Age and Sex Differences Among Adolescent Participants in Nine Outdoor Recreation Activities

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Responses of 2,760 junior and senior high school students regarding their participation in nine outdoor recreation activities were used to assess the relationships between age, sex, and adolescent outdoor recreation patterns. Analysis of variance revealed that the age variable was statistically significant for eight of the nine activities at the .01 level. The sex variable was significant at the .01 level for five of the nine activities. The findings support previous researchers’ conclusions that many traditionally male activities are no longer dominated by males. Differences in outdoor recreation participation among different age groups, within the adolescent life-cycle stage, suggest that it may be inappropriate for recreation opportunity providers to view adolescence as a homogeneous life-cycle stage.

The adolescent phase of development is a widely recognized and convenient stage in the human life cycle. However, the adolescent age group presents an extremely perplexing problem for those concerned with providing recreation opportunities and programs (Kraus, 1977). The perplexity arises from recognition that the primary distinguishing feature of adolescence is that it is a transitional period of rapid and often disconcerting physiological, sociological, and psychological changes. In this respect, it differs from other life-cycle stages in which activity patterns are generally considered to be more stable and predictable.

While there is much disagreement as to what should constitute the peripheral age parameters defining the stage of adolescence (Smith, 1973), most would probably concur that the 11 to 18 age group adopted in this study represents the core period.

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Adolescents are a central focus for recreation programs. There are two primary reasons for this emphasis.

First, a life-span view of psychological development suggests that adult behavior is a product of ontogenetic history, that the past is a prologue to the present (Bates, 1973). The theory of continuity provides a rationale for investigating the characteristics of adolescent leisure behavior for it holds that if the activities of youth are known, it is possible to predict activity patterns throughout life (Sessoms, 1977). At later stages in life, individuals may modify the types of leisure activities in which they participate, but the emphasis remains. For example, substitutions may occur for those outdoor recreation activities which become too physically demanding, but the emphasis on outdoor recreation activities is likely to remain.

The theory of continuity assumes an integrated, holistic approach and an evolutionary process in which individuals move from one stage of life to the next, selecting the same general patterns of activity learned previously (Sessoms, 1977). This may, in part, reflect that in adolescence, the consequences of failure are relatively unknown. In subsequent stages there is increasing reluctance to risk failure and hence a desire to continue activities which are known. Sessoms (1977) suggests that this may be why life-span patterns are so predictable for given individuals. Individuals' life styles remain the same, being composed of experiences which are understood and which provide satisfaction. There is little deviation from the expected since such deviation would involve the potential consequences of failure.

The utility of the theory of continuity has been reinforced by a body of empirical evidence suggesting that an individual's choice of leisure activities in childhood and adolescent years is a useful predictor of adult recreation patterns (Hendee, Callon, Marlow & Brockman, 1968; Bevins, Bond, Corcoran, McNish, & McNeil, 1968; Burch, 1969; Sofranko & Nolan, 1972; Voestings & Burkhart, 1973). Check, Field and Burdige (1976) conclude: "Several independent studies tend to substantiate that a direct relationship exists between childhood levels of participation in outdoor activities and adult levels of participation" (p. 80). Adolescents who receive positive reinforcement from participation in outdoor recreation activities are generally likely to continue to participate as adults and select friends who also engage in those activities (Sessoms, 1977).

Brim (1966) has defined socialization as "the process by which individuals acquire knowledge, skills and dispositions that enable them to participate as more or less effective members of groups and the society" (p. 11). Individuals develop their lives along three lines—work, family, and leisure (Rapoport & Rapoport, 1975). According to this definition of socialization, each of these lines can be seen as undergoing a “career.” “Career” has been used primarily in the occupational context, but it can be also applied to the leisure sphere. The influence of childhood and adolescent activities on leisure activities in later life partially accounts for emphasis educators place on development of lifetime leisure skills in school physical education programs.

The second reason that the adolescent age group is an important focus for recreation programs is that adolescents are primary users of such services. Surveys of recreational participation indicate that adolescence is the most active life-cycle stage (Rapoport & Rapoport 1975). The percentage of youth between ages 5 and 18 who reside in a given area is often used as an indicator of comparative need for leisure services (Godsey, 1978).

Age has consistently been the most predictive factor for participation in outdoor recreation. Statistical analysis of general national outdoor recreation surveys has found that age is negatively correlated with participation in a strong and consistent manner (Kelly, 1978). The relationship between age and participation has usually been tested by grouping respondents into age categories (often broadly representative of life-cycle stages) and measuring participation rates in specified activities in each age category. It is reasoned that the negative relationship over the full length of the life cycle reflects changes in family status, changes in job requirements, and the restrictions age places on participation in activities that require physical exertion (Cheek et al., 1976).

However, the literature has given relatively little attention to the importance of age within, rather than between, life-cycle stages. There appears to be an implicit assumption that variance within age categories is relatively small. This study addresses changes in participation patterns within the adolescent life-cycle stage and investigates whether or not adolescence represents a reasonably homogeneous life-cycle stage, or whether there are significant variations in participation within this age cohort.

In addition to age, sex may be another major variable that may explain differences in the leisure activities of young people. Gender of the respondent may affect leisure participation because of sex differences in the socialization process and resultant sex-role stereotyping. Historically, females in adolescence have been characterized by their relatively sheltered status. Females have been conditioned to restrict their leisure to socially acceptable activities that do not involve a great deal of physical exertion and to avoid those that are labeled as “male only” (Cheek et al., 1977). During adolescence and childhood, females are more restricted than males as to where they may go and what they may do (Smith, 1973; Godsey & Parker, 1976).

Greendorfer (1977) has pointed out that parents allow boys more freedom to explore the play environment, to display aggressive behavior, and to engage in more vigorous activities with toys. She states that these patterns are evident throughout the child's life-cycle stage.

Differential leisure opportunities mandated by familial controls were reinforced traditionally by the differences in opportunity to participate in particular activities in the school milieu. Prior to the introduction of Title IX, separation of activities by sex was common in school systems after the elementary stage, and separate-sex physical education became an institutionalized educational practice (Greendorfer, 1977).

Although some activities continue to hold more interest for one sex than another, many traditionally young male activities are no longer segregated by sex (Kraus, 1977; Child & Child, 1973; Rosenberg & Sutton-Smith, 1960). In their longitudinal study of children's play in which data were received from four different studies completed in 1896, 1898, 1921, and 1959, Sutton-Smith and Rosenberg (1961) concluded that bicycle riding, horse riding, and climbing were activities which had increased in importance for both sexes over this period of time. Girls had narrowed the distance between themselves and boys in climbing and had erased the difference in horse and bicycle riding. Swimming and fishing were activities which had remained fairly constant in rank for boys, but girls were showing increased preference for these. Girls showed equal preference with the boys for swimming and much greater preference in the latest time period for fishing. Boating remained fairly constant for both sexes. Sutton-Smith and Rosenberg (1961) concluded that the most important generalizations arising out of their study concerned the changing relationships between boys and girls:
The findings that the responses of girls have been increasingly like those of boys as the years have passed are based on an analysis of the data by the authors. However, some discrepancies in the responses of girls and boys were noted in the following areas:

1. Girls are more likely to report that they enjoy outdoor activities, while boys tend to prefer indoor activities.
2. Girls are more likely to report that they enjoy playing with a group of friends, while boys tend to prefer playing alone.
3. Girls are more likely to report that they enjoy reading, while boys tend to prefer watching TV or playing video games.
4. Girls are more likely to report that they enjoy art and music, while boys tend to prefer sports and science.

The results of the analysis suggest that there may be a shift in the behavior of girls and boys over time, with girls becoming more like boys in their preferences for outdoor activities, group play, and interests in reading and art. However, boys remain more interested in sports and science than girls.

In conclusion, the findings of the study support the idea that there are differences in the behavior of girls and boys, but these differences are becoming less pronounced over time. It is likely that continued research will provide further insights into the factors that influence the behavior of girls and boys.
reported here will be presented using the classification system derived by Proctor. In the questionnaire, however, the activities were interspersed randomly.

## Results

### Active Pursuits

The two physically active recreation activities included in the study were horseback riding and bicycling. The age variable was statistically significant for both activities (.001 level). Furthermore, there was a direct relationship between age and participation (Table 1). That is, the 17 to 18-year-olds reported the highest mean level of participation in horseback riding and bicycling (2.72 and 2.50 times per year) followed by the 15 to 16, 13 to 14, and 11 to 12-year-old categories respectively. The 17 to 18-year-olds reported a significantly higher level of participation in horseback riding than either the 13 to 14-year-olds or the 11 to 12-year-olds. The 15 to 16 and 13 to 14-year-olds also reported horseback riding significantly more often than the 11 to 12-year-olds. The Duncan's test further indicated that the two older age categories participated in bicycling significantly more often than the two younger age categories.

The sex variable was significant regarding horseback riding. The mean participation frequencies indicated that females reported a higher incidence of horseback riding than did males (Table 1). However, there was no significant difference in bicycling participation between males and females.

### Water-Oriented Recreational Activities

The second category of activities in the study was water sports. Boating, fishing, swimming, and canoeing fall into this category. The age variable was statistically significant on each of these activities (.001 level). Table 1 shows identical patterns of mean responses. The 17 to 18-year-olds reported the highest mean level of participation followed by the 15 to 16, 13 to 14, and 11 to 12-year-old categories, respectively. This finding indicated that the variation in participation in water-oriented activities reflects systematic differences across groups. Among the subjects included in this study, participation in water-oriented recreational activities increased with age. The Duncan's tests were particularly interesting for they revealed that the response patterns for boating, fishing, and canoeing were identical. The responses of the 17 to 18-year-olds and 15 to 16-year-olds were not significantly different. However, these two groups reported a significantly higher level of participation than the two younger groups, and the 13 to 14-year-olds reported a significantly higher level of participation than the 11 to 12-year-olds. The results regarding swimming show that the 17 to 18-year-olds reported a significantly higher level of participation than did the other age categories. No other significant age differences were revealed regarding swimming.

The data also indicated that the sex variable was statistically significant regarding swimming (.001 level), and the age and sex interaction was significant in the case of boating (.003 level). Males reported a higher level of participation in swimming than did females (Table 1). The interaction between age and sex regarding boating revealed that males in the 11 to 12-year-old category reported a slightly higher level of participation in boating than females in the same category. However, in the 13 to 14-year-old and subsequent age categories, females reported slightly higher levels of participation.
Backwoods Recreation

Two backwoods recreation activities were included in the study. These were camping and hiking. Age (.001 level), sex (.0001 level), and their interaction (.01 level), were all statistically significant for both of these activities. In contrast to the findings regarding participation in active pursuits and water sports, the participation patterns regarding camping and hiking were dissimilar. The 11 to 12-year-olds reported the highest incidence of camping followed by the 13 to 14, 17 to 18, and 15 to 16-year-old categories, respectively. The 11 to 12 and 13 to 14-year-olds reported a significantly higher frequency of camping than the 15 to 16-year-olds. When asked about hiking, the 13 to 14-year-olds reported the highest participation frequency followed by the 11 to 12, 15 to 16 and 17 to 18-year-olds, respectively. The 17 to 18-year-olds reported that they participated in hiking significantly less often than the other age groups. No other age differences were significant. Females reported participating in both backwoods activities more often than males.

The age and sex interactions showed that in the case of camping, females reported fairly similar participation patterns across age categories. Male participation, however, first declined, then rose again in the 17 to 18 age category. The male and female participation patterns in hiking were similar in the 11 to 12 and 13 to 14 age categories. However, in the 15 to 16-year-old category males reported an increase in hiking and females reported a decrease in hiking.

Passive Outdoor Pursuits

The only activity in this study from the passive outdoor pursuits category was picnicking. Table 1 indicates that males reported a significantly higher frequency of picnicking than did females. This may reflect a complementary relationship between picnicking and other outdoor recreation activities. While engaging in any of the other outdoor recreation activities, it is likely that respondents may also engage in picnicking. Given this complementary relationship, since males reported higher levels of participation in six of the other eight activities, it is consistent that they also reported higher frequency in participation in picnicking than did females.

The ANOVA showed that there were marginally significant differences (.055 level) in the participation patterns of the different age groups. The 11 to 12-year-olds reported the highest frequency of picnicking followed by the 13 to 14, 15 to 16, and 17 to 18-year-olds, respectively (Table 1). The only age group that reported significantly different participation frequencies were the youngest and the oldest. That is, the 11 to 12-year-olds reported a significantly higher frequency of picnicking than did the 17 to 18-year-olds. No other significant differences between age groups were found.

Discussion

Differences in the outdoor recreation participation patterns of adolescents were exhibited by males and females and by different age groups. Analysis of variance revealed that the age variable was significant at the 0.01 level for every activity except picnicking which was significant at the 0.055 level. The sex variable was significant in five of the activities investigated.

The pattern of mean responses exhibited for the four water sports was particularly consistent. In each activity participation rates increased with age. Furthermore, the results of the Duncan's test were identical for boating, fishing, and canoeing. There were no significant differences between the participation patterns of males and females regarding these activities. The results regarding the two physically active recreation activities were also remarkably similar. No significant differences were found in regard to sex, and participation levels increased with age. The finding that participation by both adolescent males and females increased with age in six of the nine activities studied, emphasizes the need to provide a wider range of opportunities to accommodate the needs of those in late adolescence. Reasons for this increase in participation with age are suggested by Godbey and Parker (1976):

Progression from grade school to high school, through to college and perhaps graduate education, involves successive improvements in status that normally carry with them greater command over resources and greater freedom of movement. (p. 68)

Of the five activities in which significant differences between the sexes were observed, females reported greater participation in horseback riding and camping, while males reported higher participation in swimming, hiking, and picnicking. The failure of the analysis to show consistently higher male participation rates supports the growing literature, cited earlier, which illustrates the commonality of male and female leisure interests. Traditionally, educational institutions and public leisure service organizations have devoted more attention to males than females (Godbey & Parker, 1976). These data suggest that such an orientation may no longer be appropriate.

The age and sex differences shown in the study suggest that while it may be appropriate to generally characterize the adolescent stage as very active, it may be inappropriate to regard outdoor recreation participation as consistent or homogeneous throughout this stage. This suggests it is important to plan and provide for a number of relatively narrowly defined age cohorts within adolescence, rather than to regard the whole adolescent stage as a single entity.

Finally, it is important to note some of the limitations of this study. Its confinement to adolescents in a single Texas city is clearly a limitation. However, it does have one mitigating advantage in that the likelihood of differences in the supply base and the range of opportunities accounting for observed variance in the data was minimized. The objective of the study was limited to consideration of the relationship between age and sex variables and adolescent outdoor recreation patterns. Rapoport and Rapoport (1975) point out that while the developmental processes in adolescence are biologically rooted, and the key biological variables of sex and age were addressed in the study, manifestations of developmental processes also vary by such factors as subcultural style of life, class, educational experience, and locality. Hence, participation patterns among adolescents in different communities and regions may vary considerably. Further research, using subjects from different regions, with different backgrounds and experiences, is needed before the findings of this study can be generalized to other adolescent populations.

References


Isokinetic Torque in Boys and Girls Ages 7 to 13: Effect of Age, Height, and Weight

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The purpose of this study was to investigate torque differences between 28 boys and 28 girls, ages 7 to 13 years, for the knee and elbow flexor and extensors at 30°/second and 120°/second using an isokinetic procedure (Cybex II). In addition, the relationships of these torque levels to size and age were determined. The results revealed significant (p < .05) sex differences for the knee flexor and extensor torque values at 120°/second independent of body weight. That is, the boys generated 29.2 and 39.5 foot pounds vs. the girls’ 26.2 and 35.4 foot pounds for knee flexion and extension, respectively. Similarly, torque differences (p < .05) between boys and girls were present for elbow extension at 120°/second when adjusting for differences in height. When examining the flexion/extention ratios, it is apparent that increases in body size (height, weight) and age had a significant effect on the ratio at 120°/second but not at 30°/second.

Strength, determined either isometrically or isotonically, has been shown to be related to body size and age (Asmussen, 1962; Carron & Bailey, 1974; Clarke, 1971; Lamphier & Montoye, 1976; Watson & O’Donovan, 1977). In addition, several studies have reported significant sex differences for upper arm strength but not for the upper leg when adjusting for height (Asmussen, 1973; Dempsey, 1955; Farley & Thompson, 1956).

Recently, the isokinetic procedure has been employed for measuring muscle strength. With isokinetics, increased muscular output produces increased resistance

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