Leisure Sciences, 27: 367–383, 2005

ISSN: 0149-0400 print / 1521-0588 online
DOI: 10.1080/01490400500225674

Routledge
Taylor & Francis Group

Recreation and Leisure Research from an Active Living Perspective: Taking a Second Look at Urban Trail Use Data

PAUL H. GOBSTER

USDA Forest Service
North Central Research Station
Evanston, Illinois, USA

This paper examines recreation and leisure research within the context of active living, and highlights an apparent gap between the current involvement of recreation and leisure researchers and the potential they could offer to this important and expanding area of inquiry. To illustrate this potential, I looked at two previous studies that focused on the recreational use of urban trails and reanalyzed the data from an active living perspective. In Study 1, individual, social and environmental factors helped distinguish between low, moderate, and high activity level trail uses. In Study 2, use patterns helped distinguish between health-motivated trail users and individuals using trails for recreation and other purposes, but perceptual and demographic data were similar among groups. Findings from similar studies can help inform active living research, and recreation and leisure studies can provide leadership and contributions to a transdisciplinary understanding of active living.

Keywords physical activity, urban parks, logistic regression, ecological models, Chicago

Introduction

By now the statistics are all too familiar. Rates of obesity and incidents of related diseases such as diabetes, heart disease, and depression have reached epidemic proportions among adults and children in the United States. These conditions have been linked with other factors to increasingly sedentary lifestyles brought on by changes in technology in homes and workplaces, urban sprawl, and the perceived and actual safety of communities (Frumkin, Frank, & Jackson, 2004). The consequences of physical inactivity have been estimated to be responsible for 365,000 deaths annually (McKay, 2004; Mokdad, Marks, Stroup, & Gerberding, 2004, 2005) and result in treatment costs of at least $37 billion per year (Colditz, 1999; Finkelstein, Fiebelkorn, & Wang, 2003). The alarming nature of these statistics has spurred government groups such as the Centers for Disease Control and Prevention and private concerns such as the Robert Wood Johnson Foundation to mount major research initiatives and interventions to understand how more Americans can improve their health

Received 15 August 2004; accepted 31 January 2005.

Support for this work came from the USDA Forest Service and the Beatrix C. Farrand Fund of the Department of Landscape Architecture and Environmental Planning at the University of California-Berkeley. Thanks to Ann Forsyth, Ashley Livingston, Anne Lusk, Rohit Verma, and two anonymous reviewers for their helpful comments on an earlier version of this paper.

Address correspondence to Paul H. Gobster, USDA Forest Service, North Central Research Station, 1033 University Pl., Suite 360, Evanston, IL 60201. E-mail: pgobster@fs.fed.us

and fitness by integrating physical activity into the course of their everyday lives. This concept is coming to be known as "active living" (Active Living Research, 2003).

Although this physical activity, which for an average adult amounts to 30 minutes of moderate-to-vigorous movement per day (Centers for Disease Control and Prevention [CDC], 2001), can come from a variety of sources, parks and other outdoor recreation environments are increasingly being cited as key contributors (Frumkin, 2003; Goodman & Miller, 2003). There are several reasons. Many kinds of active recreation experiences in which people can freely engage take place in outdoor settings and are seen as enjoyable by a wide range of people in their leisure time (Henderson & Ainsworth, 2002). In addition, these activities and the settings in which they occur require little outlay in costs for participation or visitation and can be readily adapted to suit different ages, skill levels, and interests. The outcomes of engagement can extend beyond physical activity to encompass multiple dimensions of physical, mental, and spiritual health and restoration (L. E. Jackson, 2003; Payne, 2002).

A rapidly emerging field of research focused on active living is uncovering how various factors influence physical activity, with the goal of developing guidelines and policies for design, planning, and management (Sallis, Kraft, & Linton, 2002). Much of this work has adopted an "ecological model" of physical activity that examines the influence and relationships among different environmental, personal, and social variables. Individual studies that employ ecological models usually focus on a given scale, such as the social and environmental factors that constrain or facilitate accessibility to a local trail (Troped et al., 2001) or the influence that urban sprawl factors such as residential density and land use mix have on obesity and physical activity (Ewing, Schmid, Killingsworth, Zlot, & Raudenbush, 2003). One comprehensive version of this ecological model proposed by Spence and Lee (2003) posits that these variables are nested in a hierarchical framework. Engagement in physical activity is dependent upon *microsystem* dimensions such as the type and quality of facilities and verbal support from family and friends set within the context of larger scale *meso-* and *macro-* dimensions such as societal norms and values, neighborhood safety, climate, and urbanization.

Whether targeted and empirical or comprehensive and conceptual, much of this "new" work may sound strangely familiar to researchers in recreation and leisure studies who for years have studied such ideas and concepts in the context of participation, satisfaction, demand, and similar dependent variables. Yet the direct involvement as a community of leisure scholars in active living research is noticeably underrepresented in the active living literature. Instead, attention to the issues of physical activity, including its relationship to outdoor recreation settings, is being driven by researchers in health sciences fields of epidemiology, public health, behavioral and preventive medicine, and sport and exercise physiology. An examination of recent theme issues from journals in these fields shows a concerted effort being mounted to approach active living problems from a transdisciplinary perspective (e.g., R. J. Jackson, 2003; Killingsworth, Earp, & Moore, 2003). Although urban planning, land use law, environmental psychology, and architecture and landscape architecture are visible in this mix, the field of recreation and leisure studies is not. Even within recreation and leisure research journals, papers dealing directly with active living are rare. In a review of titles of all published articles in five main recreation and leisure research journals over the last five years (*Journal of Leisure Research, Journal of Park and Recreation Administration, Leisure Sciences, Leisure Studies*, and *Therapeutic Recreation Journal*), only 9 out of more than 600 articles ($1\frac{1}{2}\%$) dealt explicitly with active living issues (i.e., linking everyday leisure and recreation physical activity with individual or community health and fitness goals). Awareness of the issue is not lost on the profession, however, as over the same period the monthly practice-oriented *Parks & Recreation* magazine of the

National Recreation and Parks Association had published more articles in this area than all of the research journals combined.

Important reasons likely exist for this apparent gap in involvement: an increased specialization of the field that tends to separate leisure from broader social and environmental issues (including parks and recreation), a preponderance of journals in the field focused on theoretical issues at the expense of "real-world" problems, and conceptual and methodological emphases grounded more in social psychology than the physical aspects of behavior (e.g., Godbey, 2000; Kelly, 2000).[1] Despite this lack of attention and visibility, recreation and leisure research appears to have a great deal of relevance to active living issues. The same journals that I reviewed had much to say about participation and demand, constraints and motivations, crowding and conflict, gender and ethnicity, and environmental preferences, which are all topics of considerable utility to active living research. With some change in focus, recreation and leisure researchers could have much to contribute to concepts, theory, methods, and practical implications for planning and management, program delivery, and policy development.

This special theme issue of *Leisure Sciences* represents an important step in this direction.[2] To illustrate the utility of recreation and leisure research in addressing active living questions, I re-examined data from two previous studies conducted on urban trail use in Chicago. Along with urban parks, urban bicycle and pedestrian trail systems have been identified as important outdoor settings for active living for a number of reasons: they cater to physical activities that can be adopted and adhered to by a broad spectrum of the public (Sallis, Bauman, & Pratt, 1998), their typical off-street and natural location in parks and greenways provide safe and attractive environments that further encourage use (e.g., Humpel, Owen, & Leslie, 2002), and their length and the modes of movement (walking, jogging, bicycling, cross country skiing, and in-line skating) for which they are designed facilitate use for both leisure and utilitarian purposes (Shafer, Lee, & Turner, 2000). Although the original focus of the investigations was on the recreational dimensions of trail use, the characteristics of the data collected lent themselves to reinterpretation from an active living perspective. After outlining the reanalysis and findings of these two studies, I discuss the broader implications of past and future recreation and leisure research within an active living agenda.

Study 1: Individual, Social, and Environmental Aspects of Physical Activity on an Urban Trail

The purpose of this reanalysis was to examine individual, social, and environmental factors associated with urban trail users exhibiting low, medium, and high levels of physical activity. Several recent studies using ecological models have looked at socio-demographic and environmental correlates of physical activity in indoor and outdoor settings (e.g., Addy et al., 2004; Giles-Corti & Donovan, 2002) and found many of the groups under investigation have been relatively restricted with respect to race/ethnicity and age. Although

[1]Speculations on the future of leisure research were thoughtfully addressed in a series of short essays by leading leisure researchers compiled by Samdahl, Scott, and Weissinger (2000) in a special issue of the *Journal of Leisure Research* on "Turning the Century: Reflections on Leisure Research." Although these and other explanations for the lack of involvement by recreation and leisure researchers in active living issues are inherent in many of these essays, it is again telling that none of the 38 papers dealt explicitly with physical activity or health issues.

[2]Acknowledgement should also be given to the *Journal of Park and Recreation Administration*, which featured a special theme issue on "Leisure and Health" in its Winter 2002 issue addressing the physical, mental, and spiritual aspects of health and their relationships to leisure.

an increasing number of researchers have looked at environmental factors associated with outdoor physical activity (see Humpel et al., 2002 for a review), few studies have examined how changes in environmental attributes such as temperature and precipitation affect active living-related activities (Spence & Lee, 2003). The present study used an observational approach to understand use of a local park trail within a racially and ethnically diverse Chicago neighborhood over the course of three seasons.

Use of a 1.2-mile loop trail in Chicago's Warren Park was observed over 9 months in 1989. Only individuals on or in close proximity (25 feet) to the trail were included in the sample. Data were collected on individual (sex, age, race/ethnicity, activity), social (group size, composition, presence of dog[s]), and environmental (time, day, temperature, precipitation, location on trail) characteristics related to use (see Gobster, 1992, 1998 for details). Observed activities were reclassified to examine use patterns as a function of three physical activity levels: High = fast walking, running, calisthenics, roller-skating, skateboarding, roller skiing, skiing; Medium = walking, slow walking, bicycling; Low = standing, sitting, riding in a stroller, picnicking, laying down.[3]

A total of 5,496 trail users were observed during 151 observation periods. Classification of the sample observations by activity level resulted in 9% high, 65% medium, and 26% low activity level users. Cross-tabulations of demographic variables are presented in Table 1, with column counts and percentages in the first two data columns showing the actual size of the subgroups and row counts in subsequent columns showing the relative distribution of each subgroup across high, medium, and low activity levels.

In terms of individual factors, men were slightly more likely than women to be highly active users. The largest proportions of highly active users were 18–38 year-olds, with the percentage of highly active users dropping off sharply as age increased or decreased. With respect to race and ethnicity, while Anglos, African Americans, and Southeast Asians had a larger proportion of individuals categorized as highly active users than Hispanics or South Asians, African Americans also had proportionately more low activity level users than other groups. Consistent with the literature (Ainsworth, Irwin, Addy, Whitt, & Stolarczyk, 1999; Eyler et al., 2002), an interaction effect between gender and ethnicity was found. Females who where African American ($\chi^2 = 6.43$, $p < .05$) or Hispanic ($\chi^2 = 6.73$, $p < .05$) were significantly less likely to be highly active than females, African Americans, or Hispanics when analyzed in isolation.

Information on social groups was determined by aggregating the cases for individuals by the group in which they were observed on the trail. This produced a group size variable as well as measures of within-group age, sex, and racial/ethnic diversity.[4] As one might expect, the smaller the group, the faster it moved along the trail. Although around two-thirds of the sample used the trail at a medium activity level regardless of group size, solo trail users were more often highly active users, and groups of two or larger were more often low activity users. Highly active twosomes tended to be either all-male or all-female and, as evidenced by the mean standard deviations in Table 1, low and medium activity level

[3]Because the trail behaviors I observed were not always mentioned in standard activity measurement guides, I used my own labels to identify activity levels. However, while not strictly commensurable, my "high" and "medium" activity levels correspond roughly to the "vigorous" and "moderate" categories defined by the Centers for Disease Control and Prevention (CDC, 2003). On the other hand, my "low" activity level is basically sedentary activity, which differs from the CDC's "light" category.

[4]The "aggregate data" procedure in SPSS Version 11 (SPSS, 2001) provides a function for producing a value of the aggregated cases on the basis of their standard deviations. In instances where there was only one individual in a group, I recoded the value from missing to zero, the same value obtained if a group composed of multiple individuals all share the same value on a given variable (e.g., 3 females in a group of 3). This procedure allowed me to include a value of age, sex, and race "diversity" for all aggregated cases.

TABLE 1 Significant Bivariate Relationships Between Individual, Social, and Environmental Characteristics with High, Medium, and Low Activity Levels, Study 1

Type/Variable Category level	Count	%	Activity level		
			High (%)	Medium (%)	Low (%)
Individual					
Sex					
Male	2864	59.0	10.2	65.4	24.4
Female	1987	41.0	7.6	66.5	25.9
Age					
<18	1409	28.1	3.2	68.6	28.2
18–38	2118	42.3	14.1	63.7	22.2
39–55	827	16.5	8.6	67.4	24.1
>55	656	13.1	2.4	59.3	38.3
Race/ethnicity					
Anglo	3299	66.3	10.2	64.7	25.1
African American	241	4.8	8.7	56.4	34.9
Hispanic	997	20.0	4.4	64.5	31.1
SE Asian	271	5.4	10.3	74.2	15.5
S Asian	167	3.4	2.4	73.1	24.6
Social					
Group size					
1	1783	58.1	17.7	68.3	14.0
2	828	27.0	6.8	66.3	26.9
3+	456	14.9	2.2	63.6	34.2
SD Sex (mean)	3067	100.0	0.0346	0.1216	0.2106
SD Age (mean)	3067	100.0	0.1132	0.3563	0.4666
SD Race (mean)	3067	100.0	0.0111	0.0166	0.0309
Dog					
No	4695	91.4	9.4	63.5	27.1
Yes	439	8.6	2.3	80.2	17.5
Environmental					
Time					
6:30–10:00	966	18.8	17.8	66.6	15.6
10:00–2:00	1256	24.5	8.0	62.5	29.5
2:00–5:00	1610	31.4	7.7	66.6	25.7
5:00–9:00	1302	25.4	4.1	64.1	31.7
Day					
Weekday	2160	42.1	11.4	63.9	24.7
Weekend	2974	57.9	6.9	65.7	27.4
Temp. (F)					
<20	15	0.3	13.3	80.0	6.7
21–39	756	14.7	18.3	72.1	9.7
40–59	1431	27.9	10.0	69.6	20.4
60–79	2535	49.4	5.6	61.0	33.4
80+	394	7.7	6.3	58.9	34.8
Precipitation					
No	4991	97.2	8.6	64.6	26.8
Yes	143	2.8	16.1	76.2	7.7
Top 10 locations			44.8	48.2	54.8
Top 1 location			5.9	8.0	14.9

Notes: All chi-square p values <.001 except for Sex ($p < .01$). The p values for *SD* Sex, Age, and Race variables are calculated based on an F-test of the mean of the standard deviation for each of these group measures (see note 4); all are <.001. No significance tests were conducted for the location measures.

groups exhibited greater age and gender diversity than highly active groups. Some common examples of these types of social groups included males or females in their 20s or 30s jogging solo, teenaged couples walking hand-in-hand, husbands and wives pushing baby strollers or walking behind young children on their bikes, and groups of seniors sitting on park benches chatting while their grandchildren played nearby. In contrast to this age and gender diversity, all groups were quite homogeneous with respect to race/ethnicity regardless of their activity levels. Finally, I observed that although a significantly lower proportion of people with dogs used the trail at a high activity level compared with those without dogs, a significantly lower proportion of people with dogs used the trail at low activity levels. In other words, having a dog along seemed to encourage moderate activity.

As for environmental factors, highly active users tended to be on the trails more in the early hours, on weekdays, and in cold temperatures or precipitation than moderately or minimally active users. Exceptions to this pattern were minimally and moderately active trail users walking dogs—their indifference to environmental extremes equaled or exceeded highly active users. Finally, as shown by a frequency analysis of users observed at the 53 different location segments along the trail, low activity users tended to be clustered within a small number of locations along the trail at benches and other amenities, while medium and high activity users were more evenly distributed along the trail.

Variables found to be statistically significant from these bivariate analyses were included in a multinomial logistic regression model using procedures in SPSS version 11 (SPSS, 2001). This model is appropriate for polychotomous dependent variables and simultaneously solves a regression equation for each dependent variable category against the categories of each independent variable. For both types of variables, one category is used as the reference against which other categories are compared. This process determines how the odds ratios in the equation are interpreted, and thus the reference category selected should be the one of most interest in the analysis. The odds ratios are used to assess the relative predictive power of the independent variables, where a value above or below the reference value of 1.0 reflects the percent likelihood of correctly predicting the dependent variable category as a function of the independent variable category (Hosmer & Lemeshow, 1989; Pampel, 2000).

In this study, the low and medium activity levels of the dependent variable were compared with high activity level as the reference category. The category selected as the reference for each independent variable was the one that had the highest percentage correspondence to the high activity level category in Table 1. The final model was based on aggregated group data, which allowed for the inclusion of social group information but made interpretation of the individual level data less straightforward. Social groups that were not purely homogeneous with respect to sex or race were assigned into an "other" category while mixed-age groups were grouped into one of the four categories based on their mean scores. Although conceptually different, the sex, age, and racial/ethnic diversity variables were removed from the final model due to their correlation with their respective sex, age, and race/ethnicity variables. Finally, no summary measure of location seemed appropriate for model inclusion.

Odds ratios, significance levels, and 95% confidence intervals for correlates of high and medium activity level trail use are shown in Table 2. Except for precipitation, all of the variables selected for analysis were significant ($p < .05$), and the model chi-square, $\chi^2(44, N = 2,977) = 690.4$, $p < .001$, indicated a good fit for the final model. Caution must be used in interpreting odds ratios for parameter estimates because only certain category levels of the remaining variables attained statistical significance.

Results from the model showed that younger users, the absence of dog(s), cool temperatures, morning hours, and small groups figured most strongly in predicting high activity

TABLE 2 Multinomial Logistic Regression Odds Ratios for Study 1 Data

Variable/ Category level	High activity (ref.) vs. Low activity				High activity (ref.) vs. Medium activity			
		95% CI				95% CI		
	Exp(*B*)	Low	High	*p*	Exp(*B*)	Low	High	*p*
Sex								
Male (ref.)	1.00				1.00			
Female	.95	.67	1.35	.786	1.12	.85	1.49	.412
Mixed Sex	2.49	1.35	4.58	.003	2.03	1.14	3.61	.017
Age								
<18	2.23	1.35	3.69	.002	3.81	2.43	5.99	.000
18–38 (ref.)	1.00				1.00			
39–55	3.75	2.52	5.58	.000	2.76	1.99	3.83	.000
>55	14.83	7.75	28.38	.000	9.90	5.38	18.21	.000
Race/ethnicity								
Anglo (ref.)	1.00				1.00			
African American	1.93	1.00	3.74	.051	1.12	.63	2.01	.700
Hispanic	1.44	.87	2.39	.160	1.16	.74	1.82	.517
SE Asian	.61	.30	1.23	.165	1.08	.65	1.82	.761
S Asian	2.25	.69	7.31	.179	2.43	.83	7.13	.106
Mixed Race	1.08	.44	2.65	.861	.81	.36	1.82	.617
Group size								
1 (ref.)	1.00				1.00			
2	2.61	1.69	4.023	.000	1.53	1.04	2.24	.032
3+	8.38	3.95	17.80	.000	3.26	1.59	6.67	.001
Dog								
No (ref.)	1.00				1.00			
Yes	12.83	6.33	26.00	.000	14.25	7.52	27.01	.000
Time								
6:30–10:00 (ref.)	1.00				1.00			
10:00–2:00	4.14	2.70	6.35	.000	1.95	1.40	2.73	.000
2:00–5:00	3.67	2.40	5.63	.000	2.19	1.57	3.05	.000
5:00–9:00	3.51	2.07	5.93	.000	2.55	1.64	3.95	.000
Day								
Weekday (ref.)	1.00				1.00			
Weekend	1.66	1.22	2.27	.001	1.50	1.10	1.94	.002
Temperature (F)								
<20	5.65	.42	75.99	.192	2.56	.45	14.61	.285
21–39 (ref.)	1.00				1.00			
40–59	2.71	1.63	4.50	.000	1.27	.91	1.77	.161
60–79	7.95	4.82	13.10	.000	2.13	1.52	2.99	.000
80+	8.45	3.94	18.16	.000	1.74	.93	3.26	.082
Precipitation								
No	1.58	.56	4.49	.390	1.11	.59	2.10	.750
Yes (ref.)	1.00				1.00			

levels compared with low activity levels. As shown in Table 2, those individuals observed on the trail who were 18–38 years of age were nearly 15 times more likely to be highly active than those users over 55 years and more than twice as likely to be highly active than those under 18 years. Participants without dogs were nearly 13 times more likely to be highly active than those accompanied by dogs. Temperatures between 20–39 degrees Fahrenheit were 8 times more likely to predict active users on the trail than in temperatures of 60 degrees or higher and nearly 3 times more likely when temperatures ranged between 40–59 degrees. Those users who were on the trail between 6:30 a.m. and 10:00 a.m. were $3^1/_2$ to 4 times more likely to be highly active users. Solo trail users were more than 8 times more likely to be highly active than people in groups of three or more and 3 times more likely than twosomes. Weekdays and single-sex groups were also significant predictors of high activity.

The dependent variable was an ordered measure so high activity as the reference category was closer to medium activity than to low activity and thus the odds ratios for medium activity level users were less extreme in magnitude. In general, the same pattern of results occurred, with younger adults, users without dogs, and lower temperatures found to be the highest predictors.

Although the odds ratios in the model often seem impressive, the overall predictive power of the model remained quite modest. The most commonly used strength-of-association measure for this type of analysis, Nagelkerke's *R*-square, was .25, which indicated a substantial amount of variance was unexplained by the variables examined in the study.

Study 2: Use Patterns and Perceptions of Health-Motivated Metropolitan Trail Users

As seen in the first study, people who used trails at different activity levels used them in different ways, at different times, and in different social arrangements. This second study employed a self-report survey to answer additional questions about why users who see health as their top goal in trail use differed in their use patterns and perceptions from individuals who used trails primarily for pleasure or other reasons. Although trails are becoming increasingly recognized as a potentially important outlet for physical activity in urban and rural areas (Brownson et al., 2000, 2004; Merom, Bauman, Vita, & Close, 2003; Troped et al., 2001), relatively little is known about how trails are perceived and used or how they might be better planned and managed to maximize active living goals.

Through the use of an on-site survey instrument, 2,873 individuals who used a diverse sample of 13 trails in the Chicago metropolitan area were asked about their use of the trail that day and other questions related to their trail use patterns and perceptions (see Gobster, 1990, 1995 for details). A forced-choice question asking respondents their "most important reason for using the trail that day" was used to construct a multiple category dependent variable for comparison.

"Health-physical training" was cited as the second most important reason for using Chicago metropolitan trails by 32% the sample, overshadowed only by "pleasure-recreation" (44%). Four other stated reasons for using trails each received less than 10% mention as being the most important for an individual (social, safety, scenery, commuting). Although health and pleasure goals were of most interest in this analysis, data from those stating the remaining goals were combined into an "other" category (except where noted) for simplicity in reporting results.

Cross-tabulations of significant use and perception items are shown in Table 3. In terms of use patterns, health-motivated trail users visited the trail more often and were more

TABLE 3 Significant Bivariate Relationships between Individual-Social, Use, and Perceptual Measures with Health, Pleasure, and "Other" Use Reasons, Study 2

			Most important reason for use		
Type/Variable Category Level	Count	%	Health (%)	Pleasure (%)	Others (%)
Use					
Use freq this trail					
1st time-3x/yr	642	25.5	18.8	53.3	27.9
4-25x/yr	758	30.1	23.2	48.3	28.5
Every week or more	1118	44.4	45.3	35.2	19.5
Mode on trail					
Foot	554	22.6	46.8	30.5	22.7
Bike	1901	77.4	28.0	47.1	24.9
Group size					
1	805	34.0	43.2	37.1	19.6
2	1000	42.2	29.8	44.9	25.3
3+	562	23.7	19.9	51.6	28.5
Est. miles to trail					
1 mi or less	660	26.5	33.0	44.5	22.4
2–5 mi	770	30.9	29.7	43.6	26.6
6–20 mi	817	32.8	38.4	39.5	22.0
>20 mi	242	9.7	14.0	57.9	28.1
Hours on trail					
1 hr or less	657	26.2	40.9	37.1	21.9
1–2 hrs	870	34.7	32.8	43.3	23.9
2–3 hrs	505	20.2	25.9	46.9	27.1
3–5 hrs	387	15.5	26.1	50.4	23.5
>5 hrs	85	3.4	18.8	54.1	27.1
Means to trail					
Foot	287	11.5	46.3	32.8	20.9
Bike	1142	45.7	31.3	46.1	22.6
Car	1071	42.8	29.2	43.4	27.4
N other trails used					
No other trails	373	23.7	39.7	39.4	20.9
1–2 other trails	960	61.0	29.3	45.0	25.7
3 other trails	241	15.3	23.2	56.0	20.7
Perceptions					
Lack of patrols					
No problem	1590	74.1	29.6	44.6	25.8
Partial problem	363	16.9	36.1	41.0	22.9
Big problem	193	9.0	43.5	34.7	21.8
Personal safety					
No problem	1783	82.2	30.2	44.9	24.8
Partial problem	265	12.2	38.5	39.2	22.3
Big problem	122	5.6	42.6	27.0	30.3
Water body prefs	219	11.1	20.5	53.4	26.0
Safety prefs	113	5.3	36.3	24.8	38.9
Demographic					
Age					
<18	152	6.3	27.0	34.9	38.2
18–39	1341	55.8	32.7	43.5	23.7
40–55	699	29.1	32.3	45.5	22.2
>55	213	8.9	28.2	49.8	22.1

Note: All chi-square p values $<.001$.

likely to walk or run on it than those people using the trail for pleasure or for other reasons. Health-motivated users were also more likely to use the trail alone than were pleasure-oriented users or other groups. Interestingly, close distance to home did not appear to be a factor that distinguished between health-and pleasure-oriented users. The only distance category where pleasure-oriented users appeared to be in a significantly higher proportion was for those users who traveled more than 20 miles to reach the trail. This pattern of results for user-estimated distance closely mirrored a calculation of the distance between the trailhead location and home ZIP code provided by the survey respondents. On other use dimensions, health-motivated users shared traits common to a small sub-sample in the "other" group of people who used trails for commuting. Compared with pleasure, social, safety, or scenery-oriented users, health-motivated individuals and commuters both used trails for a shorter period of time, were less likely to drive to the trail, and showed a high "brand loyalty" in terms of sticking to the same trail rather than diversifying their choices among different trails.

Few differences existed in trail related perceptions between health-motivated users and others as measured by a series of items pertaining to trail problems (14 items), future trail development issues (8 items), or preferences (11 likes and 11 dislikes coded from open-ended comments). Two issues where health- and pleasure-motivated users did seem to differ related to safety and natural aesthetics. Health-motivated users were significantly more likely to rate "lack of patrols" and "personal safety" a major problem and mentioned in open-ended comments that "safety" was an issue. Conversely, pleasure-oriented users were more likely than health-motivated or other users to mention "beauty" and "water bodies" as preferred trail features in their open-ended comments. On other items, however, the groups were largely in agreement. Like most other users, health-motivated trail users appreciated a well-maintained trail environment and were concerned about crowding and the general lack of trailside facilities such as bathrooms and drinking fountains. Even though these health-motivated users tended to visit a single trail and used it for shorter periods of time, they rated more trails and longer trails as important trail development priorities. On demographic variables, health-motivated users differed little from other users with respect to gender, income, or education variables. The only significant demographic variable was age, where those between 18 and 55 years were more health-oriented than trail users over or under those ages.

Multinomial logistic regression was used to examine the combined effects of variables found significant in the bivariate relationships discussed above. Pleasure and "other" categories were compared against the health group as the reference category for the dependent variable, and as in Study 1 the category selected as the reference for each independent variable was the one that had the highest percentage correspondence to the health category in Table 3. Personal safety was selected over patrols and the open-ended safety variable in the analysis for multicollinearity reasons, as was water instead of the beauty variable.

Statistics for the final model are shown in Table 4. Based on likelihood ratio tests, all variables were significant at the $p < .05$ level in entering the model except for hours spent on the trail, which was significant at $p = .08$. The model chi-square, $\chi^2(44, N = 1,213) = 239.3$, $p < .001$, indicated a good fit for the final model. When compared to pleasure-oriented trail users, independent variables best able to assess the likelihood that an individual would be engaged in health-oriented trail use included time spent on the trail, use frequency, group size, presence of water bodies, and personal safety. Those people who used the trail for less than an hour were more than three times as likely to be health-oriented than those who spent more than 5 hours on the trail, and the most frequent users were twice as likely to be health oriented than less frequent ones. People who used the trail alone were at least

TABLE 4 Multinomial Logistic Regression Odds Ratios for Study 2 Data

Variable/ Category level	Health-Physical Training (ref.) vs. Pleasure-Recreation				Health-Physical Training (ref.) vs. Other			
		95% CI				95% CI		
	Exp (*B*)	Low	High	*p*	Exp (*B*)	Low	High	*p*
Use freq this trail								
1st time-3x/yr	2.68	1.73	4.14	.000	2.72	1.66	4.48	.000
4–25x/yr	2.77	1.96	3.93	.000	3.01	2.02	4.50	.000
Every week or more (ref.)	1.00				1.00			
Mode on trail								
Foot (ref.)	1.00				1.00			
Bike	1.98	1.16	3.38	.013	2.23	1.23	4.03	.008
Group size								
1 (ref.)	1.00				1.00			
2	2.23	1.44	3.46	.000	1.87	1.13	3.10	.015
3+	1.54	1.11	2.13	.010	1.58	1.08	2.32	.018
Est. miles to trail								
1 mi or less (ref.)	1.00				1.00			
2–5 mi	.62	.40	.96	.032	.71	.42	1.19	.190
6–20 mi	.49	.33	.73	.000	.64	.40	1.01	.057
>20 mi	1.73	.80	3.73	.161	1.51	.64	3.57	.345
Hours on trail								
1 hr or less (ref.)	1.00				1.00			
1–2 hrs	1.42	.97	2.06	.070	1.07	.69	1.66	.748
2–3 hrs	1.26	.80	1.99	.327	1.42	.86	2.36	.175
3–5 hrs	1.37	.84	2.25	.207	.94	.53	1.67	.822
>5 hrs	3.61	1.34	9.75	.011	2.72	.91	8.15	.073
Means to trail								
Foot (ref.)	1.00				1.00			
Bike	.83	.43	1.57	.556	.95	.46	1.97	.885
Car	1.13	.56	2.30	.734	.70	.31	1.57	.386
N other trails used								
No other trails (ref.)	1.00				1.00			
1–2 other trails	1.19	.84	1.67	.332	1.58	1.05	2.39	.030
3 other trails	1.95	1.20	3.17	.007	1.84	1.03	3.29	.041
Water								
Mentioned	2.31	1.40	3.83	.001	2.81	1.63	4.85	.000
Not mentioned (ref.)	1.00				1.00			
Personal safety								
No problem	1.95	1.00	3.81	.049	1.30	.64	2.65	.467
Partial problem	1.95	.91	4.17	.085	1.59	.70	3.60	.266
Big problem (ref.)	1.00				1.00			
Age								
<18	.76	.38	1.52	.445	1.45	.70	2.99	.317
18–39 (ref.)	1.00				1.00			
40–55	1.31	.95	1.81	.102	1.12	.77	1.63	.566
>55	1.81	1.00	3.24	.048	2.16	1.14	4.08	.018

1½ times more likely to be health oriented than people who came in groups of 2 or more. Participants who did not mention water bodies as a preferred feature were more than 2 times as likely to be health-oriented users, and those who mentioned that personal safety was a big problem were nearly twice as likely to be health-motivated users. Other significant findings showed that users were nearly twice as likely to be health-motivated if they: were between 18–39 years of age versus older than 55 years, used one trail rather than 3 other trails, or walked or jogged rather than bicycled the trail.

Odds ratios for health-oriented versus "other" trail users were similar to the ones just cited, with use frequency, age, presence of water bodies, and mode of trail use each showing odds ratios of 2.0 or higher. Like the model for Study 1, the overall predictive power of the final model for metropolitan trails was quite modest, with Nagelkerke's R-square = .20.

In summary, findings from the two studies supported and extended current ecological models in the active living area by identifying a set of individual, social, and environmental factors that help explain urban trail use among highly active and health-motivated trail users. Likewise, the findings also supported the contention that an active living perspective can be applied to existing leisure and recreation data such to reveal a pattern of results obscured in earlier analyses. Although the multivariate analyses indicated much variance remained to be explained, the integration of active living and leisure and recreation research concepts and methods is encouraging.

Discussion and Implications

Although they are often shunned in favor of cross-sectional samples in health sciences studies of physical activity (e.g., Trost, Owen, Bauman, Sallis, & Brown, 2002), the single-site case study and on-site survey have a long history of use in recreation and leisure research. These methods can bring both a depth and breadth of information to help understand people's use of outdoor environments such as trails from an active living perspective. In generalizing across the findings of the two studies, the classifications of highly active and health-motivated trail users tended to identify people who walked or ran on a trail on a relatively short but frequent basis and with a regularity reflected by their participation on weekdays and in cold and inclement weather. This "routinization" of trail use is consistent with active living goals and worked to separate these individuals from people who used trails for other purposes or at lower activity levels.

Along with this routinization, highly active and health-motivated trail users may also be more sensitive to changes that could disrupt their use. Being loyalists to a single trail who are less likely to drive to get there, highly active and health-motivated users might be disproportionately affected if that trail were to close or become less safe to use. For example, in a cold winter climate such as Chicago's, snow covering the trails can limit use to regular users. Additional data from the Warren Park study not reported above hinted at this limitation by showing that 50% more people used the trail in January and February on days when it was clean and dry than on days when the trail was covered with light or heavy snow. Although this particular example implied that managers could plow trails to maintain access and physical safety, findings from the metropolitan trail survey also imply that other management decisions such as lighting and policing trails could affect perceptions of personal safety.

The two studies also further specify the notion of social support as a determinant of physical activity. This motivating factor has been cited in a number of studies in the health sciences literature (e.g., Giles-Corti & Donovan, 2002; Trost et al., 2002). Although a range of off-site factors may motivate a person to come to the trail for physical activity, highly active

and health-motivated trail use in the two studies appeared to be a rather solitary affair, with users out for these purposes less likely to be accompanied by another person or a dog. Thus, in future studies distinguishing between on-site and off-site social supports may be important.

These observations as well as the restricted age group and homogeneity of other group demographic characteristics, might suggest to some people that active living behavior is a rather elite proposition. This suggestion would be a narrow interpretation of the findings, however. Although much of the results and discussion have focused on highly active and health-motivated users, the data from the studies indicated at least two different ways that active living goals can be addressed through leisure trail use. One version casts trail use as a high activity fitness endeavor, an everyday solo routine for young-to-middle aged men and women, and a safe and accessible alternative to the indoor health club. A second version sees trail use as a pleasure-oriented recreational pursuit that caters to a variety of medium level activities such as walking and bicycling, has social and aesthetic dimensions, and can be flexibly arranged in time and for the group who intends to participate. Knowledge of the characteristics and perceptions of these different user types can be helpful in marketing trails to different population segments.

Recreation and leisure research as illustrated by these two studies can be of value to researchers concerned with active living issues in a number of ways. First, recreation and leisure research can help jump start the search for individual, social, and environmental variables relevant to physical activity. Many of these independent variables have already been studied and linked to dependent variables such as participation and environmental preference. Through the use of an ecological model framework such as that proposed by Spence and Lee (2003), perhaps a more comprehensive evaluation of past recreation and leisure research could be mounted.

Second, a wealth of leisure concepts debated and tested over the last four decades may help further develop the theoretical orientation of active living research. Many of these concepts focus on the social and psychological aspects of leisure such as the constraints (e.g., E. L. Jackson & Scott, 1999) and facilitators (Raymore, 2002) to participation and the outcomes and benefits of leisure experience (e.g., Driver & Bruns, 1999). Application of these concepts could serve to build models and explanations of physical activity relationships that have greater utility and generalizability than those currently found in the active living literature.

Finally, the methodological approaches and field expertise in recreation and leisure research developed over the same period of years are formidable and are in many cases transferable to the questions and issues being dealt with in the context of active living. Case-study and on-site surveys have already been described in the context of the two studies presented. There are equally long and rich experience résumés dealing with large scale national recreation surveys (e.g., Cordell, Green, & Betz, 2002) as well as in-depth quantitative and qualitative analyses that seek to understand the deeper meanings of leisure (e.g., Watkins, 2000), its tie to place and environment (e.g., Williams, Patterson, & Roggenbuck, 1992), and the role of leisure experiences in people's lives (e.g., Hull, Stewart, & Yi, 1992).

Recreation and leisure researchers can become fuller participants in active living research in a number of ways. One unique and potentially valuable way is by looking backward. In the case of my own work, this meant looking at old data sets with fresh eyes and reinterpreting earlier questions about recreation use from an active living perspective. Many other data sets may be lying around ready for mining and potentially capable of producing valuable information with a minimal outlay in time and expense. In addition to re-classifying park activities as "high-medium-low," estimates might also be made to convert activity codes to energy expenditure rates or metabolic equivalents that are standard measures for assessing how much energy a given activity expends compared to a sedentary

state (e.g., Sallis & Owen, 1999). Within these older data lie the possibility of conducting longitudinal analyses and reclassifying participation variables to uncover trends and patterns of physical activity over time. State Comprehensive Outdoor Recreation Plan (SCORP) or federally collected data sets might be good candidates to examine with active living ideas in mind. Going further back, the parks and recreation movement in Europe and the U.S. has had a long and intimate tie to public health and physical activity issues, and historical analyses of park development during the Romantic and Progressive eras, the Neighborhood Parks Movement, and programs such as the President's Council on Physical Fitness may yield insights and hypotheses for current work (e.g., Cranz, 1982).

Recreation and leisure researchers also need to look forward if they are to continue making contributions to active living research. One way is to incorporate more explicitly behavioral, particularly objective and/or independently assessed, physical activity measures into studies. These types of measures are often stressed over subjective, self-report, perceptual and attitudinal measures in much of the current active living research. Although there is an increasing appreciation of subjective measures, priorities (and in some cases funding) are clearly focused on objective ones. In this respect, recreation and leisure researchers might include self-report measures for activity participation that are commensurable with current health guidelines for physical activity (e.g., CDC, 2001). Health science researchers have refined observational measures and make regular use of objective instruments such as accelerometers to measure various aspects of physical activity (Freedson & Miller, 2000). Even though these measures may not be of central interest in a particular recreation study, they may provide valuable data to potential partners who are interested.

This connection with the broader community of active living researchers points to the need for increased involvement in transdisciplinary research initiatives (Sallis et al., 2002). A number of such initiatives are underway in the public and private sectors, with funding programs and leadership that are attracting leisure and recreation researchers. As with many similar initiatives, incentives can help establish involvement and capacity to do integrated work that over the long term can become institutionalized as a preferred way to tackle complex and cross-cutting issues not easily handled within a single discipline (Stewart & Schroeder, 1997).

Finally, the recreation and leisure field can do much on its own to demonstrate leadership in active living studies. Increasing prominence given to this theme at major conferences is evidence of growing concern and commitment among recreation and leisure researchers and practitioners. Special theme issues of journals such as this one, the inclusion of active living themes in undergraduate and graduate coursework, and greater involvement of recreation and leisure researchers in the area are additional ways that leadership can emerge within academic venues.

Active living is not just an academic issue, and the urgency of problems from which this research has emerged makes it incumbent on recreation and leisure researchers to also take leadership in communicating knowledge gained to practitioners and policymakers. For example, research on the active living potential of trails and other outdoor recreation facilities was used by a CDC Task Force on Community Preventive Services (CDC, 2004) to establish a Memorandum of Understanding among various federal agencies in the U.S. with the goal of managing public lands and recreation programs with active living principles in mind. Other key areas where recreation and leisure research aimed at active living can play an expanded role include transportation policies and programs aimed at youth (Smith & Bird, 2004).

Recreation and leisure research has a rich legacy of historical involvement, concepts, and methods relevant to the growing area of active living. Yet for many reasons, the fit

between the two has not been well articulated. As the two urban trail studies in this paper attempted to illustrate, greater sensitivity to the measures and methods common to active living research can help to increase the relevancy of past and future recreation and leisure research to the growing active living field. At the same time, a greater appreciation for the methodological and conceptual traditions inherent in recreation and leisure research can help to strengthen active living research. Together, both fields can add to the body of knowledge for improving linkages between people's physical health in the context of their leisure and recreational pursuits.

References

Active Living Research. (2003). What is active living? Retrieved August 8, 2004, from http://www.activelivingresearch.org/index.php/What_is_Active_Living/103.

Addy, C. L., Wilson, D. K., Kirtland, K. A., Ainsworth, B. E., Sharpe, B., & Kimsey, D. (2004). Associations of perceived social and physical environmental supports with physical activity and walking behavior. *American Journal of Public Health, 94*(3), 440–443.

Ainsworth, B. E., Irwin, M. L., Addy, C. L., Whitt, M. C., & Stolarczyk, L. M. (1999). Moderate physical activity patterns of minority women: The Cross Cultural Physical Activity Participation study. *Journal of Women's Health, 8,* 805–813.

Brownson, R. C., Housemann, R. A., Brown, D. R., Jackson-Thompson, J., King, A. C., Malone, B. R., & Sallis, J. F. (2000). Promoting physical activity in rural communities: Walking trail access, use, and effects. *American Journal of Preventive Medicine, 18,* 235–241.

Brownson, R. C., Baker, E. A., Boyd, R. L., Caito, N. M., Duggan, K., Housemann, R. A., Kreuter, M. W., Mitchell, T., Motton, F., Pulley, C., Schmid, T. L., & Walton, D. (2004). A community-based approach to promoting walking in rural areas. *American Journal of Preventive Medicine, 27,* 28–34.

Centers for Disease Control and Prevention (CDC). (2001). Increasing physical activity: A report on recommendations of the Task Force on Community Preventative Services. *Morbidity and Mortality Weekly Reports 2001, 50* (RR–18).

Centers for Disease Control and Prevention. (February 27, 2003). *Measuring physical activity intensity*. Retrieved December 13, 2004, from http://www.cdc.gov/nccdphp/dnpa/physical/measuring/index.htm.

Centers for Disease Control and Prevention. (March 4, 2004). *National partnership promotes health and recreation*. Retrieved December 13, 2004, from http://www.cdc.gov/nccdphp/dnpa/physical/partnership.htm.

Colditz, G. A. (1999). Economic costs of obesity and inactivity. *Medicine & Science in Sports & Exercise, 31*(11 Supplement), 663–667.

Cordell, H. K., Green, G. T., & Betz, C. J. (2002). Recreation and the environment as cultural dimensions in contemporary American society. *Leisure Sciences, 24*(1), 13–42.

Cranz, G. (1982). *The politics of park design: A history of urban parks in America*. Cambridge, MA: The MIT Press.

Driver, B. & Bruns, D. (1999). Concepts and uses of the Benefits Approach to Leisure. In E. L. Jackson & T. L. Burton (Eds), *Leisure studies: Prospects for the twenty-first century* (pp. 349-368). State College, PA: Venture Publishing, Inc.

Ewing, R., Schmid, T., Killingsworth, R., Zlot, A., & Raudenbush, R. (2003). Relationship between urban sprawl and physical activity, obesity, and morbidity. *American Journal of Health Promotion, 18*(1), 47–57.

Eyler, A. E., Wilcox, S., Matson-Koffman, D., Evenson, K. R., Sanderson, B., Thompson, J., Wilbur, J., & Rohm-Young, D. (2002). Correlates of physical activity among women from diverse racial/ethnic groups. *Journal of Women's Health & Gender-Based Medicine, 11*(3), 239–253.

Finkelstein, E. A., Fiebelkorn, I. C., & Wang, G. (2003). National medical spending attributable to overweight and obesity: How much, and who's paying? *Health Affairs (Millwood) 22*(Jan–Jun, Suppl.), W219–236.

Freedson, P. S. & Miller, K. (2000). Objective monitoring of physical activity using motion sensors and heart rate. *Research Quarterly for Exercise and Sport (Supplemental Issue), 71*(2), S21–S29.

Frumkin, H. (2003). Healthy places: Exploring the evidence. *American Journal of Public Health, 93*(9), 1451–1455.

Frumkin, H., Frank, L., & Jackson, R. (2004). *Urban sprawl and public health: Designing, planning, and building for healthy communities*. Covelo, CA: Island Press.

Giles-Corti, B. & Donovan, R. J. (2002). The relative influence of individual, social, and physical environment determinants of physical activity. *Social Science and Medicine, 54,* 1793–1812.

Gobster, P. H. (1990). *The Illinois statewide trail user study*. Springfield, IL: Rails to Trails Conservancy.

Gobster, P. H. (1992). Urban park trail use: An observational approach. In: *Proceedings of the 1991 Northeastern Recreation Research Symposium* (General Technical Report GTR NE-160, pp. 215 221). Radnor PA: USDA Forest Service Northeastern Forest Experiment Station.

Gobster, P. H. (1995). Perception and use of a metropolitan greenway system for recreation. *Landscape and Urban Planning, 33*, 401–413.

Gobster, P. H. (1998). Urban parks as green walls or green magnets? Interracial relations in neighborhood boundary parks. *Landscape and Urban Planning, 41*, 43–55.

Godbey, G. (2000). The future of leisure studies. *Journal of Leisure Research, 32*(1), 37–41.

Goodman, R. A. & Miller, M. L. (2003). Public lands for the public's health. *Environmental Law Reporter, 33*, 10217–10223.

Henderson, K. A. & Ainsworth, B. E. (2002). Enjoyment: A link to physical activity, leisure, and health. *Journal of Park and Recreation Administration, 20*(4), 130–146.

Hosmer, D. & Lemeshow, S. (1989). *Applied logistic regression*. New York: Wiley & Sons.

Hull, R. B., Stewart, W. P., & Yi, Y. K. (1992). Experiencing patterns: Capturing the dynamic nature of a recreation experience. *Journal of Leisure Research 24*(3), 240–252.

Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity: A review. *American Journal of Preventive Medicine, 22*(3), 188–199.

Jackson, E. L. & Scott, D. (1999). Constraints to leisure. In E. L. Jackson & T. L. Burton (Eds.), *Leisure studies: Prospects for the twenty-first century*. State College, PA: Venture Publishing Co.

Jackson, L. E. (2003). The relationship of urban design to human health and condition. *Landscape and Urban Planning*, *64*(4), 191–200.

Jackson, R. J. (Ed.). (2003). The impact of the built environment on health: An emerging field. *American Journal of Public Health (Special Issue), 93*(9), 1382–1589.

Kelly, J. R. (2000). The "real world" and the irrelevance of theory-based research. *Journal of Leisure Research, 32*(1), 74–78.

Killingsworth, R., Earp, J. A., & Moore, R. (Eds.). (2003). Health promoting community design. *American Journal of Health Promotion (Special Issue), 18*(1), 1–119.

McKay, B. (2004, November 23). CDC study overstated obesity as a cause of death; admitting errors, agency expects to revise findings; big health concerns remain. *The Wall Street Journal*, p. A1.

Merom, D., Bauman, A., Vita, P., & Close, G. (2003). An environmental intervention to promote walking and cycling—The impact of a newly constructed Rail Trail in Western Sydney. *Preventive Medicine, 36,* 235–242.

Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2005). Correction: Actual causes of death in the United States, 2000. *Journal of the American Medical Association, 293*(3), 293–294.

Mokdad, A. H., Marks, J. S., Stroup, D. F., & Gerberding, J. L. (2004). Actual causes of death in the United States, 2000. *Journal of the American Medical Association, 291*(10), 1238–1245.

Pampel, F. C. (2000). *Logistic regression: A primer*. Sage Quantitative Applications in the Social Sciences Series #132. Thousand Oaks, CA: Sage Publications.

Payne, L. (2002). Progress and challenges in repositioning leisure as a core component of health. *Journal of Park and Recreation Administration, 20*(4), 1–11.

Raymore, L. A. (2002). Facilitators to leisure. *Journal of Leisure Research, 34*(1), 37–51.

Sallis, J. F. Bauman, A., & Pratt, M. (1998). Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine, 15*(4), 379–397.

Sallis, J. F., Kraft, K., & Linton, L. S. (2002). How the environment shapes physical activity: A transdisciplinary research agenda. *American Journal of Preventive Medicine, 22*(3), 208.

Sallis, J. F. & Owen, N. (1999). *Physical activity and behavioral medicine*. Thousand Oaks, CA: Sage Publications, Inc.

Samdahl, D. M., Scott, D., & Weissinger, E. (Eds.). (2000). Turning the century: Reflections on leisure research (Introduction to the special issue). *Journal of Leisure Research, 32*(1), 2.

Shafer, C. S., Lee, B. K., & Turner, S. (2000). A tale of three greenway trails: User perceptions related to quality of life. *Landscape and Urban Planning, 49,* 63–178.

Smith, A. & Bird, S. (2004). From evidence to policy: Reflections on emerging themes in heath-enhancing physical activity. *Journal of Sports Sciences, 22*, 791–799.

Spence, J. C. & Lee, R. E. (2003). Toward a comprehensive model of physical activity. *Psychology of Sport and Exercise, 4*(1), 7–24.

SPSS. (2001). *SPSS for Windows, Version 11.0.0*. Chicago: SPSS, Inc.

Stewart, S. I. & Schroeder, H. W. (1997). Guess who's coming to dinner? Integrating the sciences. L. Caldwell & S. Mou (Eds.), *Integrating social science and ecosystem management: A national challenge* (GTR-SRS-17, pp. 51–56). Helen, GA: USDA Forest Service, Southern Research Station.

Troped, P. J, Saunders, R. P., Pate, R. R., Reininger, B., Ureda, J. R., & Thompson, S. J. (2001). Associations between self-reported and objective physical environmental factors and use of a community rail-trail. *Preventive Medicine, 32,* 191–200.

Trost, S. G., Owen, N., Bauman, A. E., Sallis, J. F., & Brown, W. (2002). Correlates of adults' participation in physical activity: Review and update. *Medicine and Science in Sports and Exercise, 34*(2), 1996–2001.

Watkins, M. (2000). Ways of learning about leisure meanings. *Leisure Sciences*, 22 (2), 93–108 .

Williams, D. R., Patterson, M. E., & Roggenbuck, J. W. (1992). Beyond the commodity metaphor: Examining emotional and symbolic attachment to place. *Leisure Sciences, 14*(1), 29–46.