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Factor structure of the School Well-being Model

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Abstract

The aim of this study was to confirm empirically the factor structure of the School Well-being Model. In this Model well-being was divided into *school conditions*, *social relationships*, *means for self-fulfillment* and *health status*. Data for this study were collected by the School Health Promotion Survey in Finland with 40 147 respondents from Grades 8 and 9. The 43 variables from the Survey were fitted into the School Well-being Model using confirmatory factor analysis. The Goodness of Fit Index (GFI) for the four-factor model was 0.93 and GFI Adjusted for Degrees of Freedom was 0.93. The correlations between factors varied from 0.30 to 0.78 and internal consistencies (Cronbach's αs) from 0.62 to 0.84. The categories *school conditions* and *health status* had a good variety of variables. However, the *social relationships* and the *means for self-fulfillment* categories would have benefited from additional questions. The School Well-being Model can be utilized to construct school well-being profiles both for groups of pupils and for schools as a whole. The school well-being profile could highlight the area or areas in which schools could make improvements in order to promote the well-being of its pupils.

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Introduction

Measuring an individual's health and well-being has been reported to be a challenging task:

> The rising expectations of the past 150 years have led to a swift away from viewing health in terms of survival, through a phase of defining it in terms of freedom from disease, onward to an emphasis on the individual's ability to perform daily activities, and more recently to an emphasis on positive themes of happiness, social and emotional well-being, and quality of life. [(McDowell and Newell, 1996), pp. 11–12]

The WHO definition of health (WHO, 1947) reflects this tendency to broaden the meaning of health by engaging the wider concepts of well-being, happiness, life satisfaction and quality of life. However, the use of these concepts is varied and often not explicitly defined. One of the most notable efforts to clarify the measurement of quality of life is represented by the work of the WHO Quality of Life Group (WHOQOL Group, 1998).

The concept of well-being used in this paper is based upon the Allardt's sociological theory of welfare (having, loving, being) (Allardt, 1975, 1976, 1989). Of the other concepts mentioned above, the one that comes closest to the phenomenon we are interested in studying is that of quality of life. Well-being and related concepts have been measured using various instruments, including the Life Satisfaction Index (Neugarten, 1961), the General Health Questionnaire (Goldberg, 1978), the General Well-Being Schedule (Dupuy, 1984) and the Oxford Happiness Inventory (Argyle *et al.*, 1987). These scales are

mostly concerned with personality disorders, distress and psychological well-being, and address areas such as happiness, life-satisfaction and morale. These and other health and well-being measures have been reviewed in more detail by Bowling (Bowling, 1991) and McDowell and Newell (McDowell and Newell, 1996).

The measurement of quality of life among children is mostly health-related, which means that these methods are used to evaluate the effect of diseases and treatment protocols (Apajasalo, 1997; Drotar, 1998). One of the few indicators concerning children's or adolescents' well-being at a population level is 'The Quality of Life Profile—Adolescent Version' (Raphael *et al.*, 1996) in Canada. They use the concept of quality of life, which is defined as 'the degree to which a person enjoys the important possibilities of his/her life' [(Raphael *et al.*, 1996), p. 366].

Huebner *et al*. have constructed and analyzed the Students' Life Satisfaction Scale (SLSS) (Huebner, 1991; Huebner *et al.*, 1999; Huebner and McCullough, 2000; McCullough *et al.*, 2000). They argue that subjective well-being among children and adolescents can be seen as a three-component construct: global life satisfaction, positive affects and negative affect (Huebner, 1991; McCullough *et al.*, 2000). In Finland, Raitasalo's (Raitasalo, 1995) modification of the 13-item Beck Depression Inventory (Beck, 1972) has been used for measuring general subjective well-being among schoolchildren (Kaltiala-Heino *et al.*, 1999; Konu *et al.*, 2002). The focus of the indicator is on perceived satisfaction in specific life domains such as positive mood, future orientation, success, satisfaction, global self-esteem and specific self-esteem (appearance), social orientation, decision making, sleeping, energy, appetite, and anxiousness.

Savolainen *et al*. (Savolainen *et al.*, 1998), Samdal (Samdal, 1998), and Opdenakker and van Damme (Opdenakker and van Damme, 2000) have studied well-being in the school context, although using different indicators of well-being. In the cross-national survey data studied by Samdal, subjective well-being was measured using one question: 'In general, how do you feel about your life at present?' (Samdal, 1998). The results showed that student support, adequate expectations and teacher support are the most important predictors of subjective well-being. In the Finnish city of Tampere, Savolainen *et al*. (Savolainen *et al.*, 1998) studied several aspects of the school environment with a questionnaire initially developed in Sweden (Häggqvist *et al.*, 1997). In this questionnaire pupils' well-being was measured using three questions: Do you feel you can cope with your schoolwork? Do you enjoy going to school? Do you consider schoolwork inspiring? Pupils' well-being was related to school climate, cooperation, encouragement, support with problems, school organization and physical working environment (Savolainen *et al.*, 1998). In the Netherlands, Opdenakker and van Damme (Opdenakker and van Damme, 2000) used a well-being questionnaire designed by Van Landeghem (Van Landeghem, 1991) consisting of eight indicators: well-being at school, social integration in the class, relationships with teachers, interest in learning tasks, motivation towards learning tasks, attitude to homework, attentiveness in the classroom and academic self-concept. Their results showed that the same variables concerning instruction and knowledge acquisition were effective both for achievement and well-being. Teaching staff cooperation in relation to teaching methods and pupil counseling was also related to both achievement and well-being, whereas professional contacts between teachers were related only to school well-being.

The existing indicators of well-being and quality of life range from measures of the general phenomenon [e.g. (Raphael *et al.*, 1996; WHOQOL Group, 1998)] to specific health-related [e.g. (Apajasalo, 1997; Drotar, 1998)] scales. A general measure of well-being or quality of life is often seen very broadly; overall life satisfaction, contentment or happiness. For example, the WHO Quality of Life Group (WHOQOL Group, 1998) included key physical, psychological, social and spiritual domains of life to their quality of life instrument.

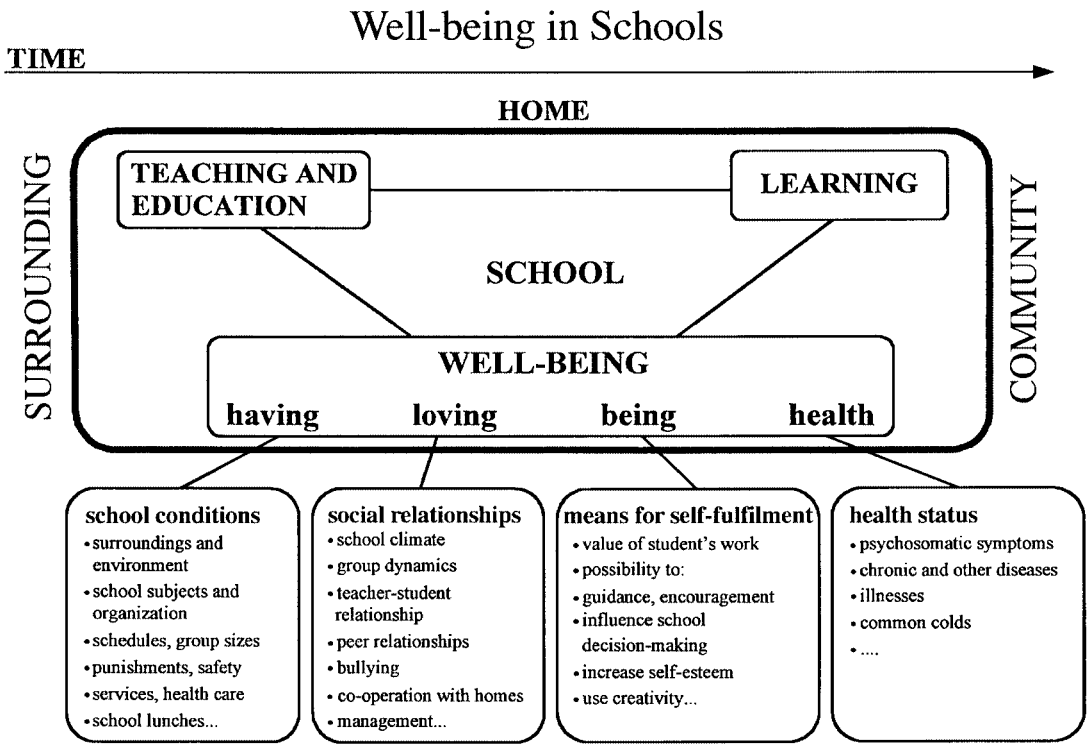

Fig. 1. The School Well-being Model (Konu and Rimpelä, 2002).

Although Samdal, Savolainen *et al.*, and Opdenakker and van Damme have used different indicators of well-being in school (Samdal, 1998; Savolainen *et al.*, 1998; Opdenakker and van Damme, 2000), the measures are seldom theoretically based. The aim of this empirical study was to confirm the factor structure of the School Well-being Model (Konu and Rimpelä, 2002) using confirmatory factor analysis and data from the School Health Promotion Survey. This was done to find out if the theoretical School Well-being Model would serve as a basis for indicators to be used in evaluating the well-being of pupils and a school as an entity.

The Konu and Rimpelä School Well-being Model (Figure 1) conceptualized well-being in school as a four-dimensional phenomenon. Well-being was associated with teaching and education, on the one hand, and with learning and achievements, on the other. Well-being was divided into *school conditions (having)*, *social relationships (loving)*, *means for self-fulfillment (being)* and *health status*. 'Means for self-fulfillment' encompassed possibilities for each pupil to study according to his/her own resources and capabilities. 'Health status' was seen through pupil's symptoms of diseases and illnesses. Each well-being category contained several aspects of pupil's life in school. The School Well-being Model was theoretically developed after the review of appropriate sociological, educational, psychological and health promotion literature. The theoretical model has been discussed in more detail in a separate article (Konu and Rimpelä, 2002).

Methods

Data collection

This study used data collected by the School Health Promotion Survey. The 16-page classroom survey

Table I. *Questions according to the categories of the School Well-being Model*

School conditions

Do you find that the following factors disturb your school work? (*not at all/a little/quite a lot/very much*)
- crowdedness in classrooms
- noise, echo
- unsuitable lighting
- poor ventilation or room air quality
- temperature (heat, cold, draught)
- dirt, dust
- inappropriate desks
- poor facilities (toilets, dressing and washing rooms)
- restlessness in work environment
- time pressure
- violent incidents
- risk of accidents

The atmosphere in my class is quiet and peaceful. (*fully agree/agree/do not agree/fully disagree*)

If you need to see your school doctor or nurse, how easy is it for you to get an appointment? (*very easy/rather easy/rather difficult/very difficult*)

How good are your school health services in cases where pupils want to talk with someone about their personal matters (e.g. sex, depression)? Are you (*very satisfied/rather satisfied/rather dissatisfied/very dissatisfied*)?

Social relationships in school

Read each of the following statements carefully. Tick the alternative that best describes your own opinion (*fully agree/agree/do not agree/fully disagree*)
- teachers are interested in how I am doing
- teachers treat us pupils fairly
- pupils in my class enjoy being together

How are you doing at school? Do you have problems in carrying out the following duties? (*not at all/only a few/some/very many*)
- working in teams
- getting along with school mates
- getting along with teachers

How often have you been bullied (bullying has been defined in advance) at school during this term? (*several times a week/about once a week/less than once a week/not at all*)

How often have you taken part in bullying other pupils during this term? (*several times a week/about once a week/less than once a week/not at all*)

Means for self-fulfillment in school

Read each of the following statements carefully. Tick the alternative that best describes your own opinion (*fully agree/agree/do not agree/fully disagree*)
- teachers encourage me to express my own views during lessons
- pupils' views are respected in the development of school work
- my teachers expect too much from me at school

How are you doing at school? Do you have problems in carrying out the following duties? (*not at all/only a few/some/very many*)
- following teaching during lessons
- doing homework or other such tasks
- preparing for exams
- finding a personal way to study
- starting or completing tasks that require personal activity
- doing tasks that require writing
- doing tasks that require reading (from books, etc.)

If you have problems with school attendance and with your studies, do you get help from someone at school or at home? I get help (*always when I need it/most of the times/seldom/hardly ever*)

Table I. *Continued*

Health status
Have you suffered from any respiratory infections, like flu, common cold, laryngitis, tonsillitis, sinusitis, cough or throat ache during the past 6 months? (*no/once/twice/three times or more*)
Have you had any of the following symptoms and how frequently during the past 6 months? Tick the alternative that suits you best on each line (*seldom or not at all/about once a month/about once a week/nearly every day*)
neck or shoulder pains
lower back pains
stomach aches
tension or nervousness
irritation or temper tantrums
trouble falling asleep or waking up
headache
feeling tired or weak

covers numerous aspects of pupils' health and lifestyle, and has been conducted in Finland every year since 1995. Self-administered questionnaires were used in a classroom survey setting supervised by the pupils' own teacher. Envelopes containing the questionnaires were sealed in the presence of pupils to ensure confidentiality. The dataset (n = 54 499) comprised the same schools (n = 173), but different respondents from the April 1998 (n = 27 341) and 2000 (n = 27 158) waves of the survey. Less than 1% of the cases was excluded from the analysis because information on gender was missing or more than half of the responses was missing. Special schools, small schools (under 70 pupils), schools with small gender/grade groups (less than 15 respondents) and schools where the number of respondents between years differed by more than 25% were removed from the data. This was done because too few respondents from a school may not be representative for the whole school. This amounted to 26% of the respondents. The final dataset used in the present study comprised 109 schools with 20 235 respondents in 1998 and 19 912 respondents in 2000; total 40 147. The schools came from southern and western parts of Finland. The respondents were in Grades 8 and 9 of secondary school, aged 14.3–16.2 years. In 1998 (2000, respectively), 51.0% (50.2%) were in Grade 8 and 49.5% (50.0%) were girls.

Measurement and analysis

The questions of the School Health Promotion Survey were selected on the basis of their relevance to the School Well-being Model (Konu and Rimpelä, 2002). Theoretically valid variables (total 43) with four-scale response options were chosen and divided into four categories according to the Model: school conditions, social relationships, means for self-fulfillment and health status. *School conditions* comprises 15 variables, s*ocial relationships* eight variables, *means for self-fulfillment* 11 variables and *health status* nine variables. The corresponding questions are presented in Table I. The proportion of missing responses within the variables varied from 0 to 5.4%.

To verify the structure of the School Well-being Model, confirmatory factor analysis was conducted using structural equations modeling with PROC CALIS (SAS/STAT Software, 1997). Each variable was defined to represent only one factor, but the factors were allowed to correlate with each other. This means that each question represented only one category of the School Well-being Model, but the categories were allowed to have relations with one another. Because not all variables were normally distributed, unweighted least-squares estimation was used. The Goodness of Fit Index (GFI), GFI Adjusted for Degrees of Freedom (AGFI) and Root Mean Square Residual (RMR) were used as the indices of the model fit. The

closer the GFI and AGFI were to the numerical value 1 and RMR to value 0, the better the theoretical model fitted the empirical data.

The internal consistency of each well-being category was calculated using Cronbach's α (SPSS 9.0 for Windows). This was done to examine if questions in each category were satisfactory in describing the underlying factors; the closer Cronbach's αs were to the numerical value 1, the better the questions described the same phenomenon.

In a former paper, the researchers found out that both the level of general subjective well-being, and the variables associated with it were somewhat different among boys and girls (Konu *et al.*, 2002); the confirmatory factor analysis of specific school well-being was also conducted separately for boys and girls.

Results

The four-factor model with all 43 variables included showed a good fit. GFI was 0.93, AGFI was 0.93 and RMR was 0.06. The theoretical School Well-being Model fitted well the empirical data gathered by the School Health Promotion Survey. The between factor correlations varied between 0.30 and 0.43 (Figure 2), except for the correlation between *social relationships* and *means for self-fulfillment* ($r = 0.78$). Thus social relationships were rather closely linked with questions concerning studying. The reliability coefficients (R^2) for variables varied between 0.05 and 0.51, indicating varying relationships with the phenomenon in each category.

The internal consistencies of the four categories were good to reasonable. Cronbach's α was 0.84 for *school conditions*, 0.62 for *social relationships*, 0.81 for *means for self-fulfillment* and 0.81 for *health status*. A lower Cronbach's α for *social relationships* category could indicate that the questions consisted of somewhat diverse areas of school life. The well-being scales of Opdenakker and van Damme showed reliability figures ranging from 0.63 to 0.88 (Opdenakker and van Damme, 2000) and the well-being indicator of Savolainen had Cronbach's α 0.79 (Savolainen, 2001).

In the gender-specific confirmatory factor analysis, the fit indices remained similar. The correlation between *school conditions* and *social relationships* factors was 0.52 for boys and 0.40 for girls. Otherwise the factor correlations differed by no more than 0.03 to 0.06. According to this analysis, there were no notable differences between the genders in the structure of school well-being.

The reliability coefficients of individual variables are presented in Figure 2. In the *school conditions* category, 'dirtiness, ventilation, temperature and lighting' were the most important variables. 'Getting along with teachers' had the highest figure in *social relationships* category. Having no or few problems with studies accounted for most of the variation in the *means for self-fulfillment* category and 'feeling tired or weak' had the highest figure in *health status* category.

Discussion

The aim of this study was to confirm empirically the factor structure of the School Well-being Model (Konu and Rimpelä, 2002) using confirmatory factor analysis drawing on data collected in the School Health Promotion Survey. The model fit was good. The analysis showed that the theoretical School Well-being Model matched well with the appropriate questions taken from real school life. The between factor correlations were moderate with the exception of *social relationships* and *means for self-fulfillment* ($r = 0.78$). Thus, the questions in the four well-being categories had relations with one another, especially within *social relationships* and *means for self-fulfillment* categories. The model fit was the same among both boys and girls, but a slight difference was found in the correlation between *school conditions* and *social relationships* factors.

The dataset from the School Health Promotion Survey consists of a wide variety of questions on school, learning, health and lifestyle that can be categorized according to the School Well-being Model. The questionnaire was designed separately

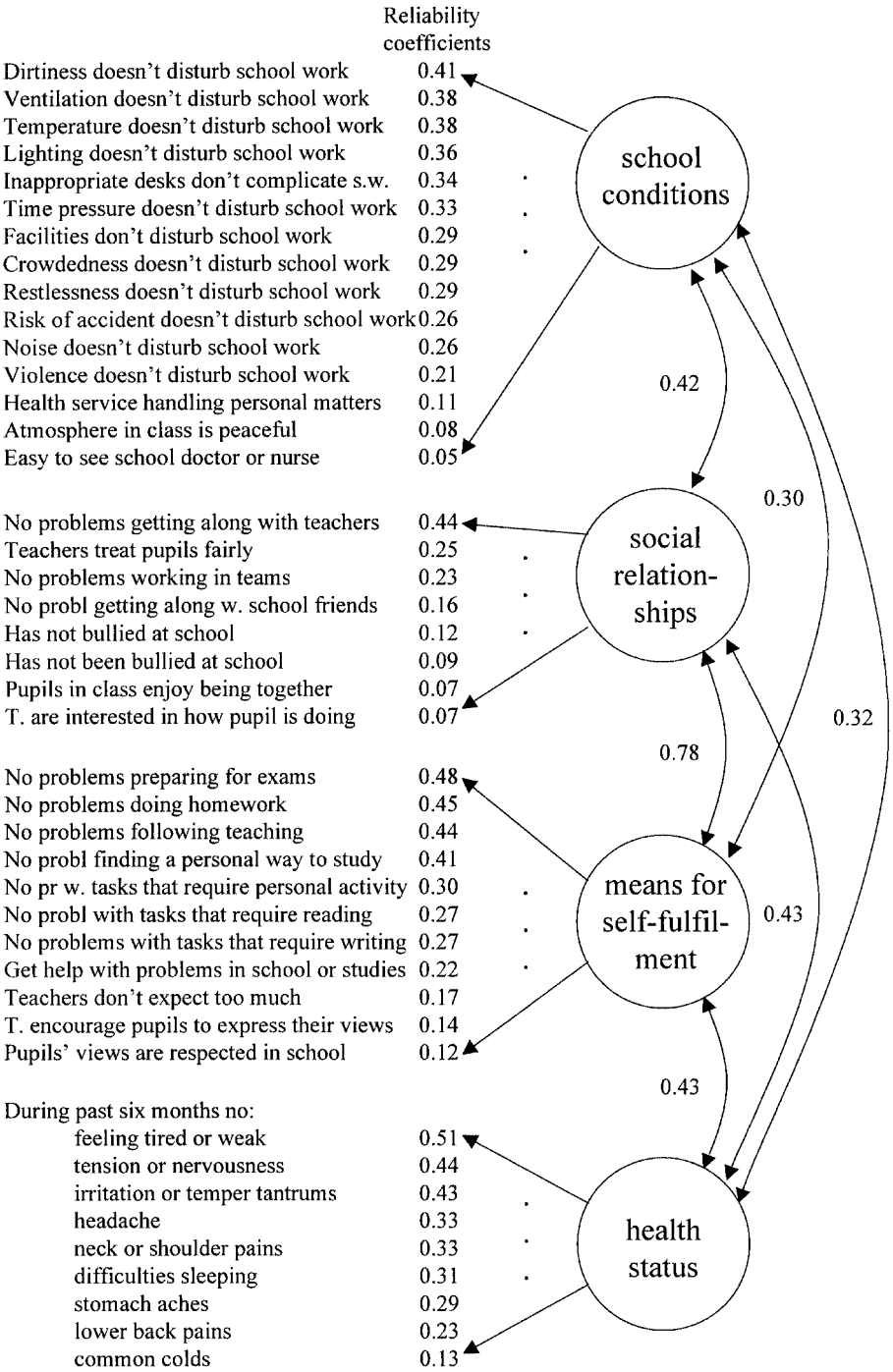

Fig. 2. The confirmatory factor model for the School Well-being Model.

from the conceptual model of school well-being and some topics included in the Model were missing from the survey data. Keeping this in mind, the data offered a sound basis for studying and empirically confirming the School Well-being Model.

Other studies concerning well-being in school (Samdal, 1998; Savolainen *et al.*, 1998; Opdenakker and van Damme, 2000) have used different indicators and therefore it is not appropriate to make comparisons with these indicator structures. Opdenakker and van Damme (Opdenakker and van Damme, 2000) had some indicators similar to those used in our study; these concerned social relationships in school. Huebner and colleagues (Huebner, 1991; McCullough *et al.*, 2000), Kaltiala-Heino *et al.* and Konu *et al.* used global/general subjective well-being indicators among schoolchildren (Kaltiala-Heino *et al.*, 1999; Konu *et al.*, 2002). Comparisons between specific and global indicator structures are not relevant. This study tried to clarify the structure of school well-being. The comparison of the particular well-being categories of this study to the corresponding separate studies is a question for further research.

Three of the four categories (*school conditions*, *means for self-fulfillment* and *health status*) showed good internal consistency indicating that the questions in each category measured the same broad phenomenon. The reason why *social relationships* showed weaker internal consistency may lie in the diversity of the indicators in this category, e.g. social relationships between teachers, social relations within groups of pupils and indicators of bullying. In addition, the total number of variables in this category was smaller than in other categories.

Allardt (Allardt, 1975, 1976) and the Research Group for Comparative Sociology at the University of Helsinki operationalized Allardt's 'having, loving, being' structure in the Comparative Scandinavian Study concerning the level of living and quality of life in Denmark, Finland, Norway and Sweden. Regarding this present study, it was notable that the factor analysis [(Allardt, 1975), p. 22; (Allardt, 1976), p. 236] did not place health in the same factor as most other 'having' category indicators. Health was placed in a separate factor together with employment. In the School Well-being Model health status is a separate category and the analysis confirmed that conceptual structure.

The questions comprising the *school conditions* category (Table I) mainly concerned the physical environment inside the school building (dirtiness, ventilation, temperature, facilities, etc.). There were only a few working environment factors (peaceful atmosphere, restlessness and time pressure). Two questions concerned health services. The internal consistency of the questions in this category was high. The reliability coefficients were higher for factors concerning the physical environment than the working environment or service factors. The order of the questions in the questionnaire may have had some effect on the result. The physical environment factors were assessed within one question with sub-items while the others were separate questions. Questions on health services may not have been relevant to all pupils whilst physical conditions were relevant to all. The number of questions on each topic may also have had an effect on the statistical analysis; in this case the physical environment appeared as the dominant factor.

If a survey were to be designed on the basis of the School Well-being Model, the perceptions of the school's surroundings and the neighborhood could be included in the *school conditions* category. Other interesting factors would include group sizes, schedules, breaks, the amount of homework, and a rotation between active physical exercise and physically passive sitting periods. It would also be interesting to gather information about rules and punishments, counseling and lunch services.

The *social relationships* category contained both relations between pupils, and relations between teachers and pupils. The latter had the highest reliability coefficients within this factor. Bullying was included in this category, although it exemplifies negative social relationships. Bullying can be seen as a group phenomenon based on social relations and roles in the group (Salmivalli *et al.*, 1996). In a meta-analysis it was found that

depressiveness was the most important problem connected with bullying (Hawker and Boulton, 2000). In a longitudinal study by Olweus, it was found that people who had been bullied were still more depressed in adulthood (Olweus, 1993).

The survey questions belonging to this area were scarce; additional questions would have been needed. The nature of this factor seemed to be multidimensional. Further research with additional questions could help to clarify this issue. The conceptual model suggests additional topics like school climate, management style, and cooperation between homes and school.

The *means for self-fulfillment* category consisted of questions focusing on problems with schoolwork (e.g. preparing for exams, doing homework and getting help with studies); teachers expecting too much from a pupil; teachers' encouragement; respect for pupils' views at school. Having no or few problems with studies showed the highest reliability coefficients in this category. Teachers' encouragement and expectations were less important. This may be explained in part by the major role of 'schoolwork problems' questions in this factor. On the other hand, the pupils' role is to study and success in this role is essential for self-fulfillment. A school opens up more or less the means for that success. A previous study on general subjective well-being suggested that it would be crucial to take the educational aspect seriously when trying to improve the well-being of schoolchildren (Konu *et al.*, 2002).

Other areas of the *means for self-fulfillment* category suggested by the Model are the possibility to increase self-esteem, to apply one's creativity or the value of students' work. Further studies would benefit from finding a way to include these areas in an overall school well-being indicator.

The *health status* category addressed the absence of psychosomatic symptoms or common colds. Feeling tired or weak, tension or being nervous, being irritated or having temper tantrums had the highest reliability coefficients in this category, while having common colds and lower back pains were less significant. Not feeling tired or weak had the highest single reliability coefficient in the whole model. Feeling tired or weak may be an important sign of an overall feeling of not being well.

In addition to psychosomatic symptoms, chronic and other diseases could be included in the *health status* category. However, this was not done because it was thought that psychosomatic symptoms were more relevant from the school well-being point of view. Also, it has been found that chronic diseases (like diabetes and asthma) were only marginally connected even with general subjective well-being among pupils attending normal schools (Konu *et al.*, 2002). The School Well-being Model does not see health-related behaviors such as smoking or drinking as parts of health status, but rather as factors affecting it. The serious consequences of these behaviors are mostly seen on a longer time scale. Health education and health promotion concerning health-related behaviors are important parts of schooling; they are included in the teaching and education sector (Konu and Rimpelä, 2002). Measuring mental health problems in a school questionnaire is a complex matter. At least part of mental health problems express themselves as psychosomatic symptoms (Aalberg and Siimes, 1999).

The School Well-being Model was confirmed in this study using a large survey dataset. The questions did not cover all aspects of the conceptual model. The categories *school conditions* and *health status* were appropriately covered, but the *social relationships* and *means for self-fulfillment* categories would have benefited from a wider range of variables that would have enabled further investigation.

School well-being seems to be a truly multidimensional phenomenon. The main differences in the School Well-being Model compared with other health-promoting school frameworks [e.g. the WHO 'Health Promoting School' (Parsons *et al.* 1996; WHO, 1998; St Leger, 1999) and 'Coordinated School Health Program' in the USA (Allensworth and Kolbe, 1987; Marx *et al.*, 1998)] are the use of the *well-being concept*, the *definition of health* and the subcategory *means for*

self-fulfillment (Konu and Rimpelä, 2002). The categories in the School Well-being Model were linked together; especially social relationships and means for self-fulfillment. Although all well-being categories are important, educators and other professionals in school could draw still more attention to opening up more means for self-fulfillment for each pupil. In the school context, this could be seen as an equal possibility for each pupil to study according to his/her own pace and capabilities taking the cognizance of his/her gifts and abilities. This, together with good social relationships could have a remarkable effect on well-being in school.

Conclusion

Although by no means exhaustive, the School Well-being Model can be used to construct well-being indicators and profiles for groups of pupils. The groups may be, for example, under-achievers, pupils showing disturbing behavior or overly dutiful pupils. The information from each well-being category may be obtained using a questionnaire, an interview or other convenient method. The well-being categories should be kept separate to obtain more specific information. The structure of the Model may help to detect areas these pupils find problematic or where they need more support.

Another way to use the School Well-being Model could be to construct well-being profiles for entire schools to highlight the area or areas where a school could make improvements in order to promote the well-being of its pupils. The Model could be used further as a process evaluation tool, e.g. after an intervention the profile could be drawn again to see whether the intervention was successful.

Acknowledgement

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