education, 105*(3), 261-263.

Ericson, N. (2001, May). The YMCA's teen action agenda. *Office of Juvenile Justice and Delinquency Prevention Fact Sheet, no.14*. Retrieved February 8, 2008 from http://www.ncjrs.org/pdffiles1/ojjdp/fs200114.pdf.

Faber-Taylor, A & Kuo, F.E. (2004). A potential natural treatment for attention-deficit/hyperactivity disorder: Evidence from a national study. *American Journal of Public Health, 94*(9), 1580-1586.

Fila, S.A. & Smith, C. (2006). Applying the theory of planned behavior to healthy eating behaviors in urban Native American youth. *International Journal of Behavioral Nutrition and Physical Activity, 3*(11).

Fisman, L. (2005). The effects of local learning on environmental awareness in children: An empirical investigation. *The Journal of Environmental Education, 36*(3), 39-50.

Fredricks, J.A. & Eccles, J.S. (2005). Developmental benefits of extracurricular involvement: Do peer characteristics mediate the link between activities and youth - outcomes? *Journal of Youth and Adolescence, 34*(6), 507-520.

Frenn, M., Malin, S., Villarruel, A.M., Slaikeu, K., McCarthy, S., Freeman, J., et al. (2005). Determinants of physical activity and low-diet among low income African American and Hispanic middle school students. *Public Health Nursing, 22*(2), 89-97.

Frenn, M. & Porter, C. (1999). Exercise and nutrition: What adolescents think is important. *Applied Nursing Research, 12*(4), 179-184.

Frumkin, H. (2001). Beyond toxicity: Human health and the natural environment. *American Journal of Preventative Medicine, 20*(3), 234-240.

Frumkin, H. & Louv, R. (2007). *The powerful link between conserving land and preserving health*. Land Trust Alliance Special Anniversary Report.

Gallagher, K.M., Stanley, A., Shearer, D. & Mosca, C. (2005). Implementation of youth development programs: Promise and challenges. *Journal of Adolescent Health, 37*, S61-S68.

Garcia, A.W., Pender, N.J., Antonakos, C.L., & Ronis, D.L. (1998). Changes in physical activity beliefs and behaviors of boys and girls across the transition to junior high school. *Journal of Adolescent Health, 22*(5), 394-402.

Gardner, H. (1993). *Multiple intelligences: The theory in practice*. New York: Basic.

Ginsberg, K.R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics, 119*, 182-191.

Gomez, J.E., Johnson, B.A, Selva, M. & Sallis, J.F. (2004). Violent crime and outdoor physical activity among inner-city youth. *Preventive Medicine, 39,* 876-881.

Goodway, J.D. & Smith, D.W. (2005). Keeping all children healthy: Challenges to leading an active lifestyle for preschool children qualifying for at-risk program. *Family and Community Health, 28*(2), 142-155.

Goran, M.I., Reynolds, K.D. & Lindquist, C.H. (1999). Role of physical activity in the prevention of obesity in children. *International Journal of Obesity, 23*(Supp3), S18-S33.

Gray, D. E. (2004). *Doing Research in the Real World*. Thousand Oaks, CA: Sage.

Gray, J.H. & Densten, I.L. (1998). Integrating quantitative and qualitative analysis using latent and manifest variables. *Quality & Quantity, 32*, 419-431.

Graziano, A.M. & Raulin, M.L. (1997). *Research methods: A process of inquiry* (3rd ed.). New York: Longman.

Grossman, J.B. & Bulle, M.J. (2006). Review of what youth programs do to increase the connectedness of youth with adults*, Journal of Adolescent Health, 39*, 788-799.

Grund, A., Koertziner, I., Langnase, K., Mast, M. & Muller, M.J. (1999). Physical activity and diet in 5 to 7 years old children. *Public Health Nutrition, 2*(3a), 443-444.

Guo, Q., Johnson, A., Unger, J.B., Lee, L., Xie, B., Chou, C., et al. (2007). Utility of the theory of planned behavior for predicting Chinese adolescent smoking. *Addictive Behaviors, 32*, 1066-1081.

Hagger, M.S., Anderson, M., Kyriakaki, M. & Darkings, S. (2007). Aspects of identity and their influence on intentional behavior: Comparing effects for three health behaviors. *Personality and Individual Differences, 42*, 355-367.

Halpern, R. (1992). The role of after-school programs in the lives of inner-city children: A study of the "Urban Youth Network". *Child Welfare, 71*(3), 215-230.

Haluza-Delay, R. (2001). Nothing here to care about: Participant constructions of nature following a 12-day wilderness program. *The Journal of Environmental Education, 32*(4), 43-48.

Hanson, W.E., Plano Clark, V.L., Petska, K.S., Creswell, J.W. & Creswell, J.D. (2005). Mixed methods research designs in counseling psychology. *Journal of Counseling Psychology, 52*(2), 224-235.

Hardy, L. (2006). Fighting student obesity in school. *The Education Digest, 71*(9), 25-26.

Hartje, J.A., Evans, W.P., Killian, E.S. & Brown, R. (2008). Youth worker characteristics and self-reported competency as predictors of intent to continue working with youth. *Child Youth Care Forum, 37*, 27-41.

Hayes, A.F. & Krippendorf, K. (2007). Answering the call for a standard reliability measure for coding data. *Communication Methods and Measures, 1*(1), 77-89.

Heitzler, C.D., Martin, S.L., Duke, J. & Huhman, M. (2006). Correlates of physical activity in a national sample of children aged 9 – 13 years. *Preventive Medicine, 41*, 254-260.

Hellison, D. (2006). Physical activity programs for underserved youth. *Journal of Science and Medicine in Sport, 3*(3), 238-242.

Hill, J.O. & Trowbridge, F.L. (1998). Childhood obesity: Future directions and research priorities. *Pediatrics, 101*, 570-574.

Hogg, M. & Terry, D. (1996).Group norms and the attitudes-behavior relationship: A role for group identification. *Personality and Social Psychology Bulletin, 22*(776-793).

Hood, E. (2005). haring solutions for childhood obesity. *Environmental Health Perspectives, 113*(8), A520-A522

Howell, D.C. (2007). *Statistical methods for psychology* (6th Ed.). Belmont, CA: Thomson Wadsworth.

Itin, C.M. (1999). Reasserting the philosophy of experiential education as a vehicle for change in the 21st century. *The Journal of Experiential Education, 22*(2), 91-98.

Johnson, B. & Christensen, L. (2004). *Educational research: Quantitative, qualitative, and mixed approaches* (2nd ed.). Boston: Allyn and Bacon.

Johnson, R.B. & Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14-26.

Junge, S.K., Manglahallan, S. & Raskauskas, J. (2003). Building life skills through afterschool participation in experiential and cooperative learning. *Child Study Journal, 33*(3), 165-174.

Kahn, P.H. (2001). *The human relationship with nature*. Boston: MIT Press.

Kahn, J.A., Huang, B., Gillman, M.W., Field, A.E., Austin, S.B., Colditz, G.A., et al. (2008). Patterns and determinants of physical activity in U.S. adolescents. *Journal of Adolescent Health, 42*, 369-377.

Kahne, J., Nagaoka, J, Brown, A., O'Brien, J, Quinn, T. & Thiede, K. (2001). Assessing after-school programs as contexts for youth development. *Youth & Society, 32*, 421-446.

Karsten, L. & van Vliet, W. (2006). Children in the city: Reclaiming the street. *Children, Youth and Environments, 16*(1), 151-167.

Kellert, S.R. (2002). Experiencing nature: Affective, cognitive, and evaluative development in children. In P.H. Kahn & S.R. Kellert (Eds.), *Children and nature* (pp. 117-151). Boston: MIT Press.

Kerner, M.S. & Kurrant, A.B. (2003). Psychosocial correlates to high school girls' leisure-time physical activity: a test of the theory of planned behavior. *Perceptual and Motor Skills, 97*, 1175-1183.

Kerr, J., Rosenberg, D., Sallis, J.F., Saelens, B.E., Frank, L.D. & Conway, T.L. (2006). Active commuting to school: Associations with environment and parental concerns. *Medicine and Science in Sports and Exercise*, 787-794.

Kerr, L.M., Pate, R.R., Trost, S.G. & Ward, D.S. (2001). Physical activity and determinants of physical activity in obese and non-obese children. *International Journal of Obesity, 25*, 822-829.

King, A.C., Stokols, D., Talen, E., Brassington, G.S. & Killingsworth, R. (2002). Theoretical approaches to the promotion of physical activity. *American Journal of Preventive Medicine, 23*(2S), 15-25.

Kirby, D. & Coyle, K. (1997). Youth development programs. *Children and youth services review, 19*(5/6), 437-454.

Klein, J.D., Sabaratnam, P., Auerbach, M.M., Smith, S.M., Kodjo, C., Lewis, K., et al. (2006). Development and factor structure of a brief instrument to assess the impact of community programs on positive youth development: The Rochester evaluation of asset development for youth (READY) tool. *Journal of Adolescent Health, 39*, 252-260.

Koplan, J.P., Kraak, V.I. & Liverman, C.T. (Spring, 2005). Preventing childhood obesity. *Issues in Science and Technology,* pp. 57-64.

Krisberg, K. (2007, October). Movement to reconnect kids with nature growing nationwide. *The Nation's Health,* pp. 1, 16.

Kuo, F.E. (2001). Coping with poverty: Impacts of environment and attention in the inner city. *Environment and Behavior, 33*(1), 5-34.

Kuo, F.E. & Sullivan, W.C. (2001a). Environment and crime in the inner city: Does vegetation reduce crime? *Environment and Behavior, 33*(4), 543-571.

Kuo, F.E. & Sullivan, W.C. (2001b). Aggression and violence in the inner city: Effects of environment via mental fatigue. *Environment and Behavior, 33*(3), 343-367.

Lakin, R. & Mahoney, A. (2006). Empowering youth to change their world: Identifying key components of a community service program to promote positive development. *Journal of School Psychology, 44*, 513-531.

Larson, R.W. & Walker, K. (2005). Processes of positive development: Classic theories. In P. Witt & L. Caldwell (Eds.), *Recreation and youth development* (pp. 131-48). State College, PA: Venture Publishing, Inc.

Larson, R., Walker, K. & Pearce, N. (2005). A comparison of youth-driven and adult-driven youth programs: Balancing inputs from youth and adults. *Journal of Community Psychology, 33*(1), 57-74.

Leech, N.L. & Onwuegbuzie, A.J. (2007). A typology of mixed methods research design [Electronic Version]. *Quality & Quantity*.

Lerner, R.M., Brentano, C., Dowling, E.M. & Anderson, P.M. (2002). Positive youth development: Thriving as a basis of personhood and civil society. *New Directions for Youth Development, 95*, 11-33.

Lerner, R.M. & Thompson, L.S. (2002). Promoting healthy adolescent behavior and development: Issues in the design and evaluation of effective youth programs. *Journal of Pediatric Nursing, 17*(5), 338-344.

Lewis, B.A., Marcus, B.H., Pate, R.R. & Dunn, A.L. (2002). Psychosocial mediators of physical activity behavior among adults and children. *American Journal of Preventive Medicine, 23*(2S), 26-35.

Lindquist, C.H., Reynolds, K.D. & Goran, M.I. (1999). Sociocultural determinants of physical activity among children. *Preventive Medicine, 29*, 305-312.

Little, T. D., & Wanner, B. (1997). *The multi-cam: A multidimensional instrument to assess children's action-control motives, beliefs, and behaviors.* (No. Materialen aus der Bildungsforschung, No. 59). Berlin: Max Planck Institute for Human Development.

Louv, R. (2005). *Last child in the woods*. New York: Algonquin Books of Chapel Hill.

Louv, R. (March 2, 2007). Leave no child inside. *Orion Magazine*.

Mackett, R., Lucas, L., Paskins, J. & Turbin, J. (2005). The therapeutic value of children's everyday travel. *Transportation Research, 39*, 205-219.

Malone, K. (2007). The bubble-wrap generation: Children growing up in walled gardens. *Environmental Education Research, 13*(4), 513-517.

Mason, J. (2006). Mixing methods in a qualitatively driven way. *Qualitative Research, 6*(1), 9-25.

Mayer, F.S., Frantz, C.M., Bruehlman-Senecal, E. & Dolliver, K. (2008). Why is nature beneficial? The role of connectedness to nature. *Environment and Behavior, 0*. Retrieved March 17, 2009 from http://eab.sagepub.com.floyd.lib.umn.edu/cgi/rapidpdf/0013916508319745v1.

McAllister, R. (2003). The four critical hours. *WebMD*. Retrieved November 1, 2006 from http://www.webmd.com/content/pages/18/101924.htm.

McGregor, A. (2004). Sustainable development and 'warm fuzzy feelings': Discourse and nature within Australian environmental imaginaries. *Geoforum 35*, 593-606.

McGuire, M.T., Hannan, P.J., Nuemark-Sztainer, D., Cossrow, N.H.F. & Story, M. (2002). Parental correlates of physical activity in a racially/ethnically diverse adolescent sample. *Journal of Adolescent Health, 30*, 253-261.

McMillan, J.H. (2004). *Educational research: Fundamentals for the consumer* (4th ed.). Boston: Allyn and Bacon.

Meijer, P.C., Verloop, N. & Beijaard, D. (2002). Multi-method triangulation in a qualitative study on teachers' practical knowledge: An attempt to increase internal validity. *Quality & Quantity, 36*, 145-167.

Miller, S.I. & Gatta, J.L. (2006). The use of mixed methods models and designs in human sciences: Problems and prospects. *Quality & Quantity, 40*, 595-610.

Molnar, B.E., Gortmaker, S.L., Bull, F.C. & Buka, S.L. (2004). Unsafe to play? Neighborhood disorder and lack of safety predict reduced physical activity among urban children and adolescents. *American Journal of Health Promotion, 18*(5), 378-386.

Moran-Ellis, J., Alexander, V.D., Cronin, A., Dickinson, M, Fielding, J., Sleney, J., et al. (2006). Triangulation and integration: Processes, claims and implications. *Qualitative Research, 6*, 45-59.

Morrissey, K.M. & Werner-Wilson, R.J. (2005). The relationship between out-of-school activities and positive youth development: An investigation of the influences of community and family. *Adolescence, 40*(157), 67-85.

Mother nature knows best. (2007, November 16-18). *USA Weekend*, pp. 8-10.

Mullis, R., Pate, R. & Trost, S. (2001). Community interventions to promote proper nutrition and physical activity among youth. *Preventative medicine, 31*(supp), S138-S149.

Murphey, D.A., Lamonda, K.H., Carney, J.K. & Duncan, P. (2004). Relationships of a brief measure of youth assets to health-promoting and risk behaviors. *Journal of Adolescent Health, 34*, 184-191.

Musser, L.M. & Diamond, K.E. (1999). The children's attitudes towards the environment scale for preschool children. *The Journal of Environmental Education, 30*(2), 22-30.

Nader, P.R., Stone, E.J., Lytle, L.A., Perry, C.L., Osganian, S.K., Kelder, S., et al. (1999). Three-year maintenance of improved diet and physical activity: The CATCH cohort. *Archives of Pediatric and Adolescent Medicine, 153*, 695-704.

Nahas, M.V., Goldfine, B. & Collins, M.A. (2003). Determinants of physical activity in adolescents and young adults: The basis for high school and college physical education to promote active lifestyles. *The Physical Educator, 60*(1), 42-56.

Nicholson, H.J., Collins, C. & Holmer, H. (2004). Youth as people: The protective aspects of youth development in after-school settings. *The ANNALS of the American Academy of Political and Social Science, 591*, 55-71.

Noam, G.G. & Fiore, N. (2004, Fall). Relationships across multiple settings: An overview. *New Directions for Youth Development*, *103*, 9-16.

Noar, S.M., Chabot, M. & Zimmerman, R.S. (2008). Applying health behavior theory to multiple behavior change. *Preventive Medicine, 46*, 275-280.

O'Loughlin, J., Paradis, G., Kishchuk, N., Barnett, T. & Renaud, L. (1999). Prevalence and correlates of physical activity behaviors among elementary school children in multiethnic, low income, inner-city neighborhoods in Montreal, Canada. *Annals of Epidemiology, 9*, 397-407.

Onwuegbuzie, A.J. (2000, November). *Expanding the framework of internal and external validity in qualitative research*. Paper presented at the annual meeting of the Association for the Advancement of Educational Research.

Onwuegbuzie, A.J. & Leech, N.L. (2005). Taking the "Q" out of research: Teaching research methodology courses without the divide between quantitative and qualitative paradigms. *Quality & Quantity, 39*, 267-296.

Onwuegbuzie, A.J. & Leech, N.L. (2007). Validity and qualitative research: An oxymoron? *Quality & Quantity, 41*, 233-249.

Orthner, D.K., Smith, S. & Wright, D. (1986). Measuring program needs: A strategic design. *Evaluation and Program Planning, 9*, 199-207.

Outdoor Industry Association. (2006). *State of the Industry Report.* Boulder, CO: Author.

Parrott, M.W., Tennant, L.K., Olejnik, S. & Poudevigne, M.S. (in press). Theory of planned behavior: Implications for an email-based physical activity intervention. *Psychology of Sport and Exercise*.

Pate, R.R., Riner, W., Saunders, R., Trost, S.G. & Ward, D.S. (1999). Correlates of objectively measure physical activity in preadolescent youth. *American Journal of Preventative Medicine, 17*(2), 120-126.

Patten, M.L. (2009). *Understanding research methods: An overview of the essentials* (7th ed.). Glendale, CA: Pyrczak Publishing.

Patton, M.Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage.

Perkins, D.F. & Caldwell, L. (2005). Resiliency, protective processes, promotion, and community youth development. In Witt, P. & Caldwell, L. (Eds.). *Recreation and youth development* (pp. 149-168). State College, PA: Venture Publishing, Inc.

Quane, J.M. & Rankin, B.H. (2006). Does it pay to participate? Neighborhood-based organizations and the social development of adolescents. *Children and Youth Services Review, 28*, 1229-1250.

Rakin, R. & Mahoney, A. (2006). Empowering youth to change their world: Identifying key components of a community service program to promote positive development. *Journal of School Psychology, 44*, 513-531.

Ranz-Smith, D.J. (2007). Teacher perception of play: In leaving no child behind are teachers leaving childhood behind? *Early Education and Development, 18*(2), 271-303.

Rhodes, R.E. & Courneya, K.S. (2005). Threshold assessment of attitude, subjective norm, and perceived behavioral control for predicting exercise intention and behavior. *Psychology of Sport and Exercise, 6*, 349-361.

Rhodes, R.E., Courneya, K.S. & Jones, L.W. (2004). Personality and social cognitive influences on exercise behavior: Adding the activity trait to the theory of planned behavior. *Psychology of Sport and Exercise, 5*, 243-254.

Rhodes, R.E., Macdonald, H.M. & McKay, H.A. (2006). Predicting physical activity intention and behaviour among children in a longitudinal sample. *Social Science and Medicine, 62*, 3146-3156.

Rhodes, R.E. & Plontikoff, R.C. (2005). Can current physical activity act as a reasonable proxy measure of future physical activity? Evaluating cross-sectional and passive prospective designs with the use of social cognition models. *Preventive Medicine, 40*, 547-555.

Rich, M. & Ginsburg, K. (1999). The reason and rhyme of qualitative research: why, when, and how to use qualitative methods in the study of adolescent health. *Journal of Adolescent Health, 25*, 371-378.

Richter, K.P., Harris, K.J., Paine-Andrews, A., Fawcett, S.B., Schmid, T.L., Lankenau, B.H., et al. (2000). Measuring the health environment for physical activity and nutrition among youth: A review of the literature and applications for community initiatives. *Preventive Medicine, 31*, S98-S111.

Rieber, L.P., Smith, L., & Noah, D. (1998). The value of serious play. *Educational Technology,38*(6), 29–37.

Roth, J.L. & Brooks-Gunn, J. (2003). Youth development programs: Risk, prevention and policy. *Journal of Adolescent Health, 32*(3), 170-182.

Russell, K.C., Lewis, T.G. & Petit, M. (in review). Evaluation of an afterschool intentional youth development program to encourage healthy eating and physical activity. Submitted to *Journal of Park and Recreation Administration*.

Sale, J.E.M., Lohfeld, L.H. & Brazil, K. (2002). Revisiting the quantitative-qualitative debate: Implications for mixed-methods research. *Quality & Quantity, 36*, 43-53.

Sallis, J.F., Zakarian, J.M., Hovell, M.F. & Hofstetter, C.R. (1996). Ethnic, socioeconomic, and sex differences in physical activity among adolescents. *Journal of Clinical Epidemiology, 49*(2), 125-134.

Santos, J.R.A. (1999). Cronbach's alpha: A tool for assessing the reliability of scales. *Journal of Extension, 37*(2). Retrieved April 2, 2009, from http://www.joe.org/joe/1999april/tt3.php.

Saunders, R.P., Pate, R.P., Felton, G., Dowda, M., Weinrich, M.C., Ward, D.S., et al. (1997). Development of questionnaires to measure psychosocial influences on children's physical activity level. *Preventative Medicine, 26*, 241-247.

Sherwood, N.E., Taylor, W.C., Treuth, M., Klesges, L.M., Baranowski, T., Zhou, A., et al. (2004). Measurement characteristics of activity-related psychosocial measures in

8- to 10-year-old African-American girls in the girls health enrichment multisite study (GEMS). *Preventive Medicine, 38*, S60-S68.

Shortt, J. (2002). Out-of-school-time programs: At a critical juncture. *New Directions for Youth Development, 94*, 119-123.

Shute, N. (1998, April 6). Go out and play. *U.S. News and World Reports, 124*(13), 69.

Simmons, D.A. (1994). Urban children's preferences for nature: Lessons for environmental education. *Children's Environments, 11*(3), 28-40.

Sloat, E.A., Audas, R.P. & Willms, J.D. (2007). Evaluating programs for at-risk adolescents: Toward an outcome-based assessment framework. *Journal of Education for Students Placed At-Risk, 12*(4), 459-476.

Smith, E.P. (2007). The role of afterschool settings in positive youth development. *Journal of Adolescent Health, 41*, 219-220.

Springer, A.E., Kelder, S.H. & Hoelscher, D.M. (2006). Social support, physical activity and sedentary behavior among 6th-grade girls: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity, 3*(8).

Sprung, B. (2007, May). Growing up green: How connecting with nature helps children become a protector of the planet – and a better learner. *Scholastic Parent and Child*, 26-30.

Stagnitti, K. (2004). Understanding play: The implications for play assessment. *Australian Occupational Therapy Journal, 51*, 3-12.

Stahl, T., Rutten, A., Nutbeam, D., Bauman, A., Kannas, L, Abel, T., et al. (2001). The importance of the social environment for physically active lifestyle: results from an international study. *Social Science and Medicine, 52*, 1-10.

StatSoft, Inc. (2007). Nonparametric Statistics. In *Electronic Statistics Textbook.* Retrieved May 14, 2009, from http://www.statsoft.com/textbook/stathome.html.

Stein, C., Fisher, L., Berkey, C. & Colditz, G. (2007). Adolescent physical activity and perceived competence: does change in activity level impact self-perception. *Journal of Adolescent Health, 40*, 462.e1-462.e8.

Steptoe, S. (2003, October 27). Ready, set, RELAX! *Time Magazine, 162*(17).

Strauss, R.S., Rodzilsky, D., Burack, G., & Colin, M. (2001). Psychosocial correlates of physical activity in healthy children. *Archives of Pediatric Adolescent Medicine, 155*, 897-902.

Stucky-Ropp, R.C. & DiLorenzo, T.M. (1993). Determinants of exercise in children. *Preventive Medicine, 22*, 880-889.

Swiderski, M. (2006). Nature deficit disorder: Plugged in and out of touch. [Review of the book *Last child in the woods: Saving our children from nature deficit disorder*]. *Journal of Experiential Education, 29*(1), 95-97.

Tabachnick, B.G. & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson.

Tanner, C.K. (2001, April). Into the woods, wetlands, and prairies. *Educational Leadership*, 64-66.

Taylor, B. (2003). Recapturing childhood. In J. De Graff (Ed), *Take back your time* (pp. 46-51). San Francisco: Berrett-Koehler Publishers, Inc.

Tebes, J.K., Feinn, R., Vanderploeg, J.J., Chinman, M.J., Shepard, J., Brabham, T., et al. (2007). Impact of a positive youth development program in after-school settings on the prevention of adolescent substance use. *Journal of Adolescent Health, 41*, 239-247.

Theunissen, N.C.M. & Tates, K. (2004). Models and theories in studies on educating and counseling children about physical health: A systematic review. *Patient Education and Counseling, 55*, 316-330.

Thomas, D.R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation, 27*(2), 237-246.

Torrence, M. (2001, Summer). Why play? *Montessori Life, 13*(3), 20-21.

Trochim, W.M.K. (2006). Deduction & induction. In *Research Methods Knowledge Base* (Philosophy of Research). Retrieved April 2, 2009, from http://www.socialresearchmethods.net/kb/dedind.php.

Trost, S., Pate, R.R., Ward, D.S., Saunders, R. & Riner, W. (1999). Correlates of objectively measure physical activity in preadolescent youth. *American Journal of Preventative Medicine, 17*(2), 120-126.

Trost, S., Saunders, R. & Ward, D.S. (2002). Determinants of physical activity in middle school children. *American Journal of Health Behavior, 26*(2), 95-102.

Trust for Public Land. (1994). Healing America's cities: Why we must invest in urban parks. San Francisco, CA: The Trust for Public Lands National Office.

Tucker, P. (2006, May-June). Curing "nature deficit disorder". *The Futurist,* p. 13.

United States Census Bureau. (n.d.). *American FactFinder*. Retrieved October 15, 2008 from http://factfinder.census.gov/home/saff/main.html?_lang=en.

Utter, J., Denny, S., Robinson, E.M., Ameratunga, S. & Watson, P. (2004). Perceived access to community facilities, social motivation, and physical activity among New Zealand youth. *Journal of Adolescent Health, 39*, 770-773.

Utts, J.M. & Heckard, R.F. (2006). *Statistical ideas and methods*. Belmont, CA: Wadsworth/Thompson Learning.

Vandell, D.L., Shernoff, D.J., Pierce, K.M., Bolt, D.M., Dadisman, K. & Brown, B.B. (2005, Spring). Activities, engagement, and emotion in after-school programs (and elsewhere). *New Directions for Youth Development*, *105*, 121-129.

VanderVen, K. (2007). From spontaneous play and hanging out to out-of-school-time programming. *New Directions for Youth Development, 116*, 71-86.

Vinluan, M. B. (2005, October). Advocacy update: Reducing obesity through recreation: park and recreation agencies need increased federal funding to support efforts to reduce health problems. *Parks & Recreation*. Retrieved September 14, 2007 from http://findarticles.com/p/articles/mi_m1145/is_10_40/ai_n15863412.

Vinluan, M. B. (2006, December). Advocacy update: Linking health to parks and recreation. *Parks & Recreation*, 14-15.

Wals, A.E.J. (1994). Nobody planted it, it just grew! Young adolescents' perceptions and experiences of nature in the context of urban environmental education. *Children's Environments, 11*(3), 1-27.

Walsh, D.S. (2007). Youth empowerment evaluation: Learning voice. *American Journal of Evaluation, 28*, 321-326.

Walsh-Daneshmandi, A. & MacLachlan, M. (2006). Toward effective evaluation of environmental education: validity of the children's environmental attitudes and knowledge scale using data from a sample of Irish adolescents. *The Journal of Environmental Education, 28*, 32-37.

Watkins, B. (1992). Youth beliefs about health and physical activity. *Journal of Applied Developmental Psychology, 13*, 257-269.

Webb, T.L. & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*(2), 249-268.

Welk, G.J. & Schaben, J.A. (2004). Psychosocial correlates of physical activity in children: A study of relationships when children have similar opportunities to be active. *Measurement in Physical Education and Exercise Science, 8*(2), 63-81.

Wells, N.M. & Lekies, K.S. (2006). Nature and life course: Pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments, 16*(1), 1-24.

White, R. (2004). *Young children's relationship with nature: Its importance to children's development & the earth's future.* Kansas City, MO: White Hutchinson Leisure & Learning Group.

White, R. & Stoecklin, V.L.. (1998). *Children's outdoor play & learning environments: Returning to nature*. Early Childhood New.

Why kids need nature. (2005, June/July/August). *Copy Editor*, pp. 70-72

Wilder Foundation. (2005). Saint Paul neighborhood census facts. *Community DataWorks*. Retrieved October 15, 2008 from http://www.communitydataworks.org/StPaul/data.php.

Wills, D.K. (2007). The case for play. *Teacher Magazine, 18*(4).

Wilson, E.O. (2006). Biodiversity, biophilia. In *Naturalist* (pp. 354-365). Washington, DC: Island Press.

Wilson, E.O. (1993). Biophilia and the conservation ethic. In S.R. Kellert & E.O. Wilson (Eds.), *The biophilia hypothesis* (pp. 31-41). Washington, DC: Island Press.

Wilson, R. (1997). A sense of place. *Early Childhood Education Journal, 24*(3), 191-194.

Witt, P. (2005). Developing Quality After-School Programs. In Witt, P. & Caldwell, L. (Eds.). *Recreation and youth development* (pp. 301-327). State College, PA: Venture Publishing, Inc.

Witt, P. & Caldwell, L. (2005). 10 principles of youth development. In P. Witt & L. Caldwell (Eds.), *Recreation and youth development* (pp. 3-23). State College, PA: Venture Publishing, Inc.

World Health Organization. (2004). About WHO. Retrieved February 8, 2008, from http://www.who.int/about/en.

Zarrett, N. & Eccles, J. (2006). The passage to adulthood: Challenges of late adolescence. *New Directions for Youth Development, 111*, 13-28.

Zimmerman, L.K. (1996). The development of an environmental values short form. *The Journal of Environmental Education, 28*, 32-37.

APPENDICES

A: Internal Review Board Ethics Approval

05/22/2008

Keith C Russell
Kinesiology
100 Cooke Hall
Minneapolis Campus

RE: "Youth and Nature: Assessing the Impact of an Integrated Wellness Curriculum on Nature Based Play and Nature Appreciation for Youth in After-School Recreation Programming"
IRB Code Number: 0805S33021

Dear Dr. Russell

The referenced study was reviewed by expedited review procedures and approved on May 19, 2008. If you have applied for a grant, this date is required for certification purposes as well as the Assurance of Compliance number which is FWA00000312 (Fairview Health Systems Research FWA00000325, Gillette Children's Specialty Healthcare FWA 00004003). Approval for the study will expire one year from that date. A report form will be sent out two months before the expiration date.

IRB approval of this study includes the consent form and assent form received
May 9, 2008.

Please note that the following items are now required on each page of the consent form: IRB code number and consent form version date (the date the consent form specific to this study revised). This will be required at the time of continuing review.

The IRB would like to stress that subjects who go through the consent process are considered enrolled participants and are counted toward the total number of subjects, even if they have no further participation in the study. Please keep this in mind when calculating the number of subjects you request. This study is currently approved for 250 subjects. If you desire an increase in the number of approved subjects, you will need to make a formal request to the IRB.

The code number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

As the Principal Investigator of this project, you are required by federal regulations to inform the IRB of any proposed changes in your research that will affect human subjects. Changes should not be initiated until written IRB approval is received. Unanticipated problems and adverse events should be reported to the IRB as they occur. Research projects are subject to continuing review and renewal. If you have any questions, call the IRB office at 612-626-5654. On behalf of the IRB, I wish you success with your research.

Sincerely,

Felicia Mroczkowski, CIP
Research Compliance Supervisor
FM/egk
CC: T. Lewis

B: Child Assent Form

ASSENT FORM

Youth and Nature: Assessing the Impact of an Integrated Wellness Curriculum on Nature Based Play and Nature Appreciation for Youth in After-school Recreation Programming

Hello,
We are asking if you would be willing to take part in a study on a new program that seeks to teach youth about being physically active outdoors in your free time. You are being asked to participate in this study because you go to the _____ after-school/summer program at the _____ recreation center. The study is being conducted by Dr. Keith Russell and T. Grant Lewis, who are researchers at the University of Minnesota. If you agree to participate in the study we will ask you to answer some questions about what you like to do in your free time, and what your friends and family like to do in their free time. You can answer the questions however you would like, and no one will know your answers from any other kids in the study. We are asking these questions so we can better understand how the program works with kids just like you.

You can ask any questions that you want about the study to your parents or guardians, the recreation center staff, or anyone that is helping you fill out the questions. If you do not like any of the questions you can choose not to answer them, or you can choose not to be included in the study. You simply have to tell your leader or teacher at the recreation center, and they will help you.

By signing here it means that you have read this paper, or that someone has read the paper to you, and that you agree to participate in the study. If you don't want to be in the study, then you do not have to sign the paper. Remember, being in this study is up to you and nobody will be mad or upset with you if you do not want to be included.

Name of participant:_____

Signature of participant:_____

Signature of person explaining the study:_____

Date:_____

C: Parental Consent and Research Cover Letter

CONSENT FORM

Youth and Nature: Assessing the Impact of an Integrated Wellness Curriculum on Nature Based Play and Nature Appreciation for Youth in After-school Recreation Programming

You are invited to have your child participate in a research study to examine the physical activity behaviors in outdoor settings of young people. Your child was selected as a possible participant because your child is enrolled in after-school/summer programming at this recreation center. We ask that you read this form and pose any questions you may have before agreeing to be included in the study.

This study is being conducted by: Keith C. Russell, Ph.D., assistant professor in Recreation at the University of Minnesota, and T. Grant Lewis, M.Ed., a doctoral student in Recreation at the University of Minnesota.

Background Information

The purpose of this study is to evaluate the program's impact on youth participants by examining their physical activity behaviors in outdoor settings before and after the implementation of the project.

Procedures

If you agree to allow your child to participate in this study and be included in the research process, we would ask that you encourage your child to complete the assessments that ask him or her about their perceptions of physical activity and the outdoors.

Your child will complete a survey before and after the implementation of the project. In addition to questions regarding their own perceptions of physical activity in outdoor settings, the survey contains questions related to youth's perceptions regarding the physical activity habits of their parent(s) or guardian(s). Examples of these questions include the following:

I enjoy being outdoors because it is fun.	1	2	3
People who care about me encourage me to play outdoors.	1	2	3
My family takes me places where I can be outdoors.	1	2	3

In addition, your child may be observed by the principal investigators of the study. This would involve the researchers actively participating in two or three of the sessions involving health and wellness lessons.

Risks and Benefits of Being in the Study

The study has several risks. First, some questions will be asked that require the youth to assess the degree to which their parents or guardians, friends, and others feel about

physical activity and the outdoors (see examples under Procedures). This may be a sensitive subject in your household and may prompt discussion in the family unit. Second, some of the questions ask about why kids may or may not be more physically active. This may be a sensitive subject for your child.

There are no direct benefits to participation in this study.

Confidentiality
The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a participant. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study
Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota, or with the recreation center supervising your child's after-school/summer programming. If you decide to participate, you have the right to choose not to answer any question or to withdraw from the study at any time without affecting those relationships.

Contacts and Questions
The researchers conducting this study are Dr. Keith C. Russell and T. Grant Lewis. Please feel free to ask any questions that you have now, or if you have questions that arise later, **you are encouraged** to contact either of the researchers. Dr. Russell can be reached at 612.626.4280 or krussell@umn.edu; Mr. Lewis can be reached at tglewis@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line at 612. 625.1650. Written correspondence can be addressed to: D528 Mayo, 420 Delaware St. SE, Minneapolis, MN 55455.

You will be given a copy of this information to keep for your records.

Statement of Consent

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Name of child:_____

Name of parent or guardian:_____

Signature:_____ Date: _____

Signature of Investigator:_____ Date: _____

D: Latent Constructs and Survey Questions

Construct	Question Number	Question
Attitudes	1	I prefer to play outdoors rather than indoors
	2	I like being outdoors because it is good for me
	3	I enjoy being outdoors because it is fun
	4	I like being outdoors because it helps me feel good about myself
	5	I like to eat healthy snacks, like fruits, vegetables, and nuts
	6	I enjoy being physically active because it is fun
	7	I like walking or riding my bike to places
	8	I enjoy trying new activities
	9	I like exploring new areas
	10	I enjoy being physically active because it helps me feel good about myself
Norms & External PBC	1	My family spends time together outdoors
	2	My friends and I spend time together outdoors
	3	People who care about me encourage me to play outdoors
	4	My friends enjoy running, riding bikes, and playing games outdoors
	5	I am allowed to play outdoors when I am at home
	6	People who care about me are usually with me while I play outdoors
	7	My friends and I eat healthy snacks, like fruits, vegetables and nuts
	8	My parents or people who care about me recycle
	9	My family enjoys being physically active together

	10	There are places for my friends and me to play outdoors (playgrounds, parks, courts
	11	People who care about me are physically active
	12	My family takes me places where I can be outdoors
Internal PBC	1	I can be physically active most days of the week
	2	My parents or people who care about me go outside and do active things with me
	3	I have the ability to be active in my free time
	4	My friends like to go outdoors and do active things with me on most days
	5	I can be outdoors on most days even if it is very hot or cold outside
	6	I have access to healthy snacks
	7	I am uncomfortable playing outdoors because I think kids will tease me
	8	I am uncomfortable playing outdoors because it makes me tired
	9	I would rather play inside than outside because I get dirty when I play outside
	10	I feel safe walking or biking during the day
	11	I feel safe walking or biking at night
Values	1	Being outdoors is important to me
	2	Playing outside with my friends is important to me
	3	Eating healthy snacks is important to me
	4	Improving my health and physical condition is important to me
	5	Taking care of nature is important to me
	6	Drinking lots of water is important to me
	7	Going to the park with my family is important to me
	8	Recycling is important to me
	9	Having places to play outside with my friends is important to me

Intentions	1	In the next week I will spend time outdoors
	2	In the next week I walk or ride my bike to places, such as school, the store, or the park
	3	In the next week I will chose healthy snacks when I had a choice
	4	In the next week I will play outdoors with my friends
	5	In the next week I will turn off the water while I brushed my teeth
	6	In the next week I will choose to be outdoors on most days even though I could watch TV or play video games instead
	7	In the next week I will be given a ride to places, such as school, the store, or the park
	8	In the next week I will recycle items
	9	In the next week I will be physically active with my family
	10	In the next week I will explore new areas
	11	In the next week I will try an activity outdoors
Behavior	1	In the last week I spent time outdoors
	2	In the last week I walked or rode my bike to places, such as school, the store, or the park
	3	In the last week I chose healthy snacks when I had a choice
	4	In the last week I played outdoors with my friends
	5	In the last week I turned off the water while I brushed my teeth
	6	In the last week I chose to be outdoors on most days even though I could watch TV or play video games instead
	7	In the last week I was given a ride to places, such as school, the store, or the park
	8	In the last week I recycled items
	9	In the last week I was physically active with my family
	10	In the last week I explored new areas
	11	In the last week I tried a new activity outdoors

Exploring Your Thoughts and Feelings about Physical Activity and the Outdoors

Name: _____

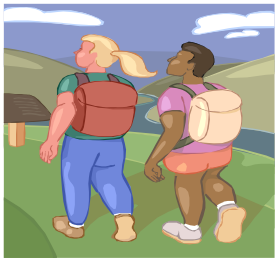
Recreation Center: _____

Please use the scale below to tell us how much the statements are true or not true for you. There are three ways to answer each question. Please **circle the number** that best represents your feelings. Remember, **there are no right or wrong answers**, so you can answer however you feel!!!

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
I prefer to play outdoors rather than indoors.	1	2	3
I like being outdoors because it is good for me.	1	2	3
I enjoy being outdoors because it is fun.	1	2	3
I like being outdoors because it helps me feel good about myself.	1	2	3
I like to eat healthy snacks, like fruits, vegetables, and nuts.	1	2	3
I enjoy being physically active because it is fun.	1	2	3
I like walking or riding my bike to places.	1	2	3
I enjoy trying new activities.	1	2	3
I like exploring new areas.	1	2	3
I enjoy being physically active because it helps me feel good about myself.	1	2	3

PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
My family spends time together outdoors.	1	2	3
My friends and I spend time together outdoors.	1	2	3
People who care about me encourage me to play outdoors.	1	2	3
My friends enjoy running, riding bikes, and playing games outdoors.	1	2	3
I am allowed to play outdoors when I am at home.	1	2	3
People who care about me are usually with me while I play outdoors.	1	2	3
My friends and I eat healthy snacks, like fruits, vegetables and nuts.	1	2	3
My parents or people who care about me recycle.	1	2	3
My family enjoys being physically active together	1	2	3
There are places for my friends and me to play outdoors (playgrounds, parks, courts).	1	2	3
People who care about me are physically active.	1	2	3
My family takes me places where I can be outdoors.	1	2	3



PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
I can be physically active most days of the week.	1	2	3
My parents or people who care about me go outside and do active things with me.	1	2	3
I have the ability to be active in my free time.	1	2	3
My friends like to go outdoors and do active things with me on most days.	1	2	3
I can be outdoors on most days even if it is very hot or cold outside.	1	2	3
I have access to healthy snacks.	1	2	3
I am uncomfortable playing outdoors because I think kids will tease me.	1	2	3
I am uncomfortable playing outdoors because it makes me tired.	1	2	3
I would rather play inside than outside because I get dirty when I play outside.	1	2	3
I feel safe walking or biking during the day.	1	2	3
I feel safe walking or biking at night.	1	2	3

PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
Being outdoors is important to me.	1	2	3
Playing outside with my friends is important to me.	1	2	3
Eating healthy snacks is important to me.	1	2	3
Improving my health and physical condition is important to me.	1	2	3
Taking care of nature is important to me.	1	2	3
Drinking lots of water is important to me.	1	2	3
Going to the park with my family is important to me.	1	2	3
Recycling is important to me.	1	2	3
Having places to play outside with my friends is important to me.	1	2	3

PLEASE TURN THE PAGE

In the next group of questions please answer how often you believe you **did** the each of these activities **during the last week**.

	Hardly Ever	Sometimes	Almost Always
In the last week I spent time outdoors.	1	2	3
In the last week I walked or rode my bikes to places, such as school, the store, or the park.	1	2	3
In the last week I chose healthy snacks when I had a choice.	1	2	3
In the last week I played outdoors with my friends.	1	2	3
In the last week I turned off the water while I brushed my teeth.	1	2	3
In the last week I chose to be outdoors on most days even though I could watch TV or play video games instead.	1	2	3
In the last week I was given a ride to places, such as school, the store, or the park.	1	2	3
In the last week I recycled items.	1	2	3
In the last week I was physically active with my family.	1	2	3
In the last week I explored new areas.	1	2	3
In the last week I tried a new activity outdoors.	1	2	3

THANK YOU FOR YOUR PARTICIPATION!!!!!!!!

Spike's Knowledge Quest

Spike needs **your** help! Each sentence has one or more blank spaces. Using the words at the bottom of the page fill in the blanks in the sentences below to share what you know about physical activity and nature.

1. Our world needs _____ because they clean the air we breathe and turn carbon dioxide into oxygen.

2. When the calories that go into our bodies through food and drinks equals the calories that go out of our body through exercise and activities then we have _____ _____.

3. A group of things in nature that live and work together is a _____.

4. Animals, plants, and humans need clean _____ to grow and be their best.

5. Foods that are in their natural forms are the best kind of Energy Ins for us because they have lots of _____.

6. We can help the Earth to stay in balance by reducing _____.

7. An example of a heart-pumping activity in the outdoors is _____.

8. In order to be prepared when we go outside we can _____.

9. Three ways to reduce our use of fossil fuels and help the world be in balance are _____, _____, and _____.

recycling ecosystem eat healthy snacks pollution walking
energy balance trees nutrients reduce waste biking
water reusing items gardening wear sunscreen

Exploring Your Thoughts and Feelings about Physical Activity and the Outdoors

Name: _____

Recreation Center: _____

Please use the scale below to tell us how much the statements are true or not true for you. There are three ways to answer each question. Please **circle the number** that best represents your feelings. Remember, **there are no right or wrong answers**, so you can answer however you feel!!!

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
I prefer to play outdoors rather than indoors.	1	2	3
I like being outdoors because it is good for me.	1	2	3
I enjoy being outdoors because it is fun.	1	2	3
I like being outdoors because it helps me feel good about myself.	1	2	3
I like to eat healthy snacks, like fruits, vegetables, and nuts.	1	2	3
I enjoy being physically active because it is fun.	1	2	3
I like walking or riding my bike to places.	1	2	3
I enjoy trying new activities.	1	2	3
I like exploring new areas.	1	2	3
I enjoy being physically active because it helps me feel good about myself.	1	2	3

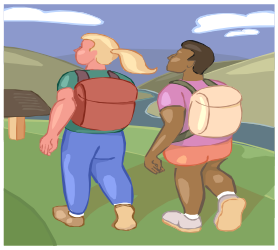
PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
My family spends time together outdoors.	1	2	3
My friends and I spend time together outdoors.	1	2	3
People who care about me encourage me to play outdoors.	1	2	3
My friends enjoy running, riding bikes, and playing games outdoors.	1	2	3
I am allowed to play outdoors when I am at home.	1	2	3
People who care about me are usually with me while I play outdoors.	1	2	3
My friends and I eat healthy snacks, like fruits, vegetables and nuts.	1	2	3
My parents or people who care about me recycle.	1	2	3
My family enjoys being physically active together	1	2	3
There are places for my friends and me to play outdoors (playgrounds, parks, courts).	1	2	3
People who care about me are physically active.	1	2	3
My family takes me places where I can be outdoors.	1	2	3

PLEASE TURN THE PAGE

In the next group of questions please answer how often you believe you **will do** each of these activities **during the next week**.

	Hardly Ever	Sometimes	Almost Always
In the next week I will spend time outdoors.	1	2	3
In the next week I will walk or ride my bike to places, such as school, the store, or the park.	1	2	3
In the next week I will choose healthy snacks when I have a choice.	1	2	3
In the next week I will play outdoors with my friends.	1	2	3
In the next week I will turn off the water while I brush my teeth.	1	2	3
In the next week I will choose to be outdoors on most days even though I could watch TV or play video games instead.	1	2	3
In the next week I will be given a ride to places, such as school, the store, or the park.	1	2	3
In the next week I will recycle items.	1	2	3
In the next week I will be physically active with my family.	1	2	3
In the next week I will explore new areas.	1	2	3
In the next week I will try a new activity outdoors.	1	2	3



PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
I can be physically active most days of the week.	1	2	3
My parents or people who care about me go outside and do active things with me.	1	2	3
I have the ability to be active in my free time.	1	2	3
My friends like to go outdoors and do active things with me on most days.	1	2	3
I can be outdoors on most days even if it is very hot or cold outside.	1	2	3
I have access to healthy snacks.	1	2	3
I am uncomfortable playing outdoors because I think kids will tease me.	1	2	3
I am uncomfortable playing outdoors because it makes me tired.	1	2	3
I would rather play inside than outside because I get dirty when I play outside.	1	2	3
I feel safe walking or biking during the day.	1	2	3
I feel safe walking or biking at night.	1	2	3

PLEASE TURN THE PAGE

	Not True for Me	**Sometimes** True for Me	**Very** True for Me
Being outdoors is important to me.	1	2	3
Playing outside with my friends is important to me.	1	2	3
Eating healthy snacks is important to me.	1	2	3
Improving my health and physical condition is important to me.	1	2	3
Taking care of nature is important to me.	1	2	3
Drinking lots of water is important to me.	1	2	3
Going to the park with my family is important to me.	1	2	3
Recycling is important to me.	1	2	3
Having places to play outside with my friends is important to me.	1	2	3

PLEASE TURN THE PAGE

In the next group of questions please answer how often you believe you **did** the each of these activities **during the last week**.

	Hardly Ever	Sometimes	Almost Always
In the last week I spent time outdoors.	1	2	3
In the last week I walked or rode my bikes to places, such as school, the store, or the park.	1	2	3
In the last week I chose healthy snacks when I had a choice.	1	2	3
In the last week I played outdoors with my friends.	1	2	3
In the last week I turned off the water while I brushed my teeth.	1	2	3
In the last week I chose to be outdoors on most days even though I could watch TV or play video games instead.	1	2	3
In the last week I was given a ride to places, such as school, the store, or the park.	1	2	3
In the last week I recycled items.	1	2	3
In the last week I was physically active with my family.	1	2	3
In the last week I explored new areas.	1	2	3
In the last week I tried a new activity outdoors.	1	2	3

THANK YOU FOR YOUR PARTICIPATION!!!!!!!!

Spike's Knowledge Quest

Spike needs **your** help! Each sentence has one or more blank spaces. Using the words at the bottom of the page fill in the blanks in the sentences below to share what you know about physical activity and nature.

1. Our world needs _____ because they clean the air we breathe and turn carbon dioxide into oxygen.

2. When the calories that go into our bodies through food and drinks equals the calories that go out of our body through exercise and activities then we have _____ _____.

3. A group of things in nature that live and work together is a _____.

4. Animals, plants, and humans need clean _____ to grow and be their best.

5. Foods that are in their natural forms are the best kind of Energy Ins for us because they have lots of _____.

6. We can help the Earth to stay in balance by reducing _____.

7. An example of a heart-pumping activity in the outdoors is _____.

8. In order to be prepared when we go outside we can _____.

9. Three ways to reduce our use of fossil fuels and help the world be in balance are _____, _____, and _____.

recycling ecosystem eat healthy snacks pollution walking
energy balance trees nutrients reduce waste biking
water reusing items gardening wear sunscreen

G: Observation Focus Areas

Observations will provide an opportunity to view the process of program implementation across program sites. A focus will be placed on youth interaction with the program curriculum during and after each activity along with the youths' perceived attitude towards the curriculum itself. Attitudinal observations of youth during the activity sessions will focus on body language and non-verbal indicators in conjunction with verbal identifiers. In addition, specific and general comments made by youth that connect the curriculum with everyday life activities will be noted. Staff delivery of the program, including adaptations and modifications, will be documented. Observations will center on the following four items:

- Youth interaction with program curriculum during/after each physical or "classroom based" activity;
- Youth attitude towards the curriculum;
- Staff delivery of the program, including any adaptations and modifications;
- Youth comments that referenced how the program was impacting their lives at school, with their friends, or at home.

H: Focus Group Questions – Staff and Youth

Focus Group Process

Discussion and feedback from the focus group session with participants will be audio recorded, coded, and included the final report. The focus group process will entail the following:

STAFF

Step-One: Brainstorming

Please identify the following:

1. Strengths and weaknesses of the program;
2. Improvements to the overall program;
3. Strengths and weaknesses of the curriculum and its individual components;
4. Modifications and adaptations employed at individual centers;
5. Additional resources utilized or would be beneficial for future implementations;
6. Challenges to implementing the program;
7. On average how much time did you spend preparing to implement each mission?

Step-Two: Ranking

Staff will be asked to indicate a level of importance for each recorded response by ranking each of the responses (for questions # 1, 2, and 5).

YOUTH

Step-One: Brainstorming

Please identify the following:

1. What did you enjoy most about the program;
2. What did you least enjoy about the program;
3. What did you learn by completing the program;
4. What things do you wish you could have learned more about, or would want to learn;
5. What activities, if any, would you feel more comfortable doing on your own or with your family;
6. Would you recommend this program to a friend, and what are the reasons you would/wouldn't;
7. How would you describe nature.

Step-Two: Ranking

Youth will be asked to indicate a level of importance for each recorded response by ranking each response (for questions # 1 and 2).