Searching for similarities: transfer-oriented learning in health education at secondary schools

Peters, L.W.H.

Publication date
2012

Chapter 1

INTRODUCTION

1. HEALTH-RELATED BEHAVIORS AND SCHOOL HEALTH PROMOTION

Many health-risk behaviors develop or augment during adolescence. In the E-MOVO study among over 35.000 Dutch secondary school students in Grades 8 and 10 (De Nooijer & De Vries, 2007), large proportions of students did not meet health recommendations for fruit consumption (70%), consistent condom use when having sex (47%), physical activity (29%), alcohol consumption (23%), smoking (22%), and drug use (18%). Other studies have found similar results, both in The Netherlands (e.g., Van Dorsselaer, Zeijl, Van den Eeckhout, Ter Bogt, & Vollebergh, 2007) and in other European countries and the United States (Currie et al., 2006; Eaton et al., 2006). These health-risk behaviors contribute to the leading causes of morbidity and mortality among adults (Hoeymans, Melse, & Schoemaker, 2010).

Because of the prevalence of health-risk behaviors among adolescents, many health education and promotion interventions have been, and continue to be, developed to promote healthful behaviors among this age group. Many of these interventions are intended for use in schools, because schools are a setting where large numbers of adolescents can be reached. Moreover, secondary schools in The Netherlands are required by governmental law to teach about health-related matters in some way in the first two years of secondary education. However, in light of the freedom of education laid down in the Dutch constitution, schools have a lot of freedom in deciding what, how and how much to teach about health. The governmental requirements have, intentionally, been formulated in a very general way in the form of core objectives. The core objective which is most relevant to health and health promotion states: “The student learns to understand the essentials of the constitution and function of the human body, to establish connections with the promotion of physical and mental health, and to take own responsibility in this matter”. Health education is not a separate subject in Dutch secondary schools. Regular textbooks for Biology include some information related to health behavior domains such as nutrition, sexuality, and substance use, but this information is usually limited, both in scope and in

the number of lessons. Given the schools' freedom, it is at the school's discretion to teach these lessons, and to implement additional health promotion interventions: such interventions are mostly implemented as a supplement to the core curriculum, which in many cases is overcrowded as it is.

Most school health promotion interventions in The Netherlands focus on a particular health behavior domain, not on combinations of domains. As each intervention takes up time from school, and each new intervention requires innovative capacity of school staff to get acquainted with the intervention, school staff are becoming more and more overloaded by the abundance of health education and other interventions available to schools (Greenberg et al., 2003; Lee, Keung, & Tsang, 2004; Leurs, Jansen, Schaalma, Mur-Veeman, & De Vries, 2005). In a recent interview, the Dutch Minister of Education Van Bijsterveldt phrased this issue as follows (Gerrits, 2010, p. 7, translation added from Dutch):

> In the past decades, too many societal tasks have been shoved towards schools, from obesity to money problems. Education should not be turned into a portal for public service announcements. […] Schools complain to me that they have been given so many societal tasks that distract attention away from the core.

In the health promotion sector, this situation has given rise to increasing calls for integrative and coordinated approaches to school health promotion (Catalano, Hawkins, Berglund, Pollard, & Arthur, 2002; Flay, 2002; Greenberg et al., 2003; Paulussen, Panis, Peters, Buijs, & Wijnsma, 1998; Prochaska, 2008).

To illustrate some of the above points about interventions, Table 1 presents the results of a query in the Dutch I-Database, a comprehensive database of health promotion interventions available in The Netherlands[1]. The table lists the results of a query for interventions for the target group of 12-17-year-olds. In the query, the target group keyword was combined with keywords for several health behavior domains, and with a keyword for the setting 'secondary school'. Comparison of the top and bottom halves of the table may illustrate that most interventions focus on a specific domain, such as nutrition or smoking, not on combinations of domains. Comparison of the left- and right-hand parts of the table may illustrate that many adolescent health promotion interventions are intended for the school setting. The table includes only interventions which have been judged by a national expert committee to be well-documented, and the numbers are an underrepresentation of interventions available in The Netherlands (Brug et al., 2010). Many interventions have not been judged yet -as judgment is an ongoing process- or have failed to qualify for the judgment 'well-documented'.

[1] *http://www.loketgezondleven.nl/i-database, accessed on December 6, 2010*

Table 1. Number of well-documented interventions for 12-17-year-olds listed in the I-Database by various domains and by setting secondary school

Keyword for a particular domain	Number of interventions	Number of interventions for the setting secondary school
Total number for 12-17-year olds (no key-word for a domain)	48	25
Number of interventions for several selected domains		
Nutrition	13	5
Alcohol	7	5
Smoking	5	4
Sexuality	9	9
Sexually transmitted disease (STD)	3	3
Number of interventions for combinations of selected domains		
Alcohol + Smoking	3	3
Alcohol + Smoking + Nutrition	1	1
Alcohol + Smoking + Sexuality	1	1
Alcohol + Smoking + STD	0	0
Alcohol + Smoking + Nutrition + Sexuality	0	0
Alcohol + Smoking + Nutrition + STD	0	0

2. CO-ORDINATED AND INTEGRATIVE APPROACHES TO SCHOOL HEALTH PROMOTION

The problem of the overload of health promotion interventions offered to schools can be addressed by different approaches. One approach would be to coordinate the supply of and demand for interventions. In such a co-ordinated approach, the focus is on the organizational aspects of how to select, from among the multitude of interventions available, the specific health promotion interventions that match school needs and priorities. As an example of such a co-ordinated approach, the so-called Healthy School approach is currently being promoted for primary schools at a national level in The Netherlands (Rijksinstituut voor Volksgezondheid en Milieu, 2010) and is currently being developed for secondary schools, after having been developed and tested locally (Leurs, 2008). In this approach, regional health authorities support the schools in their region to generate health risk profiles of the student body, which are then used to set up priorities in school-based health promotion planning.

Another approach, the so-called integrative approach, is to focus on integration at the content level of health promotion, by making connections between various health domains. This approach is advocated by many proponents of co-ordinated, integrative programs (Catalano et al., 2002; Flay, 2002; Greenberg et al., 2003; Paulussen et al., 1998; Prochaska, 2008). It is also the approach we have taken.

3. INTEGRATIVE APPROACHES: THE IMPORTANCE OF CONNECTIONS BETWEEN HEALTH-BEHAVIOR DOMAINS

The integrative approach is based in connections between health behavior domains. The connections can be found at various inter-related levels. At the level of behavior, many behaviors have been found to be associated (or to cluster): adolescents who are involved in one behavior are more likely to also be or become involved in another behavior (Basen-Engquist, Edmundson, & Parcel, 1996; Donovan, Jessor, & Costa, 1991; DuRant, Smith, Kreiter, & Krowchuk, 1999; Li, Stanton, & Ju, 2007; Prochaska, Spring, & Nigg, 2008; Van Nieuwenhuijzen et al., 2009). Evidence of associations between various behaviors is rapidly accumulating, and so far, the literature has shown that the strength of the association varies with the specific combination of behaviors which is examined. Nevertheless, although the number and composition of behavioral clusters may vary between studies, most studies report clustering of or strong associations between health-risk behaviors such as smoking, drinking, and drug use, and weaker or inverse associations of these behaviors with health-promoting behaviors such as dietary and physical activity behaviors.

At the level of behavioral determinants, there are indications that various behaviors have similar determinants (Flay, 2002; Flay & Petraitis, 1994). Determinants can be distinguished at various levels, according to the level and directness of the influence they are theorized to have on behavior. Determinants at a proximal level are posited to have the strongest and most direct influence on behavior. Their influence is likely to be specific to a behavior (Flay, 2002). An example of a proximal determinant is self-efficacy to resist smoking. Determinants at a distal level are posited to have a more indirect influence on behavior through more proximal determinants, and their influence is posited to be more generalizable across various behaviors. Consider the following example: the distal-level determinant self-esteem is posited to have some influence on an adolescent's smoking behavior, among other things via his self-efficacy to resist smoking. Whereas the influence on smoking is stronger and more direct for smoking self-efficacy than for self-esteem, self-esteem is believed to also have some influence on other adolescent behaviors besides smoking (e.g., alcohol, sex, violent behavior, et cetera). Finally, determinants at the ultimate level of influence, such as genetic factors, are posited to have an even more indirect and generalizable effect on behavior.

In line with current frameworks of health promotion planning (Bartholomew, Parcel, Kok, Gottlieb, & Fernández, 2011; Green & Kreuter, 2005), behavioral determinants are the focal points for designing interventions. Various proponents of integrative interventions focus on the more distal determinants (e.g., social competence, self-esteem, school bonding), as these are theorized to be underlying constructs and to have a generalizable influence across behaviors (e.g., Botvin & Griffin, 2004; Hawkins, Kosterman, Catalano, Hill, & Abbott, 2008). Often, this focus on distal determinants is combined with addressing proximal determinants (e.g., outcome expectancies and refusal skills) for various behavior domains in a domain-specific way. Existing integrative interventions are often comprehensive, multi-year programs, as

distal determinants generally require more effort to modify them than do proximal-level determinants.

Most single-domain health promotion interventions focus on determinants at the proximal level of influence. Although proximal determinants are likely to be domain-specific, and thus on surface may not seem to be similar across domains, many of these interventions address similar psychosocial constructs, such as factual knowledge, attitudinal beliefs, social influences from peers and parents and refusal skills (Botvin, Schinke, & Orlandi, 1995; Schaalma, Abraham, Gillmore, & Kok, 2004; Summerfield, 2002). This suggests there is at least some similarity with respect to proximal-level determinants and some conceptual overlap in programs between behavioral domains.

To summarize so far, schools threaten to be overflowed by a multitude of single-domain health promotion programs, whereas an integrative approach that targets and connects various behavioral domains at the same time may be more efficient. An integrative approach seems feasible, as connections between various health domains have been established at the level of behavior, at various levels of determinants, and at the level of determinants targeted by health promotion programs. However, the feasibility of an integrative approach may differ depending on the specific behavioral domains one wishes to combine or integrate. Feasibility may depend on the strength of association between the behaviors (e.g., health-risk behaviors cluster more strongly than do health-risk and health-promoting behaviors), and on the extent to which (it is known that) the behavioral domains have determinants in common. Similarities in determinants between behavioral domains seem to be possible at all three posited levels of determinants (ultimate, distal, and proximal). Therefore, in theory, integrative interventions can focus on any of these levels: ultimate and distal determinants - which are posited to have an influence which is generalizable across behavioral domains and which may be relatively difficult to modify – and on proximal determinants – which are likely to be domain-specific and are less difficult to modify.

4. TRANSFER-ORIENTED APPROACH

The particular integrative approach we examined in our project was one that focuses on the concept of transfer. This approach originates from educational theory and research and, to our knowledge, has never before been applied to the health promotion field. In a transfer-oriented approach students are stimulated to apply independently and flexibly the knowledge, attitudes and skills they have learned in one context or behavioral domain (e.g., refusal skills with respect to smoking) to another context or domain that is not explicitly addressed (e.g., refusing alcohol). Research and theory from the field of educational psychology have generated insights into the conditions under which transfer is more likely to occur, and how these conditions can be translated into aspects of the teaching-learning process to promote transfer among students (Campione, Shapiro, & Brown, 1995; Tuomi-Gröhn & Engeström, 2003). Two such transfer-promoting aspects are addressed here briefly. One aspect

is that the learning content should explicitly address general principles or procedures that are relevant for various student behaviors (e.g., general rules for how to say no to something/someone) and should prompt students to apply these general principles to various specific domains (e.g. how would you refuse an offer of tobacco, sex, etc.). The examples may indicate that general principles in the health promotion field are likely to have a cognitive-behavioral nature. The other aspect is that the learning process and content, such as the general principles, should be meaningful to students. If students don't see the relevance for their personal or professional life, they will not be likely to have a meaningful learning experience which they can translate to other domains. Combining these two aspects leads to the expectation: if students grasp the general principles, practice them in several domains, and find the principles and their application personally meaningful, it is expected that they will be able and motivated to use them also in domains that were not explicitly taught and practiced.

In the transfer literature it is almost a given that the extent of transfer to other domains, or the ease with which transfer may be expected to occur, can vary between domains, depending on the closeness or degree of similarity between the transfer domain and the original domain in which the knowledge or skill was learned (Barnett & Ceci, 2002). Applying this finding to the literature on behavioral clustering leads to the expectation that transfer from one behavioral domain to another is easier to accomplish if the transfer domain and the original domain are more strongly associated. Hence, in light of the results for behavioral clustering mentioned earlier, one would assume that transfer from one risk behavior to another (e.g., from smoking to alcohol) is more likely to occur or easier to produce than transfer from a risk behavior to a health-promoting behavior (e.g., from smoking to nutrition).

5. OUR STUDY

The basic premise of our study was to develop a transfer-oriented curriculum and to examine its effects in behavioral domains that would be addressed by the curriculum as well as in domains that would not be addressed explicitly by the curriculum. As the number of behavioral domains that could be assessed in this study was limited, e.g. due to constraints of questionnaire length, we chose to include four domains which are known to be addressed rather frequently in health promotion classes at Dutch secondary schools (Dafesh, 2006): smoking, safe sex, alcohol use, and healthy nutrition. Moreover, we selected smoking and safe sex as domains to be addressed by the curriculum because these domains are expected to be relatively close, and examined possible transfer effects in the relatively 'near' domain of alcohol and in the relatively 'far' domain of nutrition.

5.1 Objectives and research questions of this study

With this study, we hope to contribute to the knowledge base regarding transfer-oriented learning in health education at secondary schools.

The main research question of the study is:

> Is it possible, with a specially designed transfer-oriented intervention about smoking and safe sex, to achieve effects on behavior and determinants not only in the domains of smoking and safe sex, but also in the closely related domain of alcohol and the less closely related domain of healthy nutrition?

The main research question is partitioned into four subquestions:

1. To what extent are the domains of smoking, alcohol abuse, safe sex and healthy nutrition associated at the level of behavior, and which similarities exist between these domains at the level of behavioral determinants?
2. Which conditions for effectiveness of school health promotion appear to be similar across the domains of smoking, alcohol abuse, safe sex and healthy nutrition?
3. To what extent is a transfer-oriented curriculum about smoking and safe sex effective in changing behavior and behavioral determinants in the domains of smoking and safe sex, and in the closely related domain of alcohol consumption and the less closely related domains of fruit and breakfast consumption?
4. To what extent are transfer effects in the closely related domain of alcohol consumption, and in the less closely related domains of fruit and breakfast consumption mediated by students' learning experiences with respect to general cognitive-behavioral principles?

6. PHASES IN THE PROJECT AND OUTLINE OF THE THESIS

It seems logical to assume that there has to be some kind of similarity or connection between domains if meaningful transfer between these domains is to be possible. After all, if students are expected to transfer the knowledge or skill they have acquired (in the form of a general principle or procedure) from one domain to another, they have to perceive it to be worthwhile and applicable in the new domain.

Therefore, the first step in the project is to examine associations and similarities between the four domains. In **chapter 2** we address **research question 1** by examining, in a literature review, the extent to which the four behavioral domains are associated at the level of behavior, and which determinants at a proximal, distal and ultimate level appear similar across the four domains.

Chapter 3 also pertains to **research question 1**. In this chapter, we take a closer look at the review results for similarities between domain-specific determinants. Domain-specific determinants are determinants which are framed in terms of a particular domain or whose content varies with the domain in question. Think, for instance, of attitudinal beliefs: beliefs about smoking are different from beliefs about condom use, because the behavioral consequences and circumstances of smoking and condom use differ. Despite their domain-specific content, domain-specific factors may share common ground on a more general level. This common ground may create opportunities for teaching for transfer, since transfer-oriented learning is about discovering and applying general issues in specific factors across domains.

For instance, continuing the above example about beliefs: although attitudinal beliefs about behavioral consequences of smoking and condom use may differ, there may be similarities across these domains in the types of behavioral consequences as well as their personal relevance (e.g., beliefs about immediate physiological consequences, about health consequences and about social consequences). Such similarities can be used to generate general principles which may be addressed in a transfer-oriented intervention.

In **chapter 4** we address **research question 2** and examine, again by means of a literature review, which commonalities and differences exist in the conditions for effectiveness of interventions across the four domains of smoking, alcohol use, safe sex and nutrition. The reason for this review is our expectation that it will not be sufficient to examine the extent to which the four domains share similar determinants. We also believe it to be important that the intervention methods with which the determinants can best be targeted, will suit our purpose of designing a transfer-oriented curriculum that has the potential to be effective in each domain and across domains.

The results of chapters 2 to 4 showed a sufficient degree of similarity across the four domains – in terms of behavior, determinants and methods for change– for us to conclude that a transfer-oriented approach is feasible.

The next step in our project is the development of a transfer-oriented curriculum about smoking and safe sex. The curriculum is based on various sources: (1) the results of the review of determinants, especially those with respect to domain-specific determinants, are used to select target determinants for the intervention, (2) the selected determinants are compared to those found in previous quantitative Dutch research and to beliefs that appear salient in our qualitative focus groups with students, (3) specification of learning objectives, both domain-specific and with respect to general principles, (4) designing curriculum content and specific assignments based on theories and empirical insights into effect conditions for transfer and for domain-specific school health promotion interventions, (5) consultation of health promotion and education experts, (6) pilot testing the feasibility of the prototype curriculum in classroom practices, and (7) if necessary, revising the prototype curriculum into a final version.

Chapter 5 addresses **research question 3** and describes the effect study of the curriculum. In this study, we assess the effects of the curriculum - compared to a control condition consisting of usual lessons about smoking and safe sex – on behavior and determinants in the taught domains of smoking and safe sex and the untaught domains of alcohol and nutrition. As dietary behavior consists of a vast array of subbehaviors, two dietary subdomains are assessed: fruit consumption and breakfast consumption.

As we indeed observed transfer effects in the domains of alcohol, fruit and breakfast consumption in the effect study, we additionally examine whether mediation mechanisms can be found, which can explain the mechanism(s) by which the transfer effects are produced. This mediation study, addressing **research question 4**, is reported in **chapter 6**. Specifically, it is examined to what extent students report

learning a general principle, and to what extent these learning experiences mediate the intervention effects in the untaught domains.

Finally, in **Chapter 7** we present a summary of the project and its results, followed by a discussion of the project's strengths and limitations and the relevance for educational practice, theory and research. We conclude this thesis with recommendations for future research.