

## **A walk in the woods: the effects of ethnicity, social class, and gender among urban Norwegian adolescents**

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### **Abstract**

*Objectives:* The main objective was to study the influences of gender, ethnicity, and socioeconomic factors on a popular Norwegian outdoor activity: walking in the woods.

*Design:* Data from the large Young in Oslo 2006 (YiO 2006) youth survey is used to investigate the relationship between ethnic and class background and gender in relation to hiking in the woods. In the representative survey sample, 11 529 adolescent respondents aged 16 to 19 were asked how often they participated in hiking in the woods during the season.

*Results:* Analyses show that more girls than boys are active hikers and that fewer descendents from non-western immigrants and working-class youngsters are active compared to ethnic Norwegian and middle-class adolescents, respectively. Furthermore, cultural aspects of class seem to be more important than economic ones. A logistic regression analysis shows that the relationship between country of origin and hiking is significantly reduced when class measures are introduced into the model, which implies that the initial difference between ethnic minorities and ethnic Norwegians to some extent can be considered to be a class phenomenon.

*Conclusion: Norwegian authorities express great concern over health issues among the large group of non-western descendents in Norway, pointing to the Nordic tradition of outdoor recreation as one means of being physically active. This paper concludes that in the effort to recruit 'immigrant' youngsters to outdoor activities, one should keep in mind that a large proportion of the minority population also belongs to the working classes.*

## **Introduction**

In its 'Global strategy on diet, physical activity and health, the 57<sup>th</sup> World Health Organisation Assembly of 2004 urged member states to implement actions to promote increased physical activity (PA). According to World Health Report of 2002, the proportion of adults who live a sedentary life ranges from 60 per cent to 85 per cent across the populations studied, and it estimated that less than one-third of young people are sufficiently active to benefit their future health. It is well known that a sedentary lifestyle increases the probability of several serious diseases, like allergies and asthma, diabetes, heart diseases, some forms of cancer, anxiety, and depression. The Centers for Disease Control (CDC, 1998) estimated that 23 per cent of all deaths in the United States that were due to chronic illnesses were associated with physical inactivity.

Focusing on young people, Ogden et al. (2002) have shown that the prevalence of overweight children and adolescents in the U.S. increased considerably from 1960 to 1994, and continued to increase by an additional 15 per cent by 2000. The increase was especially rapid among Mexican-American and non-Hispanic black adolescents. Felton et al. (2002) have also shown the importance of the role of ethnicity, finding that a higher proportion of overweight and a lower level of PA among black than among white girls. Similar findings have been presented in many other countries (e.g., WHO, 1998).

Outdoor activities among children seem to be a very important factor influencing the total level of PA. However, studies indicate that time spent in outdoor physical activities has reduced in many populations, and that when children are active outdoors, they tend to stay closer to home compared to earlier records (e.g., Valentine & McKendrick, 1997). In a review, Dollman et al. (2005) conclude that PA among children in many countries shows a declining trend. Odden (2008) has found the same development in Norway. From 1970 to 2004 physically exhausting activities like cross-country skiing, long hiking trips, and canoeing had decreased among young Norwegians, whilst more sedentary activities like bathing and motorized water sports had increased.

## **Ethnicity and socio-economic status as predictors of outdoor leisure activities**

Participation in outdoor physical leisure activities varies across ethnic groups and as a function of social class. Attempts to reduce the risks of a sedentary lifestyle could benefit from an understanding of how socio-economic and ethnic factors influence the attractiveness of outdoor PA. Two theoretical approaches have predominated in this area of research, originating with the paper by Washburn (1978). First, the 'marginality hypothesis' has been used to include the various economic and social-class variables that may explain why some groups are underrepresented in various outdoor leisure activities. A

multitude of studies have shown that social class affects preferences for sports activities (review: Stodolska & Alexandris 2004) and for various other forms of leisure PAs (e.g., Yen & Kaplan, 1998; Ecob & McIntyre, 2000; Gordon-Larsen et al., 2000; Giles-Corti & Donovan, 2002; Steinback et al., 2011). Thus, when ethnic minority groups are found to differ from the mainstream population in outdoor leisure activities, one explanation may be that limited economic resources function as a constraint for various physical activities.

One additional mechanism that helps to create ethnic differences in leisure participation or activity preferences is discrimination (Philipp, 1999). For example, specific places where minorities are not welcome to recreate exist, and it is well known that participation in some leisure activities is restricted to the ethnic majority group (e.g., Gobster, 1998; Johnson et al., 1998). Stodolska (2005) has developed a comprehensive model of discriminatory behaviour on the individual level applied to leisure settings.

Secondly, the 'ethnicity hypothesis' states that differences between ethnic groups in preferences of leisure activity are due to intergroup differences in values, norms, and attitudes towards various activities and settings. A considerable number of studies on ethnicity and participation in the forms of leisure behaviour have been published during the last 50 years (for review, see Allison, 1988; Floyd et al., 1994; Gómez, 2002; Floyd et al., 2008). Two special issues of *Leisure Sciences* were devoted to Multicultural Perspectives on Recreation and the Environment in 2002 (Sasidharan, 2002). The large majority of studies have focused on adult leisure preferences, particularly across ethnic groups in the U.S. In the Scandinavian context, Lindström and Sundquist (2001) have found that the status of a sedentary leisure-time physical activity is higher among men born in Arabic-speaking countries. This was found also among women; in addition women born in the former Yugoslavia and in Poland reported a sedentary leisure-time lifestyle. Recently, Dawson et al. (2005) have shown that men from southern Europe, Finland, and those born in other countries (e.g., Turkey, Iran, Iraq, African countries), and women from southern and eastern Europe and those born 'in other countries' practised a low level of physical activity compared with Swedish men and women. British researchers have demonstrated that cultural norms among immigrants of Bangladeshi, Indian, and Pakistani origin reduce the likelihood of performing physical activity (Johnson, 2000; Lawton et al., 2006).

Oslo is a city surrounded by large and easily accessible forest areas, and everyone in Norway enjoys the right to roam or to free access to uncultivated land. Outdoor recreation is considered to be of great significance by the national and local governments and by the population itself. In a national representative sample, 95 per cent reported that they went on walks at least once during the last 12 months (Odden, 2008). There is a whole culture surrounding Norwegian outdoor recreation. The term *friluftsliv* (translated literally as 'free air life'), a word found only in Norwegian and Swedish, signifies that spending time outdoors is important not only as a means to better health, but also as a means of cultural expression. Svarstad (2010) shows that hiking as a cultural phenomenon contains various meanings. Among 84 Norwegian hikers she identified three categories of meaning attached to hiking, 'as recreation of societal performance abilities', 'as a way of living out a critique of society', and as a way 'to establish a sense of belonging and continuity'. In the contexts of Norwegian *friluftsliv*, an uncomplicated activity like walking in the woods connotes some deep meaning that may appear as something strange and alienating to newly arrived citizens.

## **Adolescent outdoor physical activities**

### **Ethnic differences**

Cross-cultural comparisons of the engagement in PA among university students reveal considerable variation. According to the European Health and Behaviour Survey, carried out between 1989 and 1992, the prevalence of physical exercise in the past two weeks varied from more than 80 per cent to less than 60 per cent across country samples (Steptoe et al., 1997). Haase et al. (2004) included 21 country samples of students from Europe, Asia, South America, and South Africa. The prevalence of physical inactivity in leisure time varied from 23 per cent in north-western Europe and the U.S. to 44 per cent in developing countries.

Cultural groups within one country have also been compared with respect to engagement in PA. On the basis of national representative data from large health surveys in the U.S., it has been found that minority ethnic groups engage in less physical activity than do non-Hispanic white groups (Heath et al., 1994; Andersen et al., 1998; Gordon-Larsen et al., 1999; Belcher et al., 2010). Furthermore, Woodfield et al. (2002) have found that among 11- to 14-year-olds in Birmingham, children from Asian ethnic backgrounds reported a lower level of PA than did white-Caucasian children.

In Canada, Taylor and Doherty (2005) have shown that relatively few students who have English as a second language (ESL) (immigrants from ten countries) participate in physical recreation, and that they do not participate as often as non-ESL students.

A study in Johannesburg, South Africa, had demonstrated that white nine-year-old children expressed a higher level of PA than did black children of the same age. The white children also watched less television and participated more often than black children in physical education at school (McVeigh et al., 2004). Previous studies in Norway show that young people with non-western origins to a much lesser extent than their Norwegian peers take part in the iconic Norwegian outdoor recreational activity – 'hiking in the woods'. Non-western immigrant adolescents also trained less often and they were less likely to be sports club members (Krange & Strandbu, 2004; Strandbu & Bakken, 2007).

### **Effects of gender, age and social class**

Studies in several countries, mainly in North America and Europe, have shown that among older children and adolescents, girls are generally less physically active than are boys (e.g., Hagger et al., 1998; Andersen et al., 1998; Kristjansdottir & Vilhjalmsson, 2001; Woodfield et al., 2002; Klasson-Heggebø & Anderssen, 2003; Cardon et al., 2005; Raudsepp, 2006; Seabra, 2007; Salonna, 2008). This gender difference appears at an early age (six-year-olds: Manios et al., 1999; three- to five-year-olds: Hussey et al., 2001; Pate et al., 2004).

It is a common finding that the amount of participation in various forms and degrees of PA decreases as age increases from late childhood into adolescence. This age trend has been demonstrated in both cross-sectional and in longitudinal studies (e.g., Culp, 1998; Sallis, 2000; Sallis et al., 2000; Kristjansdottir & Vilhjalmsson, 2001; Kimm et al., 2002; Barnett et al., 2002; Klasson-Heggebø & Anderssen, 2003; Norman et al., 2005). Since many

popular forms of PA take place outdoors, it is interesting to note that adolescent interests in nature-based PA, as well as in studying or observing wildlife, decline with increasing age (and seem to decline steeply at the onset of puberty) (e.g., Bjerke et al., 2001; Kaplan & Kaplan, 2002; Bell et al., 2003; Brodersen et al., 2005).

Stamps and Stamps (1985) and Hutchison (1988) reviewed the first decades of research on the relationships between social class and participation in leisure activities. More recently, Kristjansdottir and Vilhjalmsón (2001) have found that upper-social-class students in Iceland (11- to 16-year-olds) were less sedentary and participated in more PA during leisure time, compared with lower-class students. Results in the same direction have been obtained in England (Woodfield et al., 2002), South Africa (McVeigh et al., 2004), Estonia (Raudsepp, 2006), Italy (La Torre et al., 2006), and Norway (Iversen & Holsen, 2008). In a recent review of 34 studies, Hanson and Chen (2007) have concluded that the association between socio-economic status (SES) and PA in adolescents is consistently positive.

## **Background and hypotheses of the present study**

Like most European cities, Oslo has during the course of 30 to 40 years developed from a rather ethnically homogenous city to a multiethnic society. In 1970 inhabitants with a non-western immigrant background constituted only 0.7 per cent of the total population. Today more than 25 per cent of the population has a non-western immigrant background (Aalandslid, 2007). The minority population of Oslo is a young one, and every third pupil in secondary school has two parents who were born outside of Norway.

Norwegian authorities express great concern for public health among the country's ethnic minorities, and efforts are being made to recruit ethnic minority youngsters to outdoor activities. However, it is also a fact that ethnic minority parents more often hold working jobs than do ethnic Norwegians. This consideration leads one to speculate if it might be the case that minority views on outdoor recreation are also marked by working-class culture. Hence we ask:

- How does participation in forest hiking vary between minority and majority pupils?
- How does it vary between boys and girls and between classes?
- What is the relationship between class and minority status concerning hiking?

## **Methods**

### **Data survey design**

In 2006 Norwegian Social Research (NOVA) conducted a survey among secondary-school pupils in Oslo. The total population of pupils attending grades nine to 11 was targeted. Out of 94 schools, 78 agreed to participate. This gave a gross sample of N =12 422. There were 11 519 respondents who completed the survey. There were also 70 questionnaires that were considered to be incomplete and removed from the data file. Further, 19

respondents reported to be more than 20 years, and their answers were also removed. Hence, the sample used in this paper consisted of 11 430 respondents, which equals 92 per cent of the gross sample. The data set we used covers an age span ranging from 14 to 20 years. The mean age was 15.35, with a standard deviation of 1.05. The majority of students were between 14 and 17 years of age. Only very few were between 18 and 20 years, and this group was coded together as '18+'.

The questionnaire was answered in classrooms during school hours. There were no breaks, and the teachers made sure that there was no interaction between the respondents. The 2006 study was compared with the Young in Oslo 1996 study, where all secondary schools in Oslo participated. No data distortions were identified.

## **Measures**

### *Hiking in the woods*

The Young in Oslo 2006 questionnaire contains an eight-item battery measuring different outdoor recreation activities. Here we focus on one of the most iconic and most frequent of the Nordic outdoor practices, namely hiking in the woods. The respondents were asked how often they participated during the season. Responses were given on a five-point scale ranging from 'never or almost never' to 'several times a week'.

One important context for this paper is public health, and the Norwegian authorities are concerned about young people who are physically inactive. We shall focus on those who reported that they 'never or almost never' take a hike in the woods'. In the following analyses we have dichotomized the variable into active and non-active. The non-active group are those who 'never or almost never' hike in the woods, and the active group are all the rest.

### *Ethnicity*

Respondents were asked to report on their parents' country of birth. Those who reported that one or both their parents were born in Norway were classified as 'majority pupils'. By this definition 28.5 per cent of the respondents were categorized as 'minority pupils'. Within the minority group the vast majority had origins in a non-western or eastern European country. More than every fourth of the minority pupils had parents from Pakistan. No other national group amounted to more than six per cent. Only very few (less than four per cent) had two parents who were born in North America or a western European country. With regard to the analyses, the group was too small to make any difference. Hence, they were included among the minority pupils.

### *Social class*

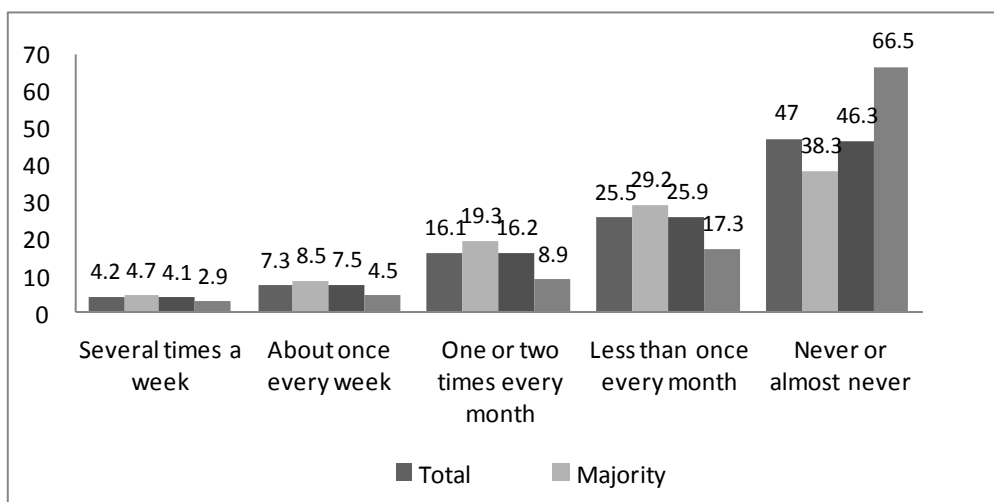
Measures of class background are not easily obtained among teenagers. Here we used various instruments to study the effects of parental work status as well as economic and cultural aspects of class. On the basis of self-reported information on parents' occupation, we used the collapsed version of Goldthorp's comprehensive scheme (Erikson & Goldthorpe, 1992). A model of five work status categories contains the *upper middle class* (managing directors, lawyers, physicians, etc.), *lower middle class* (administrators, teachers, nurses, etc.), self-employed (mostly owners of small business),

*lower office employees* (workers holding low office positions), *skilled workers* (carpenters and plumbers, etc.), and *manual workers* (production workers, forklift drivers, etc.). The parent holding the highest position was used to define the informants' status. The variable of parent's occupation was constructed on the basis of information on the level of education required for the different jobs and on the average income it provides, and can hence be regarded as an interval variable. A measure of cultural assets within the respondents' families was based on their assessment of how many books there are in the bookshelves at home. This, of course, was a very rough measure. Previous studies have demonstrated that the variable is highly relevant and with good operational validity in the Norwegian context. It is, for instance, statistically associated with phenomena like political participation (Ødegård, 2008), school achievement (Bakken, 2007), smoking (Krange & Pedersen, 2001), and membership in environmental organisations (Skogen, 1996). Following the same strategy of rough measures, a crude proxy for family economy was based on a simple question of how many cars the family owns.

## Results

Figure 1 shows that a majority of 53 per cent among young people in Oslo have more or less regular hiking experiences in the woods. There is, however, a clear tendency that very high level of involvement is less common. Only 4.2 per cent report that they go for a walk in the woods several times a week, and 7.3 per cent hike about once every week. On the opposite end of the scale, a total of 47 per cent indicate that they never or almost never go for a walk in the woods. 16.1 per cent and 25.5 per cent scored on the in-between activity levels. Further, 5.7 per cent did not answer the question. The analyses show that this is a highly selected group. Hence, the inactive group is probably even larger relative to the other groups.

**Figure1. Participation in hiking during season by minority/majority status. Percentages (n=10456)**



The figure also shows a clear association between minority status and hiking in the woods. All activity levels are more common among the majority pupils. Those with two parents born outside of Norway less often go hiking in the

woods, and those with one parent born in Norway systematically scores in-between the two other groups. Two out of three minority pupils report that they 'never or almost never' go for a walk in the woods, whilst the same applies to only 38 per cent of the majority pupils. Hence, there is a clear tendency that minority pupils more often are non-participants when it comes to hiking in the woods.

Table 1 shows how the hiking activity in addition to minority status is associated with age, gender, and some dimensions of class.

**Table 1: Hiking in the woods by minority status, age, gender, and three dimensions of class**

|                        | Active | Non-active | Chi-Square    | p-value | Valid N |
|------------------------|--------|------------|---------------|---------|---------|
| Majority pupils        | 62%    | 34%        |               |         |         |
| Minority pupils        | 34%    | 67%        |               |         |         |
| Mixed                  | 54%    | 46%        | 617.6         | <0.001  | 10 564  |
| Mean age (15-18+)      | 15.3   | 15.4       | 13.6 (F-test) | <0.001  | 10 666  |
| Boys                   | 48%    | 52%        |               |         |         |
| Girls                  | 57%    | 43%        | 89.8          | <0.001  | 10 711  |
| Upper middle class     | 66%    | 34%        |               |         |         |
| Middle class           | 58%    | 42%        |               |         |         |
| Self-employed          | 53%    | 47%        |               |         |         |
| Skilled labourer       | 50%    | 50%        |               |         |         |
| Lower office employee  | 45%    | 55%        |               |         |         |
| Manuel labourer        | 39%    | 61%        | 413.5         | <0.001  | 10 786  |
| Books: 1000+           | 70%    | 30%        |               |         |         |
| Books at home:500-1000 | 66%    | 34%        |               |         |         |
| Books at home:100-500  | 56%    | 44%        |               |         |         |
| Books at home: 20-100  | 41%    | 59%        |               |         |         |
| Books at home: < 20    | 28%    | 72%        | 741.9         | <0.001  | 10 597  |
| Family car: Non        | 38%    | 62%        |               |         |         |
| Family car: One        | 52%    | 49%        |               |         |         |
| Family car: Two        | 58%    | 42%        | 150.9         | <0.001  | 10 649  |



The first finding resembles Figure 1. It is almost twice as common among minority pupils to report to be inactive. The non-active group is slightly older than the active one, and boys are more frequently inactive than girls. There is a clear association between hiking in the woods and all three class-related measures. The variable of parent's occupation reveals an almost linear relationship with the hiking variable. On the extremes we observe that a little more than one-third of the upper-middle-class pupils are non-active whereas almost two-thirds of those who have fathers employed in manual labour report that they 'never or almost never' participate in hiking.

Class is constructed by economic as well as cultural dimensions. The rough proxy of cultural assets in the families, 'number of books at home', demonstrates good operational validity. The statistical relationship follows the ordinal scale pattern: the more books there are, the more likely are they to be active. Only 30 per cent of those who report to have more than 1000 books at home say that they are non-active, whilst 72 per cent of those who say they have less than 20 report to be non-active. The effect of the variable of number of books seems to be strongest at the bottom end of the scale. The variable is obviously not a good measure for how many books there actually are in the youngsters' homes. It is probably better to regard it as a measure of how the respondents perceive their families as being book-orientated or not. In earlier studies the measure of number of books has proven to be a strong predictor of class culture-related phenomena (Ødegård, 2008; Bakken, 2007; Krange & Pedersen, 2001). Hence the interpretation here must be that young peoples' hiking in the woods is thoroughly woven into the web of class culture, and it seems to be a somewhat 'high-brow activity'. 'Number of cars' in the household follows a similar pattern. 62 per cent of the youngsters who do not have a car say they never hike. Less than 50 per cent of those who have one or two cars say the same. The important leap is between those who have and those who do not have a car. So, even if hiking is free of charge and requires few economic resources, there is a clear statistical association between the household-economy proxy and hiking in the woods. The relationship is, however, not as strong as in the case of books. This may indicate that hiking, which is after all a low-cost activity, is more influenced by class culture than by family economy.

The overall picture is that a simple activity like taking a hike in the woods clearly is marked by class, in the economic and even more so in the cultural aspects of the term. The remaining task is to find out if the initial finding that immigrant pupils less often participate in hiking could be explained by this fact to an extent.

Below we present a binominal logistic regression with the dichotomized hiking measure as dependent variable. The 'mixed group' is left out of the ethnic-background measure, comparing only minority and majority pupils. The different independent variables are introduced in two blocks. Step one has two variables in the equation: 'hiking in the woods' and the minority/majority variable. In step two we control for age, gender, and the various class-related measures. On the basis of our hypothesis we expect that the effect of ethnic background should be reduced when the class variables are introduced to the model.

The analyses confirm that the outdoor recreational activity of hiking in the woods has a substantial connection to ethnic background, gender, and class. Model 1 resembles the bivariate finding already shown in Table 1: majority pupils are significantly more active than their minority peers, here expressed by for instance the odds ratio of 3.2. However, the main point is that the effect

of ethnic background reduces when the other variables are introduced into the model (odds ratio 2.0). The finding suggests that some of the initial difference between majority and minority pupils in regard to hiking in the woods is mediated through their class belonging, where the class background affects both groups. Hence, minority youngsters are not all that different from their majority peers, but they are more often working-class pupils.

**Table 2: Estimated effects of ethnic background, gender, age, and class dimensions. Blockwise logistic regression in two steps (95% CI).**

|                                 | Model 1:               |      |         |         | Model 2:               |       |          |         |
|---------------------------------|------------------------|------|---------|---------|------------------------|-------|----------|---------|
|                                 | B                      | SE B | OR      | p-value | B                      | SE B  | OR       | p-value |
| Ethnic (Majority =1)            | 1.2                    | 0.05 | 3.2     | <0.001  | 0.7                    | 0.07  | 2.0      | <0.001  |
| Gender (girls=1)                |                        |      |         |         | 0.4                    | 0.05  | 1.5      | <0.001  |
| Age (15-18)                     |                        |      |         |         | -0.04                  | 0.03  | 1.0      | Ns      |
| Upper middle class <sup>1</sup> |                        |      |         |         | 0.5                    | 0.09  | 1.6      | <0.001  |
| Middle class                    |                        |      |         |         | 0.3                    | 0.08  | 1.3      | <0.001  |
| Self-employed                   |                        |      |         |         | 0.1                    | 0.11  | 1.1      | Ns      |
| Skilled labourer                |                        |      |         |         | 0.2                    | 0.11  | 1.2      | <0.05   |
| Lower office employee           |                        |      |         |         | 0.1                    | 0.16  | 1.1      | Ns      |
| Books (scale: 0-4)              |                        |      |         |         | 0.3                    | 0.03  | 1.4      | <0.001  |
| Cars (scale: 0-2)               |                        |      |         |         | 0.1                    | 0.04  | 1.1      | <0.05   |
| Constant                        | -0.7                   | 0.04 | 0.5     | <0.001  | -1.1                   | 0.41  | 0.3      | <0.01   |
| O-test <sup>2</sup> Block       | Chi <sup>2</sup> 449.1 | df 1 | < 0.001 |         | Chi <sup>2</sup> 343.8 | df 9  | < 0.001. |         |
| O-test <sup>2</sup> Model       | Chi <sup>2</sup> 449.1 | df 1 | < 0.001 |         | Chi <sup>2</sup> 792.9 | df 10 | < 0.001  |         |
| Hosmer & Lemeshow               |                        |      |         |         | Chi <sup>2</sup> 6.13  | df 8  | = 0.633  |         |

<sup>1</sup>Reference: Manual labourer

<sup>2</sup>Omnibus Test of Model Coefficient

We may notice that it is the middle classes that stand out as especially active hikers, and that both the class culture and the family economy proxies have strong significant effects. Gender also has a clear effect, with girls being more active than boys. However, it is also important to notice that the effect of ethnic background is strong, even after the control for all the class-related measures. This is an expression of the fact that not all the difference between the two groups can be explained by class differences. Hence, it might be that some immigrants, regardless of their class belonging, find the Nordic tradition of walking in the woods to be alien and strange.

In an alternative analyses we introduced age and gender as the single two variables in block two. The block added significantly to the model (Omnibus Test of Model Coefficient: chi-square 79.8, df 2,  $P < 0.368$ ). Still, it did not change the effect of the majority/minority variable. The distribution of age and gender are quite equal within the two ethnic groups. It is the class measures, and neither age nor gender, that make the difference. A further expansion of the model contains a control for interactions between the class measures and ethnic background. None of the interaction variables came out with significant effects. Neither had the block any impact (Omnibus Test of Model Coefficient: chi-square 8.7, df 8,  $p < 0,001$ ).

## Discussion

Among adolescents in Oslo, Norway, 11.5 per cent report that they go for a walk in the woods once or several times a week, whilst 47 per cent answer that they never or almost never do so. Adolescents belonging to a minority group are less active in performing this activity, compared with adolescents with at least one parent born in Norway. Further, more girls than boys take walking trips in the woods. Associations between the frequency of hiking in the woods and three class-related parameters appeared: adolescents whose fathers' occupation is manual labour, who have fewer books in the home, and whose family less often own a family car hiked in the woods less often. The regression analyses show that both ethnicity and the three social-class variables contribute to the differences found in the frequency of walking in the woods. Both the ethnicity and the marginality hypotheses receive support from the present study.

The present study was not designed to unravel the mechanisms underlying the associations between the activity 'hiking in the woods' and belongingness to a class or minority group. Previous research has contributed to some insight. For example, the social-ecological model (e.g., Stokols, 1996) includes three domains of variables influencing the form and frequency of PA: the intrapersonal (e.g., enjoyment, self-efficacy), the social (e.g., support from others) and the environmental domain (e.g., urban design, access to facilities). Ball et al. (2007) have found that factors from all three dimensions explain educational inequalities in leisure-time walking, and Carlijn et al. (2007) have shown that the three dimensions are predictive of sports participation. Most variables included in the social-ecological model are influenced by more general cultural variables, like tradition and norms, possibly mediated by self-construal, that is, how people perceive themselves in relation to others. Markus and Kitayama (1991) have described this concept in detail, and presented evidence that western Europeans and European Americans present a self-construal characterized by relative independence and autonomy, whereas a relatively interdependent self-construal is more prevalent in Asian and African cultures. It has been hypothesized that different types of self-construal may affect the motivation to engage in various types of PAs (Walker et al., 2005, 2008). Traditionally, hiking in the woods has been an independent activity, most often performed alone or with a friend. A person with a self-construal characterized by social interdependence may not be easily stimulated to participate in a relatively non-collectivistic activity.

Previous research has identified many environmental physical factors that may contribute to constraint to some PAs (e.g., Trost, 2002). Some groups of people live in environments where facilities for PA are scarce. For example, Gordon-Larsen et al. (2006) characterized the residential locations of U.S.

adolescents in the National Longitudinal Study of Adolescent Health, and found that lower-SES and ethnic minority groups had reduced access to PA facilities, which in turn was associated with decreased PA and an increased overweight population. Similar results were reported after analyses of a national sample in the U.S. (Powell et al., 2006). In parts of the Oslo city centre, where natural areas like woods are very limited, minority groups constitute a considerable proportion of the resident population. However, minority groups to a large extent inhabit suburban areas where access to natural areas is easy. It has been shown that among children and adolescents in such suburban areas, surrounded by forest areas, ethnic Norwegians prefer to stay in the woods much more often than do those belonging to minority groups. It was also found that cross-country skiing, tent-camping, and fishing were more frequently performed among subjects who have at least one parent who was born in Norway (Bjerke et al., 2006). In addition, walking in the forest does not require specific skills, and the activity does not cost money. Thus, neither environmental nor economic factors should contribute significantly to the group differences observed. Personal and socio-cultural factors seem to be more important.

The effects of gender on the frequency of hiking in the woods runs counter to most previous studies on gender differences in PA (see introduction). One explanation to this finding could be that previous studies included more vigorous and sport-related activities, compared with the activity of 'hiking in the woods'. Previous studies in Norway have shown that women more than men report positive emotions whilst staying in the family's mountain cabin (Bjerke et al., 2006), and they prefer appreciative experiences like observing and feeding birds and listening to bird song more than men do (Bjerke & Østdahl, 2004, 2005). These are some of the experiences that characterize some aspects of walking in the woods.

An Australian study (Timperio et al., 2007) has shown that the availability of parks (both density and number included) did not vary across neighbourhoods varying in socio-economic conditions. However, equal access to forests may not be sufficient for the various cultural and SES groups to practise the same frequency of walking trips in the wood. Differential requirements across groups for amenities in the recreational areas may exist. For example, Crawford et al. (2008) have found that public open space in lower SES areas had fewer amenities (tables, toilets, water features, and paths) compared with space in higher SES areas, even in the outer metropolitan fringes of Melbourne, Australia. Establishing these amenities in suburban Oslo could possibly stimulate marginalized groups to increase the frequency of taking walking trips.

More research is needed in order to identify these factors in a Norwegian context, including the use of qualitative methods to supplement quantitative surveys. Intrapersonal and micro-social processes are not easily accessible by use of surveys alone.

Another issue concerns the measurement of 'class'. We chose the three variables of occupational status, cultural assets (books at home), and ownership of family car(s) as indicative of social class. A different operation of class could relate differently to the focus activity of the present study. In a Marxist perspective class denotes an economic relationship of exploitation of labour. In the context of Norwegian society, workers certainly do have the time for outdoor recreation, and walking in the woods is basically free of charge. A focus concentrated on economy would probably reveal a weaker link between class and hiking. And this is exactly what our data shows. However, a class

perspective confined to economy does not grasp how structures of power and subordination are mediated through cultural mechanisms. This is one reason for bringing class culture and cultural assets into the analyses. Recreational hiking in rough outdoor surroundings was brought to Norway by members of English nobility, and up to now several forms of leisure-time nature use are affiliated to middle-class practices. What we observe here might simply be that newly arrived minority people are 'finding their place' in the class and cultural structure of Norwegian society. Oslo is a segregated city. Northern and eastern city parts and the satellite towns have a much higher immigrant population. These are working class areas where young people from immigrant families live in the same neighbourhoods as working-class youngsters. Peers become increasingly important during youth. We might have observed the effect of some kind of cultural diffusion where non-western immigrant pupils take over the lifestyles that are more common among neighbourhood peers than among peers from more affluent areas.

### **Key message**

Minority youngsters have in Oslo, as in many other western cities, more often a working-class background than their majority peers. Their economic as well as cultural assets are not primarily products of ethnic group membership, but of class background. These are assets that prove important for choosing to participate in outdoor activities. Hence in studying minority youngsters' participation in physical outdoor recreation and in efforts to recruit them to such activities, one should take the mechanisms on the level of class into account.

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