

EMPIRICAL STUDIES

“Peers, parents and phones”—Swedish adolescents and health promotion

ANNA-KARIN LINDQVIST, PhD student, CATRINE KOSTENIUS, Associate Professor, & GUNVOR GARD, Professor

Department of Health Sciences, Luleå University of Technology, Luleå, Sweden

Abstract

Many unhealthy behaviors are created during adolescence and follow the individual into adulthood. In addition, health behaviors often occur in clusters as those who are inactive are more likely to eat unhealthy food and smoke. This makes the early foundation of healthy behaviors vital. The aim was to describe and develop an understanding of adolescents' awareness and experiences concerning health promotion. Data was collected using focus groups with a total of 28 seventh graders and was analysed with latent qualitative content analysis. One main theme was identified; being competent, ambivalent and creative at the same time. The following three subthemes also emerged: being a digital native for better and for worse, knowing what is healthy, and sometimes doing it, and considering change and having ideas of how change could be supported. The main theme elucidates how the majority of students were informed and able but they did not always prioritize their health. The concept of health promotion relies upon the engagement of the individual; however, although the students had clear ideas about how they would like to change their own behaviors, they felt a need for support. Interestingly, the students were able to make several suggestions about the kind of support that would make a difference to their adoption to more healthy modes of living. They suggested information and communication technology (ICT), for example encouraging text messages (SMS), and social support, for example parents setting rules and peers inspiring them to adhere to a healthy behavior. The knowledge gained from this study echoes our view of inclusion and this could be helpful for those who encounter the challenge of promoting health among adolescents.

Key words: *Adolescents, content analysis, empowerment, focus groups, health promotion, information and communication technology, social support*

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Children growing up today are expected to have a shorter lifespan than their parents owing to inactivity, poor diet and obesity-related diseases (Kumanyika et al., 2008). Many forms of unhealthy behavior are created during adolescence and follow the individual into adulthood (Herman, Craig, Gauvin, & Katzmarzyk, 2009), in addition to which, poor health-related behavior tends to occur in clusters with those who are inactive tending to eat unhealthy and smoke, therefore the early establishment of healthy behavior is vital (Herman et al., 2009). With the global increase in inactivity and obesity amongst young people, there is an urgent need for effective programs to promote health and wellbeing (Wang & Lobstein, 2006).

Health promotion is often described within an empowerment perspective suggesting both personal

control over one's own life and democratic participation in one's social context (Goodstadt et al., 2001). Health promotion can be defined as "... the process of enabling people to increase control over, and to improve, their health" (WHO, 1986). The WHO and the United Nations have described the need to continue accumulating evidence concerning interventions relating to health promotion in schools and improving the implementation process to ensure optimal transfer of this evidence into practice (Tang et al., 2009). Schools have been identified as an important setting for health promotion activities (Mittelmark, Perry, Wise, Lamarre, & Jones, 2007). Health promoting schools often build up a co-operation between students, teachers and parents, with the aim being to strengthen students' health

Correspondence: A.-K. Lindqvist, Department of Health Sciences, Luleå University of Technology, SE-971 87 Luleå, Sweden. E-mail: anna-karin.lindqvist@ltu.se

(Lee, Cheng, & St. Leger, 2005). School-based interventions that combine different methods seem to be promising in terms of long-term behavioral change in adolescents (Van Sluijs, McMinn, & Griffin, 2008). Lubans, Morgan, Callister, and Collins (2009) performed a school-based intervention integrating pedometers, parental information and e-mail support was successful in promoting physical activity and healthy eating behavior habits in adolescents.

Adolescents use a considerable amount of ICT, for example computers and mobile phones, in their everyday life (Tercyak, Abraham, Graham, Wilson, & Walker, 2009). Health promotion in conjunction with the support of ICT is a promising approach to use for adolescents whose behavior is unhealthy (Tercyak et al., 2009). However, previous studies of young people's use of internet-mediated interventions have found low exposure rates (Crutzen et al., 2008) and use in real life can be even lower (Evers, Cummins, Prochaska, & Prochaska, 2005). Giving young people the opportunity to increase their influence over their own health can contribute to an easier transition to adult responsibility (Moreno, Ralston, & Grossman, 2009). Furthermore, getting young people involved in the development of health promotion research may lead to increased well-being and empowerment, resulting in a different perspective than an adult view (Kostenius, 2008).

Aim

The aim was to describe and develop an understanding of adolescents' awareness and experiences concerning health promotion.

Context

The study was part of a school and research project in one municipality in the northern part of Sweden. The aim of the project was to develop the students' learning environment, and to strengthen their ICT skills. The project is called "One to one", as the name implies, it involves the distribution of a laptop to every secondary-school student for use in school and at home.

Method

Design

Since the aim of the study was to describe and develop an understanding of adolescents' awareness and experiences, a qualitative approach to data collection and analysis was chosen (Holloway & Wheeler, 2010). Data was collected using focus

groups, as interaction between group members can reveal dimensions that could not be detected in individual interviews (Kitzinger, 1995). Since the members in the focus groups share experiences with each other, they can highlight individual viewpoints, as well as collective ones. The collective nature of the focus groups can empower the participants and validate their experiences and to be considered an expert can also be empowering (Kitzinger, 1995). We agree with Dahlin-Ivanoff and Hultberg (2006) that participants are influenced by people around them and focus groups are based on commonality and shared experiences. The epistemological position in focus group methodology shares some basic assumptions with social constructivism. Social constructivism means that human beings construct their knowledge in interaction with others and sharing experiences will lead to modification and creation of new knowledge (Dahlin-Ivanoff & Hultberg, 2006).

Participants

All of the staff at the municipality's secondary school was informed by the authors about the study, and two seventh grade teachers were invited to participate as coordinators. The two volunteer teachers summoned the parents of the children in their classes to a meeting where the authors gave them verbal and written information of the study. The parents who agreed to let their children participate gave their informed consent. In addition, the authors gave verbal and written information to the students, and those who agreed to participate also signed an informed consent. The written information explained the aim of the research and stated that participation was voluntary and that the students could terminate their participation without needing to provide any reasons for doing so. The two classes consisted of 32 students, while 29 of them, 14 boys and 15 girls, were interested in participating in the focus groups. Krueger and Casey (2009) recommend separate groups for boys and girls. Focus groups were planned with 4-7 participants in each group and the students were divided by their teachers according to gender and in a manner likely to facilitate an open and lively discussion. A total of 28 students, divided into six groups, participated in the focus group discussions as one boy was on vacation.

Data collection

A few days before the focus group discussions took place, the students were asked by their teacher to write an open letter, the purpose was to facilitate communication in the upcoming focus groups. They were asked to finish the sentences: "Now I'm going

to tell you about what I do to feel well ...” and “Now I’m going to tell you about things that support me in doing things so I feel well ...” The open letters were evaluated together with five adolescents in advance and were shown to be adequate. The students kept their letters; they were not included in the data collection. We constructed a guide with questions concerning health promotion, for example “What do you do to feel well?” and “What supports you to keep a healthy behavior?” In accordance with the recommendations of Redmond and Curtis (2009), follow-up questions were posed to obtain richer material. One individual interview was performed to evaluate the interview guide in advance and it was shown to be sufficient. The focus group discussions were conducted in a room without distractions at the students’ school during the school day. Two researchers without professional connections with the students performed the focus group interviews. The first author acted as a moderator, supporting the discussion, and the second author wrote field notes, which were useful when transcribing the discussions. When the focus groups were performed, the researchers adopted a neutral approach towards the opinions of the informants to avoid influencing the material (Holloway & Wheeler, 2010). The interviews lasted between 40 and 60 min; they were sound-recorded and transcribed verbatim.

Data analysis

The transcribed data material from the focus group discussions were analysed as a whole. An inductive qualitative approach was used (Elo & Kyngäs, 2008). The qualitative latent content analysis was mainly inspired by Granheim and Lundman (2004) and we used the following procedure:

- (1) The written material was first read through several times to obtain a sense of the overall data.
- (2) In the next step the codes and the related text were collected and sorted into preliminary categories. During this process, the first author strove to be close to the text.
- (3) By going back and forth between the preliminary categories, the codes and the text categories were identified.
- (4) The underlying meaning of the categories was finally interpreted and formulated into themes.

Steps 2 and 3 were performed with support of N’Vivo software. All authors took an active part in the analysis of the data. Trustworthiness of the

results was addressed through reasoning in the group and through the performance of stepwise reanalysis, leading to refinement of themes. The preliminary results were also discussed with colleagues with experience of working with qualitative methods.

Ethical considerations

Adolescents belong to a group that is considered especially vulnerable in society; therefore conducting research in collaboration with them presents many challenges (Rogers, Kinsman, Santelli, & Silber, 1999). Confidentiality was guaranteed and ensured by analyzing the material on a group level to ensure that no individuals could be identified. All of the adolescents agreed to participate on a voluntary basis and their autonomy was maximized by conducting discussions in focus groups. At the beginning of each focus group, the students were asked not to disseminate any information they obtained during the focus group discussion. Focus groups can be considered to be ethically appealing because people can have their say under conditions that are more familiar than an individual interview and participants can choose not to speak when the group strays into sensitive areas (Raby, 2010). Focus groups can give weight to the participants’ opinions, lessening the influence of the moderator since the participants are influenced by each other (Dahlin-Ivanoff & Hultberg, 2006). The age-based power imbalance between the researcher and the respondent is also less apparent than it would be in a one-to-one situation since the children are more numerous (Wilkinson, 1998). The transcribed material and audio recording are locked up to prevent unauthorized persons gaining access to them. The research ethics committee in Umeå, Sweden approved the study before the start of the research project (date of issue: February 11, 2011, application registration number: dnr 2010-337-31Ö).

Results

The results were formulated into one main theme and three subthemes (Table I) and quotes from the focus groups are used to illustrate the conclusions drawn. The quotes are labeled with M for moderator, the number of focus group (1–6) and the number of participant (1–7).

Being competent, ambivalent and creative at the same time

The main theme consisted of three subthemes: being a digital native for better and for worse, knowing what’s healthy and sometimes doing it,

Table I. Overview of results.

Main theme	Being competent, ambivalent and creative at the same time		
Subtheme	Being a digital native for better and for worse	Knowing what is healthy and sometimes doing it	Considering change and having ideas of how change could be supported

and considering change and having ideas of how change could be supported which show a complex picture of adolescents' reasoning and experience of health promotion. The students experienced themselves to be informed and able where the promotion of health and ICT are concerned, but they did not always prioritize their health when deciding how to behave.

Being a digital native for better and for worse

The first subtheme showed that the students had extensive experience of and felt comfortable using ICT. Everybody had a mobile phone, which was used for keeping in touch with friends by talking and texting, for playing games, taking photos and listening to music. The boys talked more about playing games and used some applications on their phones. The most common usage that the girls put their phones to was that of communication. In addition, all the participants had a computer and everyone was active on Facebook. The computers were used for schoolwork, playing games, music, watching YouTube, reading and writing blogs, shopping and for keeping in touch with friends via Skype and Facebook. The boys tended to use their computers for playing games more frequently than the girls, while the girls spent a larger amount of time with the blogs. In particular, the students expressed a need to use their mobile phones, but they also said that Facebook was a very important part of their lives.

4:2 Well, I feel like I couldn't live without it [the mobile phone].

4:4 When you go somewhere and find you've forgotten it, then you feel: Oh gosh, what now?

4:3 You feel naked when you don't have your phone with you.

4:6 Well, just empty . . .

4:7 You can't be reached.

The students felt that the computers could be a threat to their health since they spent much time sitting in front of them especially when they were new, they experienced the charm of novelty, but they did not perceive the same risk with the mobile phones. The mobile phones were used in the same way, irrespective of the time of the year; however, there was a seasonal difference in how the computers were used: in the summer other activities, for

example cycling and swimming, were perceived to be more interesting than sitting at the computer. The students had some experiences of and were generally positive about ICT as a support for health promotion. Some, especially the boys, had experience of using various ICT tools, such as pedometers as mobile phone applications, but they were not willing to pay for them. In junction with the use of applications, the following discussion was recorded:

1:4 What was good about the one [application] that I had was that one got something when one had gone, for example, 150,000 steps; one received a medal like in a program. And then a new challenge was unlocked.

M And what was the reward?

1:4 One received a [virtual] medal when you've made it. And then one can see [on the application] how far one has had to go to achieve it.

1:2 In the form of a picture.

M Unlocked, how do you mean?

1:4 Yes, when you had accomplished that challenge, you got another and could walk even more.

1:2 That was cool.

Knowing what's healthy and sometimes doing it

The second subtheme showed that the students had a clear opinion of what they could do that is good for their health although they sometimes choose to behave differently. They mentioned the importance of eating healthy food and avoiding things like candy and soft drinks. The students talked about both individual and team sports, but also mentioned physical activity in general in the form of, for example, walking the dog, cycling and going fishing. In addition, they addressed the need to sleep well and to have a sound balance between activity and rest. According to the students, it was good for their health to be with friends and family, but they also said that they sometimes had a need to be alone. They said that having fun by playing in a band and kidding around with friends, for example, was good for their health. A combination of several health promoting behaviors was common and both mental and physical health were mentioned.

M Is there something more you would like to add about health?

5:5 Two glasses a day is good for your belly.

- 5:6 No, two pieces of fruit per day is good for one's belly.
5:5 No, drinking two glasses of milk is good for one's belly.
5:2 Not the belly, but rather, the bones.
5:6 Well, there is an expression that says: "An apple a day keeps the doctor away."
5:4 Hugs are good for your belly, too!
5:7 For the belly?
5:4 No, for the soul.
5:1 I love hugging and hugs are good for you.
5:7 Hugging is good for both belly and soul.

Although the students had a clear idea of activities that would promote their health, they did not always act accordingly. They knew that home-cooked food incorporating vegetables and fruit was good for them, but sometimes they skipped meals or ate fast food, even though they had previously experienced the consequences of behaving like this, being bad tempered, feeling tired, having trouble concentrating and getting headaches.

Their experience also gave them an idea of the contributing factors to their actions: peer pressure, for example, could lead to unhealthy behavior like being tempted to smoke if they had friends who were smokers. Established habits could also be a negative factor, for example, eating sweets during the weekends. In addition to these factors, according to the students, it was difficult to start a new sport when you are older because it is hard to keep up with everyone else because they have had a head start. They emphasized the importance of early experiences as a health-promoting factor. Some said that they were motivated by the fear of disease and some girls mentioned a fear of gaining weight. On the subject of eating sweets and the consequences of that habit, one discussion went:

- 5:3 It is bad for your teeth.
5:4 And then there is always the fear of getting fat.
5:5 You know, it is the thinnest of us who eat masses of sweets. Almost every day, that is. . . . We don't put on weight, but then, when one gets older, the fat or the things from the sweets build up in the body and one gets fatter. One doesn't put on much weight as a child; rather, it happens when one gets older if one does not exercise.

The students reported that the time of the year was a factor that influenced their physical activity level as they were more active during the summer and were more inclined to sit in front of the computer during the cold season.

Considering change and having ideas of how change could be supported

The third subtheme reflected the finding that the students had some suggestions for behaviors they might be willing to change, and in some cases, would even like to change. The students mentioned their eating habits, and particularly reducing eating between meals and cutting down on their sugar intake. They also wanted to have more rest and sleep, preferably on weekday mornings. The girls expressed a wish to not think negative thoughts about themselves. Increased physical activity and a decrease in "screen time" were other changes considered by the students as revealed by the following comment:

- 2:4 Perhaps one shouldn't use the computer so much, one sits in front of the computer a lot of the time at home. The first thing one does on arrival at school is sit at the computer, and then it is the same, one sits at the computer when one gets home.

The adolescent's perceived support in doing what is good for their health from other people, especially friends, but also parents, and to some extent, teachers and coaches. They might be inspired to try a new sport if they had friends who were already active. Parents were supportive, helping with practical aspects, like buying healthy food and driving to sport activities, but they also assisted by setting rules about, for example, the maximum amount of time that could be spent on the computer. The support given by parents had unforeseen benefits since the students had noticed that their parents had also reduced their candy consumption when the students did not eat sweets. Goals and rewards could be helpful when making a behavioral change, for example a "candy promise" (i.e., receiving money in exchange for not eating candy). However when a "candy promise" was made, there were different experiences of how successful it was; most thought that it supported them, at least initially:

- 6:3 I've have one right now [candy promise]. I have managed to go two months without candy. I will get 1000 crowns if I make it through to the summer.
M OK, and is it going well?
6:3 Well, not really, I feel damn tempted.
M Have the rest of you tried candy promise?
6:1 No.
6:4 Yes, it's going well. I have managed to stick to it. I have kept it up for quite a while, from last Christmas, I think.
6:3 Someone I know has done it for about half a

year. The longer one goes without [candy], the easier it is.

6:3 Yes, if you manage the first couple of months, it is easy.

6:4 Then one is less tempted [to eat candy].

When setting goals, the students emphasized that the goals should not be too difficult to attain because then they felt it was impossible, and gave up without trying. According to the students, replacing a bad habit with a good one, for example, increasing the consumption of fruit or nuts could be a way to reduce eating sweets. They also emphasized the importance of it being fun for them to engage in a health-promoting activity. They also suggested that one could combine different kinds of support, for example using a combination of ICT, goals and rewards. Another suggestion for a combination of support was the use of text messages (SMS) to entice a friend to participate in a physical activity or as a reminder to eat fruit.

Discussion of methods

We choose a qualitative approach, focus groups and content analysis, to describe and develop an understanding of adolescents' awareness and experiences concerning health promotion.

Together, the two classes comprised a total of 32 students, 28 (13 boys and 15 girls) participated in the focus groups. This gave good variety in terms of gender and ensured that there was a good possibility that light would be shed on different aspects of the topic under investigation, thereby strengthening the credibility of the study (Graneheim & Lundman, 2004). We believe that the focus groups gave the students the opportunity to share their experiences and that, together, the analysis gave a broad picture of health promotion. We agree with Dahlin-Ivanoff and Hultberg (2006) that focus groups can create awareness, making the process a heuristic one, when both the participants and the researcher learn from each other. When one forms groups from people who already know one another, there is the advantage that the participants can relate to each other's comments about their shared lives, which creates an environment of trust (Dahlin-Ivanoff & Hultberg, 2006). We believe that the open letters facilitated communication in the focus groups and that they fulfilled their purpose as stimulus material. To be faithful to an empowerment perspective, we let the students themselves create the material, instead of giving them a story or a picture to relate to. We used an interview guide comprised of three areas which, according to Holloway and Wheeler (2010), allows informants to describe their experiences in their own

words, and thus strengthens the dependability of the data collection. The moderator and the researcher were one and the same person, and that is an advantage according to Dahlin-Ivanoff and Hultberg (2006). During the focus group discussions, the moderator strove to create a calm and trusting atmosphere. The students were aware of their rights and had received both verbal and written information. Both positive and negative experiences were revealed, which suggest an openness of the participants. According to Raby (2010), focus groups can provide the support required to enable shyer people to speak more freely than they would in one-on-one interviews, but it is possible that individual interviews might have brought out other aspects. All authors took an active part in the analysis of the data, although the initial steps of the analysis were performed by the first author. The inclusion of quotations from the focus group discussions in the results also strengthens the study's credibility (Graneheim & Lundman, 2004). Most of the quotations take the form of dialogue, and such parts of the discussion are of greater value than individual quotations from participants (Dahlin-Ivanoff & Hultberg, 2006). To minimize the risk of misinterpretation, the results were presented to the students, as participants' recognition of the findings can increase credibility (Graneheim & Lundman, 2004). In order to facilitate transferability, the research process has been described in detail. Authors can offer suggestions concerning the transferability, however, as stated by Graneheim and Lundman (2004), the transferability of the results to other contexts has to be judged by the reader.

Discussion of results

The first subtheme in our study showed that the students had extensive experience of using and expressed a need to use their mobile phones and computers. An earlier study by Leung (2003) stated that today's youth are more open to the potential of ICT and that adolescents use the technology to chat, play games, for downloading material and to visit social websites (Gross, 2004). Thanks to the "One to one" project, all participants had computers. They also had mobile phones and all were active on Facebook. In our study the boys were found to play games more than the girls, while the girls preferred to use ICT for communication purposes, which are consistent with other studies (Jackson et al., 2008; Rey-López et al., 2010; Shaw & Gant, 2002). We agree with the article published by Lubans et al. (2009), which recommends that future studies of health promotion amongst adolescents should incorporate social support strategies,

such as Facebook, to facilitate changes in behavior and, according to our findings, this might be especially applicable for girls. The students in our study were generally positive to the use of ICT to support health-promoting behavioral change and they suggested, for example, the use of SMS to increase fruit consumption or physical activity. Sirriyeh, Lawton, and Ward (2010) suggest—based on their study where participants received one SMS per day containing either affective or instrumental beliefs—that affective associations may be effective for increasing physical activity in inactive adolescents. Another ICT-based intervention showed that computer-tailored advice via the internet had positive effects on physical activity levels among adolescents (De Bourdeaudhuij et al., 2010). One complication with ICT-based intervention is that almost nobody is willing to pay for the service (Verheijden, Jans, & Hildebrandt, 2008), which also was shown in our study. We think that further research with adolescents, combining health promotion and ICT, is needed.

The second subtheme showed that the students had a clear opinion of what they could do to benefit their health; however, they sometimes chose to behave differently. The students mentioned peer pressure as a factor for instigating unhealthy behavior, which is consistent with a study on adolescents' smoking habits, where the informants perceived themselves to be influenced by their peers because of the feeling that everybody who was “anybody” smoked (Nilsson & Emmelin, 2010). Sometimes the students in our study drew the same conclusions as scientific articles concerning the connection between behavior and consequences. They were motivated by a fear of disease, in addition to which, some of the girls mentioned a fear of gaining weight. In adolescents, sedentary behavior can be associated with obesity (Vicente-Rodríguez et al., 2008) and with cardiovascular disease (Martinez-Gomez et al., 2010). There is also evidence that the propensity to adopt sedentary behavior may increase through adolescence (Hardy, Bass, & Booth, 2007). We conclude that the students in our study had a clear opinion of what they could do to ensure that they remained in good health, and the informative aspect of health education is not the only key factor to health promotion. In our opinion, we need more of an enabling perspective.

The third subtheme showed that the students had suggestions about behaviors they were considering changing and had many ideas of support that could help them in that process. They emphasized the role of social support from friends. A positive influence from peers was confirmed in a study where adolescents conducted nutrition education, which led to an

improvement in the exposed peers' dietary intake (Story, Lytle, Birnbaum, & Perry, 2002). They also mentioned support from parents and the parents' role as rule setters when it comes to health promotion. The previously mentioned article by Nilsson and Emmelin (2010) on smoking also stated that concerned adults make a difference, and that adolescents expect adults to intervene. In our study, the students had experienced that their parents helped them with practical things like buying healthy food and driving them to sports activities, which is similar to the results of Trost et al. (2003), who concluded that parental support, such as financial support, transportation and encouragement are related to adolescents' physical activity levels. A school-based study showed that a combination of environmental approaches and parental support led to an increase in physical activity (Haerens, De Bourdeaudhuij, Maes, Cardon, & Deforche, 2007). In a recently published article on stress and adolescent girls, the informants considered support from parents and friends to be essential for the reduction of stress (Haraldsson, Lindgren, Hildingh, & Marklund, 2010). Our participants also received assistance in sticking to healthy patterns of behavior from adults other than their parents, such as teachers and coaches, which is consistent with published findings (Ellonen, Kääriäinen, & Autio, 2008). We agree with Sallis, Prochaska, and Taylor (2000) that including parents in adolescents' health promotion interventions might be important because parents are most likely to become the gatekeepers of their children's activities outside school hours. In the light of this, we find it sad to learn from Eccles et al. (1993) that parental involvement declines when children grow older. Therefore we suggest further research should examine the support that can be obtained from adolescents' social networks. A potential change expressed by our students was increased physical activity and they also emphasized the importance of it being fun for them to do a health-promoting activity. An association between enjoyment and exercise level, as well as between changes in enjoyment and changes in exercise level, has been found by Hagberg, Lindahl, Nyberg, and Hellénus (2009). In addition, asking and listening to youths when they talk about what is fun for them is important for their wellbeing (Bergmark & Kostenius, 2009), so, with this in mind, we conclude that making physical activity more enjoyable starts by listening to what adolescents have to say. This might be important for the long-term effectiveness of health promoting activities.

Thus, we conclude that, in our study the students were already quite well informed on many aspects of health promotion, and they were able to prioritize

their health if they desired to do so, however they sometimes chose not to. A common theme that occurs in most school-based research articles published to date is the lack of engagement by youths in planning, implementation and evaluation health promotion activities (Jones, Spence, Hardin, Clemente, & Schoch, 2011). Forming partnerships with youths is a promising avenue for developing health promoting interventions for schools (Jones et al., 2011). In a study of physiotherapists working with health promotion in compulsory education, it was concluded that it is important for the physiotherapists to involve teachers and all children in the promotion of health (Boll & Boström-Lindberg, 2010). The knowledge gained from this study echoes our view of inclusion, which is that this could be helpful for those who encounter the challenge of promoting health among adolescents and of making it a joint effort, regardless of whether the person concerned is a parent, teacher, school nurse or physiotherapist. The concepts of health promotion and empowerment emphasize need for the individuals to feel that they are participating in the planning and implementation of changes that will affect their own lives, as opposed to feeling that a program of change is being imposed from above (WHO, 1986). The students in our study suggested for example ICT and social support to encourage them to adhere to a healthy behavior. These insights and their suggestions of health promoting tools are worthy of evaluation and eventual implementation.

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References

Bergmark, U., & Kostenius, C. (2009). "Listen to me when I have something to say": Students' participation in research for sustainable school improvement. *Improving Schools*, 12(3), 249–260. doi: 10.1177/1365480209342665

Boll, M., & Boström-Lindberg, E. (2010). Physiotherapists' understanding and approach to health promotion work in compulsory school: Perceiving and supporting coherence. *Physiotherapy Theory and Practice*, 26(5), 318–326. doi: 10.3109/09593980903071394

Crutzen, R., De Nooijer, J., Brouwer, W., Oenema, A., Brug, J., & De Vries, N. K. (2008). Internet-delivered interventions aimed at adolescents: A Delphi study on dissemination and exposure. *Health Education Research*, 23(3), 427–439. doi: 10.1093/her/cym094

Dahlin-Ivanoff, S., & Hultberg, J. (2006). Understanding the multiple realities of everyday life: Basic assumptions in focus-group methodology. *Scandinavian Journal of Occupational Therapy*, 13(2), 125–132. doi: 10.1080/11038120600691082

De Bourdeaudhuij, I., Maes, L., De Henauw, S., De Vriendt, T., Moreno, L. A., Kersting, M., et al. (2010). Evaluation of a computer-tailored physical activity intervention in adolescents in six European countries: The Activ-O-Meter in the HELENA intervention study. *Journal of Adolescent Health*, 46(5), 458–466. doi: 10.1016/j.jadohealth.2009.10.006

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., et al. (1993). Development during adolescence: The impact of stage environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, 48(2), 90–101.

Ellonen, N., Käriäinen, J., & Autio, V. (2008). Adolescent depression and school social support: A multilevel analysis of a Finnish sample. *Journal of Community Psychology*, 36(4), 552–567. doi: 10.1002/jcop.20254

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115. doi: 10.1111/j.1365-2648.2007.04569.x

Evers, K. E., Cummins, C. O., Prochaska, J. O., & Prochaska, J. M. (2005). Online health behavior and disease management programs: Are we ready for them? Are they ready for us? *Journal of Medical Internet Research*, 7(3). doi: 10.2196/jmir.7.3.e27

Goodstadt, M. S., Hyndman, B., McQueen, D. V., Potvin, L., Rootman, I., & Springett, J. (2001). Evaluation in health promotion: Synthesis and recommendations. *World Health Organization Regional Publications—European Series*, (92), 517–533.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105–112. doi: 10.1016/j.nedt.2003.10.001

Gross, E. F. (2004). Adolescent internet use: What we expect, what teens report. *Journal of Applied Developmental Psychology*, 25(6 SPEC. ISS.), 633–649. doi: 10.1016/j.appdev.2004.09.005

Haerens, L., De Bourdeaudhuij, I., Maes, L., Cardon, G., & Deforche, B. (2007). School-based randomized controlled trial of a physical activity intervention among adolescents. *Journal of Adolescent Health*, 40(3), 258–265. doi: 10.1016/j.jadohealth.2006.09.028

Hagberg, L. A., Lindahl, B., Nyberg, L., & Hellénus, M.-L. (2009). Importance of enjoyment when promoting physical exercise. *Scandinavian Journal of Medicine and Science in Sports*, 19(5), 740–747. doi: 10.1111/j.1600-0838.2008.00844.x

Haraldsson, K., Lindgren, E.-C., Hildingh, C., & Marklund, B. (2010). What makes the everyday life of Swedish adolescent girls less stressful: A qualitative analysis. *Health Promotion International*, 25(2), 192–199. doi: 10.1093/heapro/dap061

Hardy, L. L., Bass, S. L., & Booth, M. L. (2007). Changes in sedentary behavior among adolescent girls: A 2.5-year prospective cohort study. *Journal of Adolescent Health*, 40(2), 158–165. doi: 10.1016/j.jadohealth.2006.09.009

Herman, K. M., Craig, C. L., Gauvin, L., & Katzmarzyk, P. T. (2009). Tracking of obesity and physical activity from childhood to adulthood: The physical activity longitudinal

- study. *International Journal of Pediatric Obesity*, 4(4), 281–288. doi: 10.3109/17477160802596171
- Holloway, I., & Wheeler, S. (2010). *Qualitative research in nursing and healthcare* (3rd ed. [updated]). Chichester, West Sussex/Ames, Iowa: Wiley-Blackwell.
- Jackson, L. A., Zhao, Y., Kolenic, A., III, Fitzgerald, H. E., Harold, R., & Von Eye, A. (2008). Race, gender, and information technology use: The new digital divide. *Cyberpsychology and Behavior*, 11(4), 437–442. doi: 10.1089/cpb.2007.0157
- Jones, S., Spence, M., Hardin, S., Clemente, N., & Schoch, A. (2011). Youth can! Results of a pilot trial to improve the school food environment. *Journal of Nutrition Education and Behavior*, 43(4), 284–287. doi: 10.1016/j.jneb.2010.10.005
- Kitzinger, J. (1995). Introducing focus groups. *British Medical Journal*, 311(7000), 299–302.
- Kostenius, C. (2008). *Giving voice and space to children in health promotion*. Luleå: Luleå tekniska universitet/Hälsovetenskap.
- Krueger, R. A., & Casey, M. A. (2009). *Focus groups: A practical guide for applied research* (4th ed. [updated]). Thousand Oaks, Calif.: Sage Publications.
- Kumanyika, S. K., Obarzanek, E., Stettler, N., Bell, R., Field, A. E., Fortmann, S. P., et al. (2008). Population-based prevention of obesity: The need for comprehensive promotion of healthful eating, physical activity, and energy balance: A scientific statement from American heart association council on epidemiology and prevention, interdisciplinary committee for prevention. *Circulation*, 118(4), 428–464. doi: 10.1161/CIRCULATIONAHA.108.189702
- Lee, A., Cheng, F. F. K., & St. Leger, L. (2005). Evaluating health-promoting schools in Hong Kong: Development of a framework. *Health Promotion International*, 20(2), 177–186. doi: 10.1093/heapro/dah607
- Leung, L. (2003). Impacts of net-generation attributes, seductive properties of the internet, and gratifications-obtained on internet use. *Telematics and Informatics*, 20(2), 107–129. doi: 10.1016/S0736-5853(02)00019-9
- Lubans, D. R., Morgan, P. J., Callister, R., & Collins, C. E. (2009). Effects of integrating pedometers, parental materials, and E-mail support within an extracurricular school sport intervention. *Journal of Adolescent Health*, 44(2), 176–183. doi: 10.1016/j.jadohealth.2008.06.020
- Martinez-Gomez, D., Eisenmann, J. C., Wärnberg, J., Gomez-Martinez, S., Veses, A., Veiga, O. L., et al. (2010). Associations of physical activity, cardiorespiratory fitness and fatness with low-grade inflammation in adolescents: The AFINOS study. *International Journal of Obesity*, 34(10), 1501–1507. doi: 10.1038/ijo.2010.114
- Mittelmarm, M. B., Perry, M. W., Wise, M., Lamarre, M. C., & Jones, C. M. (2007). Enhancing the effectiveness of the international union for health promotion and education to move health promotion forward. *Promotion & Education*, Suppl 2, 33–35. doi: 10.1177/10253823070140021101x
- Moreno, M. A., Ralston, J. D., & Grossman, D. C. (2009). Adolescent access to online health services: Perils and promise. *Journal of Adolescent Health*, 44(3), 244–251. doi: 10.1016/j.jadohealth.2008.07.015
- Nilsson, M., & Emmelin, M. (2010). “Immortal but frightened”-smoking adolescents’ perceptions on smoking uptake and prevention. *BMC Public Health*, 10. doi: 10.1186/1471-2458-10-776
- Raby, R. (2010). Public selves, inequality, and interruptions: The creation of meaning in focus groups with teens. *International Journal of Qualitative Methods*, 9(1), 1–15.
- Redmond, R., & Curtis, E. (2009). Focus groups: Principles and process. *Nurse Researcher*, 16(3), 57–69.
- Rey-López, J. P., Vicente-Rodríguez, G., Ortega, F. B., Ruiz, J. R., Martínez-Gómez, D., De Henauw, S., et al. (2010). Sedentary patterns and media availability in European adolescents: The HELENA study. *Preventive Medicine*, 51(1), 50–55. doi: 10.1016/j.ypmed.2010.03.013
- Rogers, A. S., Kinsman, S. B., Santelli, J. S., & Silber, T. J. (1999). Code of research ethics: Position paper of the society for adolescent medicine. *Journal of Adolescent Health*, 24(4), 277–283. doi: 10.1016/S1054-139X(99)00003-8
- Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, 32(5), 963–975.
- Shaw, L. H., & Gant, L. M. (2002). Users divided? exploring the gender gap in internet use. *Cyberpsychology and Behavior*, 5(6), 517–527. doi:10.1089/109493102321018150
- Sirriyeh, R., Lawton, R., & Ward, J. (2010). Physical activity and adolescents: An exploratory randomized controlled trial investigating the influence of affective and instrumental text messages. *British Journal of Health Psychology*, 15(4), 825–840. doi: 10.1348/135910710X486889
- Story, M., Lytle, L. A., Birnbaum, A. S., & Perry, C. L. (2002). Peer-led, school-based nutrition education for young adolescents: Feasibility and process evaluation of the TEENS study. *Journal of School Health*, 72(3), 121–127. doi: 10.1111/j.1746-1561.2002.tb06529.x
- Tang, K., Nutbeam, D., Aldinger, C., St Leger, L., Bundy, D., Hoffmann, A. M., et al. (2009). Schools for health, education and development: A call for action. *Health Promotion International*, 24(1), 68–77. doi: 10.1093/heapro/dan037
- Tercyak, K. P., Abraham, A. A., Graham, A. L., Wilson, L. D., & Walker, L. R. (2009). Association of multiple behavioral risk factors with adolescents’ willingness to engage in eHealth promotion. *Journal of Pediatric Psychology*, 34(5), 457–469. doi: 10.1093/jpepsy/jsn085
- Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W. C., & Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity. *American Journal of Preventive Medicine*, 25(4), 277–282. doi: 10.1016/S0749-3797(03)00217-4
- Van Sluijs, E. M. F., McMinn, A. M., & Griffin, S. J. (2008). Effectiveness of interventions to promote physical activity in children and adolescents: Systematic review of controlled trials. *British Journal of Sports Medicine*, 42(8), 653–657. doi: 10.1136/bmj.39320.843947.BE
- Verheijden, M. W., Jans, M. P., & Hildebrandt, V. H. (2008). Web-based tailored lifestyle programs: Exploration of the target group’s interests and implications for practice. *Health Promotion Practice*, 9(1), 82–92. doi: 10.1177/1524839906289515
- Vicente-Rodríguez, G., Rey-López, J. P., Martín-Matillas, M., Moreno, L. A., Wärnberg, J., Redondo, C., et al. (2008). Television watching, videogames, and excess of body fat in Spanish adolescents: The AVENA study. *Nutrition*, 24(7–8), 654–662. doi: 10.1016/j.nut.2008.03.011
- Wang, Y., & Lobstein, T. (2006). Worldwide trends in childhood overweight and obesity. *International Journal of Pediatric Obesity*, 1(1), 11–25. doi: 10.1080/17477160600586747
- WHO. (1986). Ottawa charter for health promotion. *Health Promotion International*, 1(4), 405.
- Wilkinson, S. (1998). Focus groups in feminist research: Power, interaction, and the co-construction of meaning. *Women’s Studies International Forum*, 21(1), 111–125.