chapter 7

General discussion
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The overall aim of the study was to gain insight in the energy balance related behaviour (EBRB) of adolescents on schooldays and the perceptions of adolescents, school staff and parents on school-based health promotion in interaction with encouraging health behaviour at home. In line with the behavioural change wheel (figure 7.1), proposed by Michie\(^{(1)}\), adolescents’ EBRB was studied in the context of school and home and linked to intervention types. In addition, the beliefs, motivation, actions and perceived barriers of teachers and parents, being key persons with regard to encouraging healthy behaviour in adolescents, were investigated. In chapter 2, adolescents’ beliefs on overweight, EBRB and school- and home-based intervention actions to encourage healthy behaviour and prevent overweight, expressed in focus group interviews, were analysed and points of action for intervention strategies were identified. Also the beliefs, motives, efforts and encountered barriers of parents and school staff in order to encourage healthy behaviour in adolescents were investigated by means of focus group interviews and described in chapter 3. The CheckTeen study provided quantitative information on the adolescents’ BMI, their EBRB on schooldays and determinants of their behaviour. In chapter 4, differences in EBRB on schooldays related to gender, educational level and BMI of adolescents and views on school-based health interventions are described. In chapter 5, the association between adolescents’ EBRB and parental influences as perceived by adolescents were studied. In chapter 6, the problem awareness, motivation, teaching actions and perceived barriers of teachers in health education (HE) and physical education (PE) were investigated by means of a digital survey. The main findings of the studies are combined and discussed in this general discussion (chapter 7). Subsequently, the methodological strengths and limitations of this dissertation are considered. The chapter ends with a translation of the main findings into recommendations for practice, policy, education and research and the final conclusion.
Main findings and reflections

Adolescents’ energy balance related behaviour

In 2010/2011, the prevalence of overweight was 18% in boys and 19% in girls in Zwolle and varied from 12% in students attending the highest educational level to 25% in prevocational level students, being the lowest educational level (chapter 4). At all levels, girls behaved healthier than boys regarding daily consumption of fruit, vegetables, snacks and candy and sugared drinks. Compared with higher educational level students, prevocational students had unhealthier dietary behaviours, except for eating snacks. Overweight students less often ate a daily breakfast, and less often consumed snacks and sugared drinks on school days than non-overweight students. Cycling to school contributed importantly to the daily amount of physical activities for most students: 90% cycled to school and 40% spent more than one hour per day on active commuting. Prevocational students reported less organized sports activities than higher level students, but more often played outside and had other activities. Overweight boys tended to spend less time cycling to school compared with non-overweight boys. Overweight girls less often participated in organised sports, compared with non-overweight girls. Two thirds of
the students had more than 2 hours of screen time (pc and TV) on schooldays (chapter 4). The results of the CheckTeen study are in line with other studies on the EBRB pattern.\(^{(2, 3, 4)}\)

Compared with primary school children in Zwolle, overweight was more prevalent among adolescents and the EBRB of adolescents was less healthy.\(^{(5)}\) As suggested in other studies, the EBRB of children is subject to change in the transition from primary to secondary school.\(^{(6, 7, 8, 9)}\) Therefore, in succession to interventions targeting youth in the primary school age, the first two years of secondary education are an appropriate time to bring healthy EBRB under the attention of youth again, in this new phase of life. The results of the CheckTeen study advocate for school-based interventions at all educational levels, rather than focussing on prevocational students. Gender differences should also be taken into account (chapter 4). Girls differed with boys not only in their EBRB, but also in the determinants of behaviour and their interest in healthy nutrition and physical activities (chapter 2 and 4). Compared with boys, girls are possibly more health conscious and interested in health benefits, but less likely to engage in organised sports and more susceptible of social pressure, as suggested in other studies.\(^{(10, 11)}\) Consequently, intervention effects are often gender-related and intervention strategies should take gender differences into account.\(^{(12, 13)}\)

The CheckTeen study revealed that the participants often did not meet the recommendations for healthy behaviour (chapter 4). In line with other studies, adolescents in the focus group interviews considered health and a healthy weight important for the quality of their life.\(^{(14, 15, 16)}\) In addition, the risk perception of these adolescents was low; as long as they felt healthy, they were not motivated to change their behaviour. As was explained by adolescents in the focus group interviews: “We are healthy, so we can behave unhealthily”. Adolescents expressed their desire to make their own decisions on health behaviour but simultaneously held their parents responsible for their health behaviour (chapter 2). Interventions targeting adolescents should address this discrepancy, that is typical for this phase in life, and learn adolescents to take on greater responsibility for their own health behaviour, especially in the school setting where they are more autonomous than at home.\(^{(17, 18, 19)}\)

According to adolescents themselves (chapter 2) and school staff and parents (chapter 3), the environment offered adolescents ample opportunities for unhealthy behaviour. Unhealthy food was tempting for adolescents and omnipresent in stores in the neighbourhood, in the school canteen and at home. The use of computers (for gaming, social media and homework), smartphones and watching TV were an integral part of adolescent life and life without it seemed impossible to adolescents, which is also found
in other studies.\textsuperscript{(20, 21)} On the positive side, some adolescents expressed their preference for healthy food and the majority considered participating in organized sports and cycling to school obvious behaviour (chapter 2).

Adolescents considered school an appropriate place to learn about healthy behaviour. About half of the students indicated they wanted to learn more about healthy nutrition. Students missed opportunities in school to be active during lesson breaks and endorsed the concept of a healthy school canteen although they were not prepared to spend their pocket money on fruit or a healthy snack. About two third of the snacks and sugared drinks consumed at school were brought from home and only about a fifth was bought in school. Still, offering healthy food choices in school may positively affect dietary behaviour.\textsuperscript{(22, 23)} Physical education was enjoyed and valued by the majority of adolescents and resulted in a self-reported higher level of physical activity than before amongst a quarter of the adolescents. To encourage physical activity, boys suggested more lessons while girls preferred more variation, which was also found by Wilson.\textsuperscript{(11)} With regard to lessons on healthy eating, especially girls were interested cooking classes and participating in managing the school canteen (chapter 4).

Parental influences perceived by adolescents seemed to concentrate on dietary behaviour rather than on physical activity or sedentary behaviour (chapter 5). Several studies have indicated that physical activities decline with age and the process of change is complex and difficult to understand.\textsuperscript{(24, 25, 26, 27)} Because habits seem an important predictor for maintaining the level of physical activities, parents should be encouraged to address physical activity behaviour as well.\textsuperscript{(25, 28)}

\textit{Parents’ behaviour to encourage a healthy lifestyle in their children}

Parents attributed adolescents’ overweight mainly to a high energy intake and not so much to a low energy expenditure due to inactivity. Although overweight was considered a major public health problem, parents seemed to underestimate the health consequences of overweight in adolescents on the long term (chapter 3). Parents felt motivated to stimulate a healthy lifestyle in their children, but it had no priority to them as long as their child was happy and functioning well in social networks such as school, friends and family. Parents felt not capable to stimulate healthy behaviour in their children, without stressing the relationship with their child, which was more important to them and therefore they were not very persistent in their actions. Parents considered the influence of the peer group culture, the obesogenic environment and of media and advertising more dominant than their own influences and therefore had low expectations of the impact of their efforts
to encourage healthy behaviour (chapter 3). The impacts of the environment and the peer influence on EBRB and obesity have been described by others.\textsuperscript{29, 30, 31, 32} Nevertheless, the CheckTeen study revealed that parental influences as perceived by adolescents were positively associated with adolescents’ healthy behaviour when parents ensured practical guidelines or when healthy behaviour was part of the family culture (chapter 5), which is confirmed by other studies on parental influences on adolescents’ health behaviour.\textsuperscript{18, 33, 34, 35, 36} Girls and prevocational level students perceived less parental influences compared with boys and higher level students. Prevocational education can be characterized by a relatively large group of students coming from a family with a low social-economic or non-western background and a less healthy life style, which could explain this difference.\textsuperscript{37}

Considering the parental responsibility and the existing, proved influence on adolescents’ health behaviour, parents should be addressed more directly in interventions. The authoritative parenting style is considered effective for preventing adolescent overweight and should be promoted.\textsuperscript{33} Parental behaviour should consist of acting as a role model, providing opportunities and encouraging healthy behaviour, establishing rules and discussing health behaviour with their children.\textsuperscript{38} According to the CheckTeen study parental measures should be very specific and practical in order to be effective (chapter 5). An authoritative parenting style and setting practical guidelines also proved to be successful in families with a low social-economic status.\textsuperscript{37, 39} Parents also need to understand how to change their parental role as their child moves through developmental stages into adolescence.\textsuperscript{40} During adolescence, communication and motivation and giving an appropriate degree of autonomy in EBRB are important to support adolescents to develop healthy habits that track into adulthood.\textsuperscript{41}

In the focus group interviews (chapter 3) parents expressed they appreciated the support of school in encouraging a healthy lifestyle in adolescent. Parents expected the school to provide obligatory lessons in physical education and to teach students basic knowledge about nutrition and healthy eating and some cooking skills. Parents were not well informed about the school’s efforts to encourage EBRB in students and were reluctant to become involved in the schools’ activities. Because of the limited communication between parents and school staff, there seemed to be a lack of consistency between health promotion at home and at school. This should be improved considering that parent involvement is regarded an enhancing factor in the effect of school-based health promotion and newly learned insights need to be applied at home in order to internalize in adolescents’ behaviour.\textsuperscript{42}
School staff’s motivation, capability and opportunity to implement school-based interventions

In addition to the focus group interviews with school staff (chapter 3) and the digital survey amongst teachers in health education, biology and physical education (chapter 6), supplementary interviews with 17 teachers and student-teachers in health education, biology and physical education in the Zwolle region were conducted. The interviews provided additional background information that contributed to understanding the motivation, capability, opportunities and classroom activities of teachers (van’t Hul et al, in preparation).

Although health behaviour of adolescents was considered primarily the responsibility of parents, school staff also attributed a pedagogical responsibility to themselves (chapter 3 and 6). As explained by Jourdan et al (43), it is not easy for teachers to have a clear view of their role, when school health promotion is part of the wider public health policy, as advocated in the whole school approach. (44; 45) In the additional interviews, teachers expressed their struggle with their role in an often not supportive school environment and differed in the perception of their teaching task with regard to health promotion, ranging from transferring knowledge, creating awareness, stimulating healthy choices to experiencing healthy behaviour. Health education and biology teachers focussed on teaching and assessing knowledge and skills, while teachers in physical education emphasized on letting students experience and enjoy physical activities in their lessons (chapter 6, van’t Hul et al, in preparation). Learning goals related to health behaviour were, unlike learning goals on academic knowledge and skills, generally assessed by teachers in an informal manner, by classroom evaluations, or not at all. Thus, teachers had no objective information on the impact of their lessons on the EBRB behaviour of their students. Considering that teachers were satisfied with the used teaching materials, it is understandable that teachers did not feel a need to change their lessons (chapter 6). Teachers concentrated on classroom-based health promotion instead of striving for a whole school approach in collaboration with colleague-teachers, parents and stakeholders in the community. The inconsistency between classroom-based health education and the social and physical school environment can be considered a barrier to the teachers’ motivation and the effectiveness of their efforts on changing adolescents’ EBRB (chapter 6). Other studies confirm these findings and add to it that intervention programs should be consistent with the teachers’ views. (43; 46) Teachers’ strength seemed to lie in their ability to relate to their students and their intrinsic motivation and personal interest in health behaviour (chapter 6, van’t Hul et al, preparation). In addition the teaching
style has an impact on the capacity and motivation of students. Active participation of students, leading to higher levels of learning, is most likely realized with an interactive teaching style.\(^{47, 48}\) In the focus group interviews and the individual interviews, teachers gave several examples of this teaching style, for example by discussing health behaviour with students and making them find their own solutions (chapter 3). To tailor lessons to the situation and students’ needs, teachers tend to adapt lesson programs, even when they are evidence-based. Therefore, they should be competent in health promotion in order to make appropriate choices.\(^{47, 49, 50}\)

The difference in task perception of teachers in health education and biology and teachers in physical education can be explained by the formulated national key objectives. The key objectives of physical education focus on preparing students for a long-lasting, independent, healthy, physically active lifestyle.\(^{51}\) To achieve this goal, the key objectives cover the elements of the behaviour system: motivation (experiencing and valuing physical activity), opportunity (organize physical activities) and capability (improve motor skills). On the contrary, key objectives with regard to healthy dietary behaviour are more cognitive and theoretically formulated in terms of knowledge and understanding (learn to understand, establish connections, learning how to care and influence) and only to a limited extend in terms of behaviour (take responsibility). This makes the focus on theory and assessing knowledge and skills in lessons in health education understandable. By altering the key objectives related to health education by using terms related to behaviour, comparable to the key objectives for PE, teachers would be given more direction and justification to focus on changing healthy behaviour in their students. In order to establish long-term health behaviour in adolescents, education should also prepare students to deal with the obesogenic environment by teaching them ‘critical health literacy’, which addresses personal and societal issues that influence health behaviour.\(^{52, 53}\)

Teachers pointed at aspects of the obesogenic environment that seem to counteract their efforts to stimulate healthy behaviour in their students, such as the unfavourable physical school environment, the situation at home with parents not fulfilling their role to stimulate healthy behaviour, the influence of the peer group culture and the messages sent out by the food industry, retailers and media to consume unhealthy food. Although teachers seemed aware of the interactions between stakeholders at different levels of the socio-ecological model (figure 2, chapter 1), their actions concentrated on classroom activities. Teachers were not used to collaborate with colleague-teachers or the care-team in school or with stakeholders in the community such as parents, youth care organisations, retailers and sports organisations (chapter 3, 6). However, in a comprehensive whole
school approach\(^44,45\), collaboration with different stakeholders is essential and teachers should be trained to do so in order to embed classroom-based health promotion in a social and physical school environment that facilitates healthy behaviour.

**Methodological considerations**

**Study population**

Our study population consisted of three groups: adolescents, parents and teachers. All studies with exception of the survey amongst teachers were executed in the Zwolle area, in the Netherlands. The thesis can be seen as a needs assessment for developing school-based interventions in the context of the JOGG approach in Zwolle.

The adolescent population in the CheckTeen study was a good representation of the Zwolle population, representing the majority of second grade students of 69% of the secondary schools in Zwolle. The high participation rate of schools was due to the collaboration with the local public health service and because the high response on completing the digital questionnaire was due to administering the questionnaire in classroom during school hours. Because the Zwolle population can be characterised as a predominantly western population and small non-western population, the association of ethnicity with overweight and ethnicity with EBRB could not be studied. Our study population was also too small to analyse associations between BMI and determinants of EBRB in subgroups of gender and educational level. A much larger group of participants is required for this kind of research.

The recruitment of parents and teachers was difficult as is often the case in studies on school health promotion. Parents and teachers had to be contacted through an intermediary, mostly a team leader, according whom they had trouble to make time for the focus group interviews and teachers seemed to give low priority to a questionnaire about their teaching behaviour with regard to healthy EBRB. However, the diversity in the parent and the school staff focus groups has resulted in a range of beliefs and opinions that was further explored in the CheckTeen study and the teacher survey. Altogether, this has resulted in an insightful view on school-based health promotion from the perspective of parents and school staff.

**Data collection**

Mixed methods were used to collect data: focus group interviews have produced qualitative data and the CheckTeen study and the questionnaire amongst teachers
provided quantitative data to verify the gained insights from the focus group interviews in a larger population and to gain more objective information on EBRB of students.

The CheckTeen questionnaire was a selection of questions of the ChecKid questionnaire targeting primary school children in Zwolle supplemented with questions on determinants of behaviour and on the perception of school-based interventions (5). The questionnaire measured self-reported behaviour of the student, which can lead to social desirable answers and underestimation of unhealthy behaviour, but is often done for practical reasons.(54) To ensure the questionnaire had an acceptable length for students, questions on the EBRB on weekend days were left out. Consequently, the questionnaire only reflects adolescents’ EBRB on schooldays and not the overall pattern. This choice was made because in general, dietary and physical activity behaviour on weekdays differs from weekend days and our focus was on cues for changing EBRB in the school setting. The selection of questions on the determinants of behaviour was predominantly driven by the results of the focus group interviews as these were considered important determinants for adolescents. Consequently, the behavioural determinants were not systematically questioned for all specific behaviours, which would have resulted in a much longer questionnaire. Research on the whole behaviour system and the determinants in several settings, such as home and school, is difficult to compress in one study without burdening the study population with a long, time-consuming questionnaire. Instead of questioning EBRB in detail, the measurement of EBRB by means of short validated forms could be considered when the focus is on determinants of health behaviour as part of an integrated approach.(55; 56)

In the CheckTeen study, completing the questionnaire and having anthropometric measures taken by school nurses did not happen simultaneously. The period between both measurements was mostly less than two months, but in some schools it added up to 8 months. However, the involvement of trained school nurses to measure height and weight contributed to the reliability of the measurements, limited the required work imposed on schools and increased the schools’ willingness to participate. Despite of a thorough preparation by means of a script, it turned out impossible to match the data of the administration of the questionnaire with the visit of the youth health care nurse to the school.

The questionnaire addressing teachers was developed in order to collect quantitative data on the teachers’ motives and classroom behaviour. Although the questionnaire has revealed some interesting insights on the motivation and actions of teachers, it gives little information about what actually goes on in the classroom in the interaction between teacher and students. Observational studies are needed to reveal such information.
Study design

The mixed methods design used in this thesis has provided valuable information. While qualitative research offers more background information and contributes to understanding the mechanisms behind the system of behaviour, quantitative research offers factual information about the EBRB of adolescents. In addition, several types of persons involved (adolescents, parents and teachers) were addressed in this dissertation, which is in line with the principles of the socio-ecological approach to health promotion. The combination of mixed methods and groups has resulted in a broad perspective on the subject of school-based overweight prevention which brings about new factors that should be considered in further research and the design of intervention strategies. The CheckTeen study was cross-sectional, which means causality could not be established as different factors at different levels interact with each other according to the socio-ecological model. However, causality was not the main focus in this thesis, which was finding cues for intervention strategies targeting adolescents in the school setting.

Recommendations

Recommendations for school-based health promotion

Educating adolescents in health behaviour is recommended for students in all educational levels. Emphasis should be put on teaching adolescents how to take responsibility for their personal health decisions. To increase adolescents’ interest in health behaviour, students should be actively involved in selecting and delivering school-based interventions, both in health education as in creating a favourable environment. Several studies have shown that peer-led interventions have promising results and are feasible and valued by school staff and students (57; 58; 59). For example, students can participate in running the school canteen or organising extracurricular activities. In classroom-based health education, trained peer leader students can facilitate lessons with backing from the teacher (60). A constructivist, interactive teaching approach in which students adopt an active learning style and lessons are characterised by discussions, offers promising results (48).

In the process of learning, students are confronted with new information and experiences, which can create a dilemma because existing beliefs about health and health behaviour are challenged. Reflection on this dilemma enables students to decide what impact the new gained ideas have and, if required, to change their behaviour. Therefore, reflection should be an essential element in classroom-based health education.

Health promotional efforts in school should be aligned with parental efforts at home,
sending out the same message and creating a consistent environment. Parents should at least be informed about the school health policy, what can be expected from the school and what is to be expected from students and their parents. For example, the school should advice parents on the benefits of healthy behaviour regarding learning performances, the importance of having breakfast, the preferable content of the lunchbox and the benefits of active commuting to school. In addition, parents can be involved in education, for example by contributing to students’ home assignments on EBRB.

**Recommendations for (school) health policy**

According to the socio-ecological perspective on health promotion, stakeholders at several levels interact with each other, influencing the health behaviour of an individual. A policy on national, local and school level can be helpful to clarify the role, task and approach of each stakeholder. The school management is responsible for establishing the school health policy and facilitating the execution. Institutions like the school board, the participation council, parent committee and student council represent the different partners in the school setting and should be involved to determine priorities in health education and the social and physical school environment. Clarification of the teachers’ role is especially important as they are crucial in delivering classroom health promotion.

The school health policy should also be discussed and coordinated with stakeholders in the wider environment of the school. The local health policy is important for the social and physical environment and facilitates for example youth health care to support parents and teachers to encourage healthy behaviour in adolescents and monitor the progress that is made. Embedding school-based health promotion in a multifaceted, integral community approach such as EPODE (JOGG in the Netherlands) is considered powerful and thus strongly recommended.\(^{(61)}\)

On a national level, the government should take care of agenda setting, providing guidelines on school health promotion and enforcing school-based health promotion by issuing requirements for the school environment. An example is the resolution by the Dutch government, that in 2015, all schools should have a school canteen with a food assortment containing at least 75% healthy products.\(^{(62)}\) The national key objectives for healthy behaviour should not only approach health behaviour in a theoretical manner, but also include objectives to apply health behaviour. Similar to the key objectives of physical education, the national key objectives related to health behaviour should not only address knowledge, but explicitly include experiencing, organising and improve health behaviour. By making the objective of actual healthy behaviour more explicit, teachers
will be encouraged to set health-related behavioural learning goals for the lessons and to design lessons to achieve these goals.

**Recommendations for teacher training**

As teachers have a powerful influence on classroom-based health promotion, teachers of health-related subjects should be adequately prepared to fulfil this task and allowed some degree of autonomy to adapt evidence-based interventions to the specific conditions of their students. With regard to health promotion, a teacher should be able to combine didactical competencies with health promotional knowledge and skills in order to deliver lessons that are adjusted to the needs and cognitive level of their students and be able to evaluate to what extent intended learning goals on health behaviour are achieved. In addition, teachers should be competent to discuss the importance of a healthy lifestyle in adolescence with parents and to encourage them to stimulate healthy behaviour in their children. A teacher, who is familiar with health promotion principles, could fulfil the role of the school health coordinator, responsible for the implementation of a whole school approach. In this role a teacher should be able to collaborate with several stakeholders in the community. An important partner is the local public health service that is responsible for executing the Dutch youth health care program and monitoring the local public health situation. Altogether, the role of a teacher in health promotion is powerful, complex and coloured by personal health perceptions and behaviour. In teacher training the teachers’ mission and ethical limits in health promotion should be addressed and student-teachers should be supported in building a professional identity.

In the current Dutch teacher trainings courses, building a professional identity as teacher in health education and developing the competences to set up partnerships within the school and the community should be addressed more explicitly, not only in theory but also during internships. Compared with teachers in health education and physical education, teachers in biology are less trained in health education, as in the biology teacher training curriculum health is approached as a biological condition, rather than a state of complete physical, mental and social well-being as defined by the WHO. As in the Netherlands, biology teachers increasingly take on the task to educate students in health behaviour, health promotion should become a part of their curriculum or offered as a profiling program. In addition, school-based health promotion should be offered as a continuing education programme for teachers.
Recommendations for research

According to the behavioural change wheel of Michie, the system of EBRB of adolescents needs to be understood thoroughly in order to select intervention types that match with the results of the behaviour analysis. A longitudinal study covering the transition period from primary to secondary school, would be useful to investigate when changes towards unhealthier behaviour take place and how adolescents deal with the increasing degree of autonomy. When studying the determinants of adolescents’ EBRB, the educational or cognitive level of adolescents should be taking into account to match school-based interventions with the intellectual abilities of different groups of students.

In order to improve the effectiveness of interventions targeting adolescents’ health behaviour, it is necessary to understand the behaviour - motivation, capability and opportunities - of key persons in interventions to change adolescents’ behaviour. Besides investigating program fidelity and adherence to the program principles by teachers in order to improve the design of interventions, research should also focus on the course of events in classroom and the teachers’ teaching style and interaction with students, preferably by observational studies. Likewise, parental behaviour in relation to school-based health promotion should be studied more in depth. An important issue in studying the behaviour of key persons is the personal perception of their role compared with the intended role expected by other stakeholders. In an integrated system, it is important to know what is expected from the participants and whether that matches with their personal motives, capabilities and opportunities.

General conclusion

The need for interventions targeting adolescents’ EBRB is apparent, considering the prevalence of adolescent overweight and the change towards unhealthy behaviour when entering adolescence, which is prone to adult overweight and health problems. However, encouraging healthy behaviour in adolescents is a challenge, because a complex behavioural system, consisting of the capability, opportunity and motivation for healthy behaviour needs to be changed. Because parents and school staff are key persons in the context of adolescents’ behaviour, the motives, capacities and opportunities of parents and school staff need to be understood in order to design interventions that match their needs and opportunities. In this thesis, the perspectives of adolescents, parents and school staff have been taken to study ways to influence adolescents’ EBRB in order to prevent overweight. The thesis has revealed that, generally, parents and teachers
are motivated to encourage healthy behaviour in adolescents, but struggle individually with competing interests, their role as educator and the influence of the obesogenic environment and question their capabilities to effectively influence adolescents EBRB. The opportunities to influence EBRB at home, by modelling, rules, availability of healthy food, and at school, by education and a favourable environment, are not used optimally. As part of growing up, adolescents must gradually learn to take responsibility for their personal life. A comprehensive, consistent social and physical environment at home, at school and in the community contributes to adopting a healthy lifestyle by adolescents. In this system, parents and teachers are key persons, who should be supported by a wider, social and physical environment in which different stakeholders of different levels of the socio-ecological system, such as local public health service, youth care, sports organisations, retailers and the municipal council, collaborate.

Parents and teachers should align their efforts in health promotion. Parents should be empowered to exploit their – still important – influence on their children by building their capacity to offer guidelines and opportunities, be a role model and discuss EBRB with their children. As students in higher educational levels perceived more often positive parental influences at home, especially parents of students in a lower educational level (prevocational) should be addressed in interventions to encourage implementing measures at home. Schools should support parents in their efforts, thereby enlarging the socio-ecological environment that favours healthy behaviour in adolescents. Therefore, a school health policy in which the educational and health-related behavioural goals in the curriculum are made explicit and supplemented with the intended efforts of the school and the desired contribution of parents, taking into account the motives, capabilities and opportunities of adolescents, parents and school staff, is desirable. In addition, the school health policy should include activities to improve the physical school environment by installing a “healthy school canteen” and create opportunities to encourage physical activity in the school environment during breaks. Instead of emphasizing the implementation of interventions, the focus should be on strengthening the teachers’ competences and helping them to build a professional identity. For example, teachers should evaluate the intended health behavioural goals and the didactical approach taken more systematically. An interactive teaching style can contribute to learning adolescents to take responsibility for their personal EBRB. Although this thesis has focused on the triangle adolescents, parents and school staff, addressing the inner levels of a socio-ecological model for health promotion, the higher levels should not be neglected. Adolescents, parents and school staff are part of and influenced by a wider community. School-based interventions, that
support parents and adolescents, should in turn be supported by policies on local and national level, resulting in a multifaceted, integral approach, where people contribute collectively to create a favourable context for adolescents to behave healthily.

This thesis advocates for studying the interaction between adolescents, their parents and teachers more in depth to gain a better understanding of the context in which health promotion targeting adolescents takes place. In addition, the role of teachers and the influence of teaching style should be subject of future studies in order to match interventions with the capabilities, opportunities and motivation of teachers and to specify the teacher’s role in school-based health promotion.
References


37. Loth KA, MacLehose RF, Fulkerson JA et al. (2013) Eat this, not that! Parental demographic correlates of food-related parenting practices. Appetite 60, 140-147.


58. Luca PD, Chan M, Basak S et al. (2013) A qualitative description of the development and evaluation of our voice, a health promotion magazine created by pediatric patients for hospitalized pediatric patients. Hospital pediatrics 3, 59-64.


