

# Sustaining habits of attending cultural events and maintenance of health: a longitudinal study

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## SUMMARY

The purpose of this study was to assess how changes in the habit of attending cultural events in the community might predict self-reported health. This study made use of data based on two interviews, 8 years apart, with 3793 adults aged 25–74 years from a simple random sample of the Swedish population. The subjects were interviewed in 1982–1983 and re-interviewed using the same questionnaire in 1990–1991. The setting was a Swedish interview survey of living conditions comprising a random sample of the adult population. Self-reported health status was the main outcome measure. The variables used for control purposes were baseline health status according to the survey of 1982–1983, age (at baseline), type of residence, geographical region of domicile, and socio-economic status (level of education). A correlation was found between perceived poor health and all the independent variables, as well as an

influence in the expected direction for all of them; poor education, increasing age and a low degree of urbanization all predicted poorer perceived health. In the full model (including all nine independent variables), those who became culturally less active between the first and second occasion, or those who were culturally inactive on both occasions, ran a 65% excess risk of impaired perceived health compared with those who were culturally active on both occasions. Furthermore, those who changed from being culturally less active to being more active had about the same level of perceived risk as those active on both occasions. These results could be in agreement with a causal influence of stimulation and suggest that cultural stimulation is a 'perishable commodity'. While recruiting new consumers would in that case promote health, continued frequent replenishment of the cultural stimulation may be just as important.

*Key words:* cultural consumption; cultural events; environmental enrichment; perceived health

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## INTRODUCTION

Cultural experiences and impressions from literature, theatre, film and from making music can have physical, mental and social effects. Within medical care and the care of children and senior citizens, art, drama and music have all been used as forms of therapy (Drees and Brade, 1969; Beck, 1991; Wickström *et al.*, 1993; Walsh and Minor, 1997). In a study about cultural activities and mortality (Bygren *et al.*, 1996), we found that attending cultural events is linked with longevity. People who rarely attended such events ran a nearly 60% higher mortality risk

than those attending most often, after adjusting for a range of possible confounders. However, no conclusion about a causal connection could be drawn.

There are theories in several sciences regarding the possible mechanisms of this phenomenon. One focus is on the reduction of tension (Spencer, 1997). Works of art produce specific tensions, which combine with diffuse residual tensions in the spectator. These combined tensions are then resolved through some other inductive aspect of the works of art. According to communications theory, art objectifies human feelings so that one can

understand the world of inner life by the presentational symbols used in the arts. These symbols reflect the structure of feeling and help one understand the world of feelings, which a discursive symbol such as literal language or numbers can not accomplish. Arousal of attention, alertness or excitement is another theory regarding the mechanism. One is aroused by attributes such as brightness or loudness, by being reminded of survival factors such as food, sex and death or, surprisingly, frustration. According to psychoanalytical theory, art affords vicarious experiences of unsatisfied desires in a socially accepted form. Psychoanalytical theory also explains how the normal symbolizing faculty develops in the interaction between mother and child and how this faculty is essential in caring for ourselves and for enjoying art.

The biological theories are psychoneuroimmunological (Ader *et al.*, 1995). One route could be the innervation of lymphoid organs and the release of neurotransmitters for which these organs have receptors. This should partly protect from infections and perhaps autoimmune diseases (Harbuz *et al.*, 1997). Another route could be the hypothalamo-pituitary-adrenal axis, as environmental enrichment increases the number of glucocorticoid receptors in the hippocampus, which is important in order to protect us from depression (Olsson *et al.*, 1995). In brief, we found many suggested ways in which cultural experiences influence health, both mental and physical. If this factor is indeed important, we ought to find that a change in consumption is consistent with a change in health.

This study addresses the question concerning the influence of change. We investigated how changes in the habit of attending cultural events in the community might help predict self-reported health.

## METHODS

The longitudinal analyses were based on interviews from two occasions, 8 years apart, with 3793 adults aged 25–74 years from a simple random sample of the Swedish population, collected by Statistics Sweden (Statistics Sweden, 1986). They were interviewed personally in 1982–1983 and re-interviewed using the same questionnaire in 1990–1991, having been tracked with the help of the Swedish personal

identification number and the total population register. The non-response rate in 1982–1983 was 13% and in 1990–1991 was 17%. The total response rate was 72% (3793 individuals).

### Outcome variable

In 1990–1991, health status was based on the question ‘how would you describe your general health?’. Is it ‘good’, ‘poor’ or ‘somewhere between good and poor’? Those who answered that their health status was ‘poor’ or ‘somewhere between good and poor’ were considered to have a poor health status.

### Variables for control

The baseline health status in 1982–1983, described in the same way, was used as a confounder. Gender and age were controlled for in the model. Age (at baseline) was divided into the following strata: 25–34, 35–44, 45–54, 55–64 and 65–74 years. Housing residence was divided into owning versus renting their dwelling. Geographical region comprised of three levels: (i) the three largest urban areas of Sweden combined; (ii) other medium large municipalities with >90 000 inhabitants within 30 km of the three centres; and (iii) small towns and rural districts. Socio-economic status was defined as the level of education attained. The respondents were classified into three groups: (i) primary school level, ≤9 years of education; (ii) at least 2 years of high school, 10–11 years of education; and (iii) 3 years of high school or university studies, >11 years of education. A reading index was constructed from the questions about reading books or periodicals. Two classes, ‘low’ and ‘active’ readers were contrasted against a reference group of those reading a book or periodical at least once a week. A music-making index was also constructed from questions on how often the respondent played an instrument or sang, and they were dichotomized into those doing so either at least ‘occasionally’ and those doing it less often than ‘occasionally’.

### Variables of prime interest

A cultural attendance index was constructed from visits to the cinema, theatre, concerts and live music performances, museums and art exhibitions to test the hypothesized link. Our score on cultural attendance was founded on five

questions that covered these cultural offers, and they were given equal weight in the index. For each of these items, respondents were asked the question 'have you visited any of the following cultural offers within the past 12 months—the cinema, a concert or a live music performance, the theatre, art exhibitions or museums? If yes, how often? The scoring for these questions was: 1 = never attended; 2 = attended one to five times per year; 3 = attended six to 20 times per year; 4 = attended >20 times per year. The maximum possible score was 20 (4 × 5) and the minimum score was 5 (1 × 5). After inspecting the distribution and considering the low numbers in the upper end of the scale, we decided to use a dichotomization so that (close to) a half-split distribution was achieved (Tukey, 1977). High scoring participants were those with a score of ≥12 points and low scoring participants were those scoring ≤11 points. The results were dichotomized and reported in two levels (poor/fair versus good). The more active group scoring ≥12 points, i.e. those making at least two cultural visits per week, constituted the reference group. Those scoring 11 points and below were considered a culturally 'less active' or 'low' group.

## Statistical methods

### *Cross-sectional model*

A marginal model was used to estimate cross-sectional risks for self-reported poor health. The full model (involving all nine independent variables) included sex, age, education, house ownership, geographical region, reading index, music index and cultural attendance index as independent variables. It was analysed using generalized estimating equations (GEE) (Diggle *et al.*, 1994). This method is more efficient than a cross-sectional analysis with the same number of subjects. The degree of efficiency depends on the size of the correlation between the measurements. Another advantage is that the number of repeat observations can vary among subjects without affecting the interpretation of the coefficients. The regression coefficients have a 'population-averaged' interpretation. They compare the disease odds in the population with the risk factor, to the population without a risk factor. The results are expressed as an odds ratio (OR) with a 95% confidence interval (CI) and are interpreted in the same way as ORs from cross-sectional analyses.

### *Longitudinal transitional models*

The transitional model was analysed by applying unconditional logistic regression, including health status in 1990–1991 as a dependent variable. The independent variables were health status, sex, age from baseline in 1982–1983, education, house ownership, geographical region, music index and reading index from the second interview (1990–1991), and change in attendance of cultural events. In order to estimate changes, measurements from both interviews were included in the model for the cultural attendance index, with adjustments for all other variables. The results are shown as OR with 95% CI. The reliability of the variables in the questionnaire has been analysed by means of re-interviews in 1981, 1983, 1984 and 1989 (test–re-test method), giving kappa coefficients of between 0.7 and 0.9 (Wärneryd, 1990). The SAS™ software (SAS, 1989) was employed to analyse the data.

## RESULTS

In all independent variables except region, the correlation between changes in self-reported health and changes in attendance at cultural events were as expected. The poorer the education, the larger the proportion having poor self-reported health status and the lower frequency of cultural attendance. By and large, the prevalence of poor self-reported health status increased with the age of the cohort, from 20% in 1982–1983 to 29% in 1990–1991; a crude increase of 45%. The annual increase was 6% (OR = 1.06) and the 8-year increase was ~59%. This can be compared with the correlation with seldom attending cultural events, which was of the same order. In the first model, low frequency of cultural attendance, when adjusting for sex, age and the longitudinal effect of age, showed a cross-sectional OR of 1.81 (CI = 1.61–2.04) of poor health status, estimated by GEE. In the full model (involving all nine independent variables), an attenuation occurred, but an excess risk persisted (OR = 1.61; CI = 1.42–1.83) (Table 2).

In a transitional model adjusted for sex, age and health status in 1982–1983, those who changed their cultural activities from the first occasion to the second also changed their perceived health. Compared with those who were culturally active on both occasions (the reference

**Table 1:** The proportion of self-reported poor health status and high cultural attendance in 1982–1983 and 1990–1991 in the different independent variables in the age range 25–74 years at the first interview ( $n = 3793$ )

Variable	Poor health status		Attending cultural events	
	1982–1983	1990–1991	1982–1983	1990–1991
Age at first interview (years)				
25–34	0.09	0.14	0.52	0.49
35–44	0.13	0.19	0.52	0.49
45–54	0.21	0.37	0.45	0.43
55–64	0.36	0.41	0.34	0.31
65–74	0.35	0.49	0.36	0.25
All	0.20	0.29	0.46	0.41
Sex				
Males	0.18	0.27	0.48	0.41
Females	0.22	0.30	0.44	0.42
Education				
≤9 years	0.29	0.40	0.32	0.25
10–11 years	0.18	0.25	0.46	0.42
≥12 years	0.09	0.15	0.73	0.68
House ownership				
Owning	0.19	0.25	0.46	0.43
Renting	0.23	0.37	0.45	0.37
Region				
Largest urban	0.17	0.23	0.53	0.48
Medium large	0.20	0.28	0.43	0.40
Small towns	0.22	0.34	0.42	0.37
Reading books				
Rarely	0.27	0.39	0.24	0.16
Occasionally	0.21	0.29	0.40	0.38
≥once a week	0.16	0.22	0.60	0.57
Making music				
Yes	0.16	0.27	0.65	0.61
No	0.21	0.29	0.41	0.38
Cultural attendance				
High	0.14	0.18	–	–
Low	0.26	0.38	–	–
Health status				
Good	–	–	0.49	0.47
Poor	–	–	0.32	0.27

group), those who had become culturally less active on the second occasion now had an excess risk of 1.65 (CI = 1.25–2.17). Those who were inactive on both occasions had about the same over-risk on both occasions compared with the reference group (i.e. the persistent users) (OR = 1.65; CI = 1.31–2.08). Those who changed from being inactive to very active appeared to achieve the same level as the reference group at the time of the re-interview according to the point estimate, but the confidence limit was wide (OR = 0.84; CI = 0.60–1.17). In the full model, attenuation occurred, but the pattern persisted (Table 3).

Furthermore, those who changed from being less active to being more active had about the same low level of risk as those having been active throughout (Table 3). Even when adjusting for

further variables such as social network, marital status (measured as at least one contact per week with a significant friend), physical exercise and car ownership, the OR remained on the same level (not shown). Exclusion of those who reported poor health status on the first occasion resulted in essentially the same risks (not shown).

## DISCUSSION

No other panel study on a random sample of the population has tackled the question of whether attendance at cultural events has any health effect (or correlation) other than the obvious feelings of well-being (or otherwise) during the event. There are several forms of therapies that use art, dance, music and drama, and all have

**Table 2:** Cross-sectional odds ratio (OR) with 95% confidence interval (CI) for self-reported poor health status in a full model estimated by GEE and adjusted for age ( $n = 3793$ )

Variable	Full model	
	OR	CI
Age effect		
Per year	1.06	1.05–1.08
Per 8 years	1.65	1.51–1.81
Sex		
Male	1	Reference
Female	1.22	1.07–1.39
Education		
$\leq 9$ years	1.74	1.41–2.16
10–11 years	1.46	1.19–1.78
$\geq 12$ years	1	Reference
House ownership		
Owning	1	Reference
Renting	1.50	1.32–1.72
Regions		
Largest urban	1	Reference
Medium large	1.23	1.04–1.45
Small towns	1.38	1.18–1.62
Reading books		
Rarely	1.15	0.99–1.34
Occasionally	1.05	0.92–1.20
$\geq$ once a week	1	Reference
Making music		
Yes	1.12	0.94–1.33
No	1	Reference
Cultural attendance		
High	1	Reference
Low	1.61	1.42–1.83

**Table 3:** Odds ratio (OR) with 95% confidence interval (CI) for self-reported poor health status for different transitions in cultural attendance in a model adjusted for sex, age (not shown), health status in 1982–1983, education, house ownership, geographical region, reading and music indices for the age range 25–74 years ( $n = 3793$ )

Variable	Model	
	OR	CI
Sex		
Male	1	Reference
Female	1.14	0.97–1.34
Health status, 1982–1983		
Poor	6.47	5.31–7.87
Good	1	Reference
Cultural attendance, 1982–1983/1990–1991		
High/high	1	Reference
Low/high	0.84	0.60–1.17
High/low	1.65	1.25–2.17
Low/low	1.65	1.31–2.08
Education		
$\leq 9$ years	1.48	1.11–1.97
10–11 years	1.27	0.97–1.66
$\geq 12$ years	1	Reference
House ownership		
Owning	1	Reference
Renting	1.62	1.34–1.95
Regions		
Largest urban	1	Reference
Medium large	1.30	1.05–1.62
Small towns	1.66	1.34–2.07
Reading books		
Rarely	1.07	0.85–1.35
Occasionally	1.03	0.83–1.27
$\geq$ once a week	1	Reference
Making music		
Yes	1.22	0.96–1.56
No	1	Reference

been reported to ameliorate various symptoms. No report of deleterious effects of such therapeutic forms has been found in the literature.

Participation in cultural life is a multi-dimensional matter and our measure covers only a part of it. Our questionnaire was much wider on the level of living standards, which could decrease the precision of measure. Furthermore, only two measurements in time were performed, with a long interval between them. Cultural participation could vary over the years, which makes the exposure rather imprecise. Additionally, our measure of health is relying only on one single question about subjective health. Our music-making and reading indices did not show any strong relation to the outcome. Indeed, one could remove them from the analysis but we did not as it is not self-evident that they are not confounders.

A change in health status (e.g. diagnosis of a disease or onset of disability) could precipitate

both a changed self-rated health response and a change in the attendance of cultural events. The direction of a causal effect could, however, be the other way round. If attending cultural events has a causal effect on health, then it appears to have been transient. A response at the beginning of our study of 'often attending events' that was then not maintained was followed by the same excess risk regarding self-reported impaired health as being a non-consumer at both the first and second interview. Thus, if the link is causal, i.e. participating influences health positively, the conclusion must be that cultural stimulation is a 'perishable commodity' and that continued frequent replenishment is as important as recruiting new consumers of this commodity.

There could be some important public health repercussions from the findings, as the custom of attending cultural events is not the same in all social groups.

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