

# *Information Mastering, Perceived Health and Societal Status: An Empirical Study of the Finnish Population*

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Health education programmes are generally based on the assumption that health-promoting knowledge and corresponding behaviour are automatically created as people are subjected to a rich flow of information. Improved knowledge is, however, not the same as good behaviour. Information is not synonymous with knowledge; neither is the transformation of knowledge into behaviour a simple or linear process. There are indications of gaps among the different strata of population in society, with some groups being able to gain more from societal efforts than others. In health matters, health literacy skills, i.e. health information mastering, has been emphasised as a crucial asset. The aim of this paper is to show the links that exist between an individual's everyday

life information mastering, subjective health status and social position. The objective is also to provide an introduction to the theory of the sense of coherence. A particular aim is to point out the close relationship between the sense of coherence and information mastering. The results show clearly that there is a very strong social determinant in health. The relationship between the sense of coherence and self-rated health is also very strong, as well as the relationship between the sense of coherence and self-rated social class. According to the results of this study, and also as the theory predicts, the sense of coherence seems to be rooted in the ability to manage, cope with, and process information – that is, in information mastering.

## *Introduction*

Research on health information management and practice is growing fast. Many factors justify this growth, especially increasing public expenditures on health care and service, and wasted human lives. Currently, for example, obesity accounts for 2–8% of total health costs and 10–13% of deaths in different parts of WHO European Region, and it has been estimated that the incidence of diseases related to obesity will increase substantially in the very near future (WHO Europe 2006).

Official health programmes have implicitly been based on the assumption that health-promoting knowledge and corresponding behaviour are automatically created as people are subjected to a rich flow of information. Improved knowl-

edge is, however, not the same as good behaviour (Reger, Wootan & Booth-Butterfield 1999; Sligo & Jameson 2000). Although knowing about the health risks from behaviours like use of tobacco, wrong diet or sedentary lifestyle, people might still engage in these behaviours, even if they have been diagnosed with diabetes (Eriksson-Backa 2003; Notwehr & Stump 2000). Information is not synonymous with knowledge, neither is the transformation of knowledge into behaviour a simple or linear process. Despite campaigns aimed at educating "all the people" about healthy living, there are indications of gaps among the different strata of population in society, with some groups being able to gain more from these societal efforts than others (Ek 2005; Nutbeam 2000). Studies have also revealed differences in health perceptions

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between different social classes. People in higher social positions consider health as a goal, a value in itself; in the lower strata health is considered more in a utilitarian and functional way, as a means to be able to do things, especially to work (Calnan & Williams 1991; Chamberlain 1997; d'Houtard & Field 1984).

Better-educated citizens seek information, read more, use professional sources to a larger extent, and experience information evaluation as less troublesome (Agada 1999; Ek 2005; Gaziano 1997). Fogel, winner of the 1993 Nobel Prize in economics, argues that the most intractable maldistributions or inequalities in the post-industrial society are not of income, or of food, shelter or consumer durables, but of the distribution of spiritual or intangible assets. Knowledge capital is the critical asset in the struggle for self-realisation and meaningfulness in life today (Fogel 2000, 1, 236).

In health matters, health literacy skills, i.e. health information mastering, has been emphasised as a crucial asset (DeBuono 2006; Rudd, Kirsch & Yamamoto 2004). Illiteracy has been called "a hidden epidemic" (DeBuono 2006) as well as "the silent epidemic" (Marcus 2006). DeBuono (2006) suggests that information literacy is the most important predictor of an individual's health status.

However, studies show that a considerable part of the populations of the USA and Finland lacks these skills. In a study of the National Center for Education Statistics (2006), health information literacy was reported using four performance levels: below basic, basic, intermediate and proficient. According to the report 30 million US citizens (14%) had literacy skills defined as below basic. Individuals at this level have difficulty comprehending directions for taking medicine or understanding an appointment slip. Another 47 million (22%) were at the basic level. These individuals find it difficult to calculate a dose of an over-the-counter medication for a child or comprehend a consent form. The majority (53%) of adults had intermediate health literacy and 12% were at the proficient level. While some groups, notably the elderly and poor, are at particularly high risk for limited literacy, people of all ages, nationalities, and income groups are at risk. In fact, most of the 36% of the U.S. population in the below basic and basic literacy levels are native-born, white adults. In a study of the Finnish population aged 18–65 years, 16% were found to have weak information mastering

capabilities, 35% were at an intermediate-low level, 34% at an intermediate-high level and about 15% were assessed to be very skilful in mastering information (Ek 2005).

The numbers are alarming. When a substantial number of people are below intermediate skills, it means that they are out of reach of e.g. official health promoting programmes and media reports on health. In other words, peoples' information mastering is in a key position to be able to gain the benefits of a prosperous and information-rich society.

### *Aims, objectives and scope of the study*

The prime aim of this paper is to show the links that exist between the individual's everyday life information mastering, subjective health status and social position in an information environment and media culture in rapid flux. The objective is also to provide an introduction to the theory of the sense of coherence, a health-related concept, which originates from the domain of health sociology. The aim is, in particular, to point out the close relationship between the sense of coherence and information mastering.

The focus of this paper is people's, in this case Finnish citizens', socio-cognitive processes and their social context (Fiske & Taylor 1991; Hjörland 2000). Research, which applies a cognitive test, investigates how an individual uses his world view to master information, i.e. to control, learn, remember and solve problems which may lead to understanding, ideas, knowledge and action (Allen 1991). Amongst other things, an individual's subjective understanding of his health or social status is a result of these processes.

### *The sense of coherence and information mastering*

The sense of coherence (henceforth SOC) is defined as follows: a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that

- (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable (comprehensibility, the cognitive component)

- (2) the resources are available to one to meet the demands posed by the stimuli (manageability, the instrumental component)
- (3) these demands are challenges, worthy of investment and engagement (meaningfulness, the motivational component) (Antonovsky 1987, 19)

The view is very holistic; the concept is built upon thoughts (comprehensibility) as well as actions (manageability) and feelings (meaningfulness), embedded in a socio-cultural dimension. Metaphorically one could say that three 'h' – head (comprehensibility), hands (manageability) and heart (meaningfulness) – in interplay promote a fourth 'h' – health. Kertész, winner of the 2002 Nobel Prize in literature, uses the same words in his definition of freedom: to be free one has to be connected with one's own existence; one has to know what one does, how and why (Kertész 2002). According to Kuhlthau (1993, 6–7), this classic triad has not been taken seriously in study or discussion of information seeking behaviour; in particular the affective experience, i.e. feelings, has been largely neglected. MacMullin and Taylor (1984) also state that research in an information seeking process ought to pay attention to a complex interplay within three realms of activity, very similar to Antonovsky's components: the cognitive ('comprehensibility'), the physical ('manageability'), and the affective ('meaningfulness').

According to the SOC concept, the individual's key aim in mentally processing information is to understand the world in a meaningful and manageable way (Antonovsky 1979, 1987). In order to explain the decisive meaning of information, Antonovsky integrated the concept of the SOC into a general model of information processing ("mental information-as-process", according to Buckland's (1991) distinction): the more complex the messages directed at a person, the greater the potential for noise rather than information, the greater the difficulty in integrating information in the internal processing system, the greater the danger of confusion of output. In sociological terms it was put in this way: the greater the complexity of the environmental systems, the more extensive the community, the greater the possibility of conflicts of interest, of subordination, of differing interpretations of reality. But, on the other hand, the greater the complexity is, the greater the possibility of choice, of flexibility, of adaptive change, of auto-poiesis or system reorganization. The SOC is thus

determined by (1) the extent to which a person is linked to social structures from which (2) information is received, and (3) the extent to which a person is capable of integrating the information, that is knowledge construction, and (4) transmitting further information to the social structures, which (5) are expected to provide appropriate feedback (Antonovsky 1991, 1993b, 1994).

In the five-stage model, which is underpinning the SOC theory, the "world of information" is crucial. The following issues, in order of importance, are highlighted: (1) is the self linked to, or isolated from, the environment? (2) does the environmental input consist of information or noise? (3) is the internal processing integrating or chaotic? (4) is the new knowledge translated into behaviour and put into action? (5) is the feedback from the environment responsive or rejective? If these information-based definitions of the SOC are interpreted in an information science context, one could say that a person equipped with a strong SOC must also be able to master all kind of information flows and environments (Ek 2002, 2004). As the founding father, Antonovsky, declares: "We people are perpetually bombarded by information, we are exposed to stressors that demand a new way of thinking and new conclusions. How we deal with information affects our health, make us move towards either health or sickness" (Antonovsky 1989).

The five-stage model of human information processing underpinning the SOC theory is in essence very similar to various conceptions of information literacy (cf. Behrens 1994; Bruce 1997; Doyle 1994). Both of the conceptions stress structural conditions and the value of resource-based lifelong learning. But, so far, information literacy has predominantly been scrutinised and discussed in educational and work-place contexts, and the conception is variously understood as a process, a skill, or a competence (Kapitzke 2001; Lloyd 2005). In other words, the focus of the research has been problem- or task-oriented. If we are to understand information literacy in a socio-cultural setting of everyday life environments and activities, we need to adopt a more holistic approach (Lloyd 2005; 2006). In everyday life environments with their multiple and complex sources of information the term information mastering is more accurate. Information mastering could be defined as "a meta-competency, i.e. a set of competencies which

enable new skills and knowledge in a variety of contexts" (Lloyd 2005). Information mastering is thus understood as a generic term for various conceptions of information literacy.

### *Method and material*

The methods used in this study are quantitative. The empirical material consists of data procured via a posted questionnaire. A questionnaire entitled Environmental Scanning – Health – Social Environment was posted to a representative sample group consisting of 2500 Finnish citizens from the ages of 18 to 65 years. The names for this sample group were retrieved from the Finnish Population Register Centre. The first posting took place in November 2001. A follow-up reminder was sent to those who did not return the questionnaire. This reminder also included a new questionnaire. This second posting took place in January 2002. The original sample group consisted of 2500 and of these 2475 people were reached. The reason some individuals in the sample group could not be reached stemmed from several factors, amongst which we note unknown or incorrect addresses or the recipients were no longer resident in Finland. Included in this unreachable group may be people who were too ill or handicapped to answer or who were deceased. The response rate was 52%: 1287 people of 2475 returned their questionnaires.

Information mastering was measured by the SOC-scale, which is called "the orientation to life questionnaire" in its operational format and consists of a twenty-nine-item semantic differential questionnaire. In this study the SOC was measured by 16 multiple-choice questions (scale 1–7) derived from the original 29 questions (Antonovsky 1987, 190). The number of questions was reduced, because the original number was felt to be unnecessarily large for the purpose of this particular research project. Hence we decided to use the 16 most relevant questions.

Self-rated health was established on the basis of the respondents' standpoints on a Likert scale from 1 (totally agree) to 7 (totally disagree) to the assertion: "At the moment you have no health problems". Answering one means that the health is perceived as very good, as 33% did; answering two means quite good health, as 28% did; three to five, as 26% answered, is interpreted as neither good nor bad health; and answering six or seven

means that the health status is perceived as bad, as 13% did.

Self-rated social class was measured on the basis of the respondents' answers on a Likert scale to the question: "In our society some groupings are considered as higher and some groupings as lower. Where would you position yourselves on a scale from one ('the top') to ten ('the bottom')?" The 19% answering one to three are seen as people who rank their social position as high; respondents answering four to six, as 61% did, are categorized as "ordinary citizens"; and respondents, 20%, who place themselves in the bottom groupings seven to ten are seen as people who perceive their social position as low.

Media's health information clarity was measured on a Likert scale from one (totally agree) to seven (totally disagree) by the statement: "Health information in the mass media is often ambiguous/difficult to understand".

How the respondents perceived media's clarity in general was also measured on a Likert scale from one (totally agree) to seven (totally disagree) by the statement: "Despite an extensive mass media supply it is difficult to get a clear picture of things".

The level of interest in health information was measured by the sum of two questions on a Likert scale from one to seven. The questions were: "Are you interested in health related information" (the scale was from 'not at all' to 'very') and "How actively do you seek information about the connections between health and ways of living according to nutrition, exercise and substance use?" (the scale was from 'I almost try to avoid this kind of information' to 'very actively').

The collected data was analysed by a statistics programme, SPSS 12.0.1 for Windows. The statistical method used was correspondence analysis.

### *Results*

In the following presentation five main themes are analysed in order to evaluate the connections between peoples' information mastering (the SOC scale), subjective health status, self-rated social class, their opinions about the clarity of media reporting and their interest in health information.

We begin with a look at the relationship between self-rated health and self-rated social class in Figure 1.

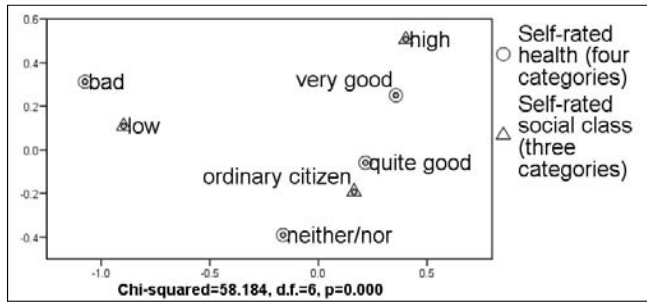


Figure 1: Self-rated health and self-rated social class

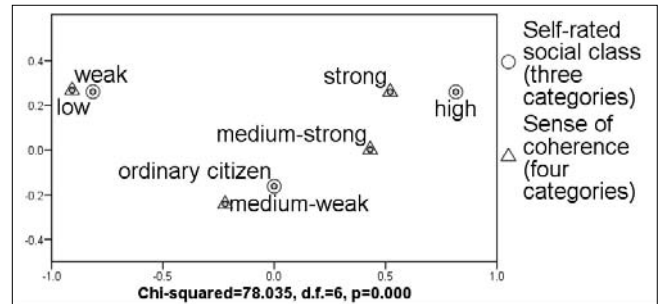


Figure 2: The sense of coherence and self-rated social class

As in previous studies (see Marmot 2004 for a comprehensive review), there is a strong social determinant in health. Bad health and low social position are close to each other to the left in the field, and very good health and high self-rated social position correspond strongly up to the right. If you feel low, you probably do it in several dimensions, and vice versa. The "ordinary citizen" is in the middle, between quite good and neither good nor bad health.

Figure 2 shows the connections between the SOC and self-rated social class.

The connection between the SOC and self-rated social class is very similar to that between subjective health status and self-rated social class. Low social class and a weak sense of coherence are very close to each other up to the left, while a strong SOC and a high perceived social class belonging are corresponding up to the right. And the ordinary citizen is again in the middle between a medium-strong and medium-weak SOC.

Figure 3 depicts the connections between the SOC and self-rated health.

The connection between the SOC and self-rated health is also very easy to interpret. As in earlier research (Antonovsky 1993a, 1996; Eriksson & Lindström 2005; McCubbin *et al.* 1994), the connection between the SOC and self-rated health is strong. Particularly the extremes – a weak SOC and bad health up to the left, and a strong SOC and very good health to the right in the field – correspond heavily, i.e. they are close to each other in the two-dimensional field.

In figures 4a and 4b we turn to the connections between the SOC on the one hand, and media's health information clarity and media's clarity in general on the other.

The relationship between the SOC and media's health information clarity is also very strong. As

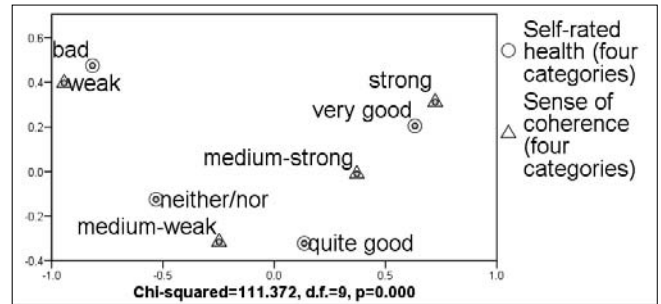


Figure 3: The sense of coherence and self-rated health

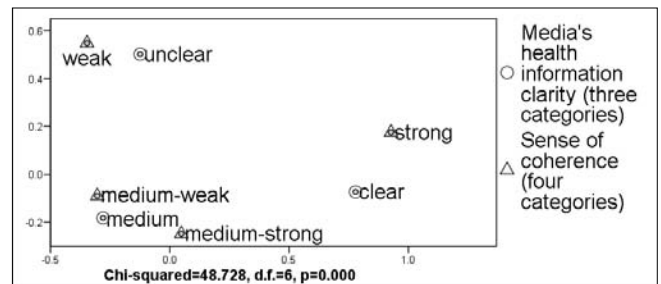


Figure 4a: The sense of coherence and media's health information clarity

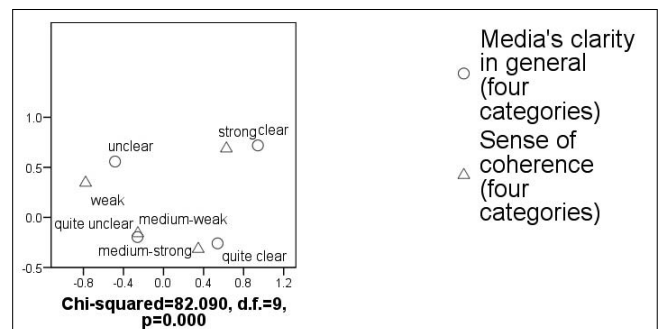


Figure 4b: The sense of coherence and media's clarity in general

shown in the figure, the relationships, category by category, are strong and very significant ( $p = 0.000$ ). A strong SOC and clear health information correspond to the right, and a weak SOC and

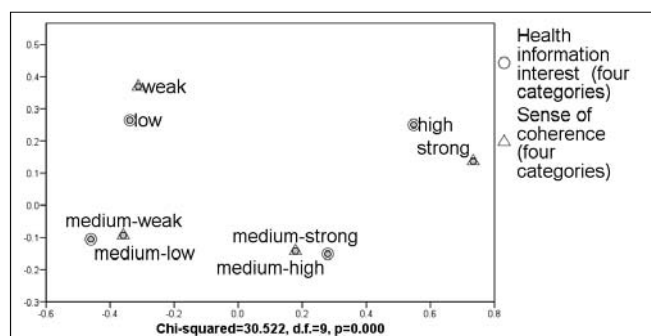


Figure 5: The sense of coherence and the level of interest in health information

unclear information are connected up to the left in the field. And medium-strong and medium-weak SOC correspond with medium health information clarity down to the left.

The SOC and media's clarity in general are corresponding accordingly. Weak SOC and confusing media reports correspond up to the left, strong SOC and clear media reports up to the right, medium-weak SOC and quite confusing media reports down to the left, and medium-strong SOC and quite clear media reports down to the right.

Finally, in Figure 5 we look at the connection between the SOC and the level of interest in health information.

The connection between the SOC and the level of interest in health information turned out to be strong, too. The relationships correspond neatly category by category – weak/low, medium-weak/medium-low, medium-strong/medium-high and strong/high – and are very significant ( $p = 0.000$ ).

### Discussion

The results show clearly that there is a very strong social determinant in health. It seems that the power of subjectivism is working to the same ends, namely that poor subjective health status also seems to mean subjective low social status, and vice versa. As expected, according to previous research (Antonovsky 1993a, 1996; Eriksson & Lindström 2005; McCubbin *et al.* 1994), the relationship between the SOC and self-rated health is very strong. The SOC and self-rated social class are also very closely related to each other. Furthermore, according to the results of this study, and also as the theory predicts, the SOC seems indeed to be rooted in the ability to manage, cope with, and

process information – that is, in information mastering. There is a strong relationship between the SOC and the skills to sift through the mountains of information on offer, i.e. to judge on the clarity of media reporting.

The study opens up important insights to the interplay of information mastering, perceived health and societal status. The results points out the importance of information mastering, for those respondents with a stronger SOC, tended to easily decipher information. Moreover, they felt better and considered their societal status to be higher than those with a weaker SOC.

An individual equipped with a strong SOC is able to access, interpret, evaluate and utilize sources of information according to the five-stage model of human information processing (Antonovsky 1991, 1994). The results in this study also suggest that such an individual is interested in health information and is health literate, which has been defined as "the capacity of an individual to obtain, interpret, and understand basic health information and services and the competence to use such information and services in ways which are health-enhancing" (Joint Committee on National Health Education Standards 1995).

### Conclusions

The basically sociological theory around the SOC seems to be closely related to the information "meta-literacy" concept, i.e. information mastering, in the field of information science, which indicates that the SOC could be an effective tool in the investigation of human information behaviour and mastering. The theory around the SOC offers an obvious advantage in regards to other theories in this area of research, i.e., the SOC scale is a formula by which it might make it possible to test empirically the strength or quality of the ability to manage, cope with and process information. Furthermore, the foundation of the theory is extremely holistic; the concept is built upon thoughts (comprehensibility) as well as actions (manageability) and feelings (meaningfulness), embedded in a socio-cultural setting. All the legs – the cognitive, instrumental and emotional – in "the classic triad" have thus been taken into account, as well as the notion that human beings are social beings, not isolated islands.

The strong relation between the SOC and information mastering is, without doubt, the most interesting result. Mental information processing has admittedly been the supporting idea around the SOC theory. Still the idea has not been empirically tested, at least not at the level the national population. One ambition of the present study has been to provide a new perspective on the so-called "information literacy debate". We suggest that information mastering could be seen as a "meta-literacy", i.e., as a generic term of various conceptions of information literacy.

It would also be very interesting to pursue SOC research outside the confines of the health context. Though the association between these two is strong, it might be possible to focus on other societal phenomena so as to determine if indeed SOC is the tool with which to master all daily information flows.

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