Optimizing the implementation of integrated health promotion packages

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An analysis in the context of intersectoral health policymaking in 34 Dutch projects of the governmental program Gezonde Slagkracht

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Optimizing the Implementation of Integrated Health Promotion Packages

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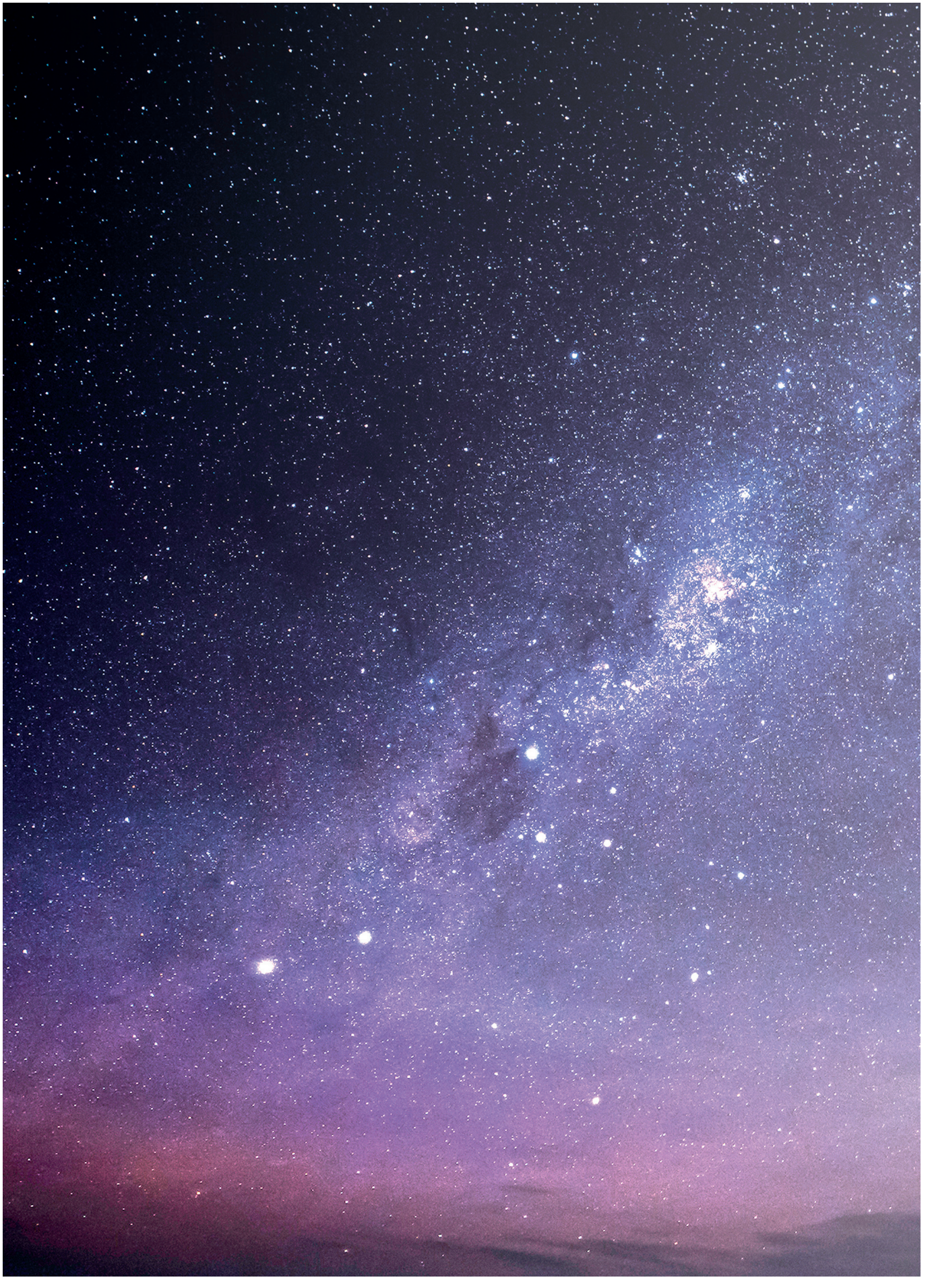
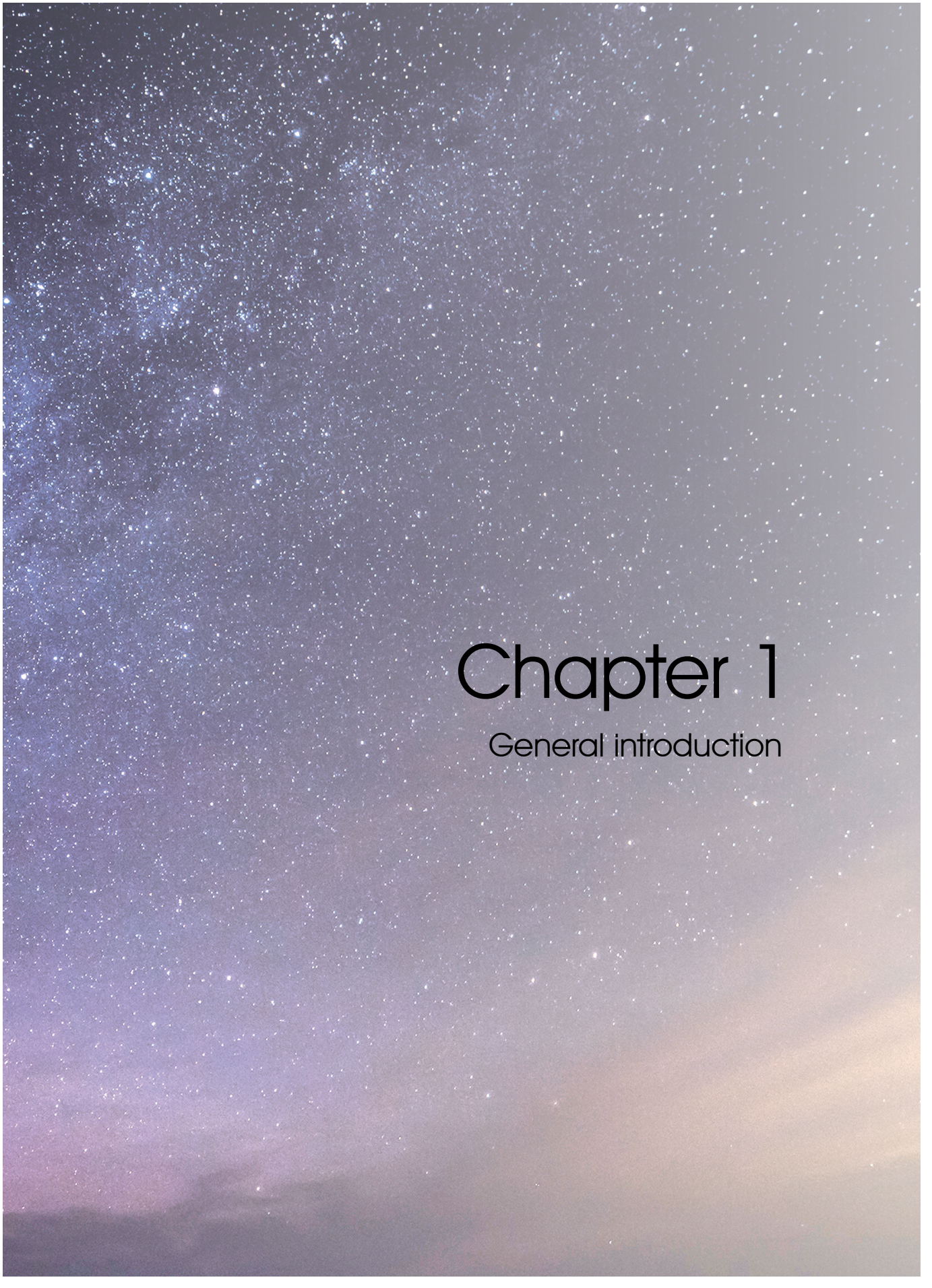




Chapter 1

General introduction

GENERAL INTRODUCTION

Brief outline general introduction

The introduction starts with defining the central problem of the dissertation. It is explained that effective health promotion requires intersectoral health policymaking and, in this context, the implementation of integrated health promotion packages that – preferably – include evidence-based interventions. This explanation reveals several knowledge gaps in implementation science that deserve further study. After presenting the aim of the dissertation, the research setting and the conceptual model for this dissertation are being described. The introduction closes with an overview of the studies included in this dissertation.

Problem definition

Intersectoral health policymaking

Countries worldwide are facing high economic and social burdens due to a pandemic of non-communicable diseases (Mayer-Foulkes, 2011; World Health Organization [WHO], 2018). These diseases are primarily caused by unhealthy behaviors, such as poor diet, sedentary behavior, and alcohol and drug abuse (Mayer-Foulkes, 2011; WHO, 2018). Unhealthy behaviors are considered to have a 'wicked' character (Rittel & Webber, 1973; Signal et al., 2012), which refers to the complex interactions between the personal and environmental behavioral determinants for which no easy solution exists (Australian Government, 2007; Sallis et al., 2008). 'Personal determinants' include an individual's motivation (e.g., knowledge and attitude) and capability (e.g., skills and self-efficacy) to perform health behaviors (Bartholomew et al., 2011; Michie et al., 2011). 'Environmental determinants' refer to structural factors, including the social, physical, economic and political determinants that shape the opportunities to carry out health behaviors (Bartholomew et al., 2011; Michie et al., 2011). In response to this 'wicked' character, experts often advocate a policy approach aiming at simultaneously addressing various personal and environmental behavioral determinants (Bartholomew et al., 2011; Bloch et al., 2014; Jackson et al., 2006; Storm et al., 2011), e.g., intersectoral health policymaking (Kickbusch & Gleicher, 2012; Smedley & Syme, 2000). Intersectoral health policy is regarded essential to realizing the desired structural and long-term improvements in public health (Clavier & De Leeuw, 2013; McQueen et al., 2012; Schmets et al., 2016).

Integrated health promotion packages

To achieve the coordinated action needed to address the different determinants of health behaviors, intersectoral health policy integrates complementary methods of change from different policy sectors (Bartholomew et al., 2011; Smedley & Syme, 2000).

That is, personal behavioral determinants may be effectively influenced by health education, while changing environmental behavioral determinants generally requires other strategies, such as regulation, facilitation, case finding and/or citizen participation (Bartholomew et al., 2011; De Leeuw, 2007; De Leeuw et al., 2014). Although health education is largely under the control of the health sector itself (Kickbusch & Gleicher, 2012; McQueen, et al., 2012), non-educational methods are generally controlled by other policy sectors (Kickbusch & Gleicher, 2012; McQueen et al., 2012). Therefore, intersectoral health policymaking would require the involvement of different policy sectors (Kickbusch & Gleicher, 2012; Krieger, 2001). First, such multi-sector involvement is deemed necessary in the policy networks in which the policy is being developed and decided about (Booher & Innes, 2002; Provan & Milward, 1995). Second, multiple sectors should be involved in the partnerships taking care for the implementation of integrated health promotion packages (Australian Government, 2007; Hunter, 2009). Here, 'integrated' means that such a package, or intervention mix, includes complementary methods of change (e.g., education and regulation), is situated in a variety of local implementation settings (e.g., schools and public places), and is targeted at both personal and environmental behavioral determinants (Bloch et al., 2014; Jackson et al., 2006; Storm et al., 2011). The diversity of the partnerships implementing such integrated health promotion packages (Bloch et al., 2014; Jackson et al., 2006; Kickbusch et al., 2008) would ensure the necessary collaborative action of a variety of partners that goes beyond the health sector (Clavier et al., 2012).

Implementing integrated health promotion packages

Although the relevance of intersectoral health policymaking has been widely stressed, in practice it remains difficult (Holt et al., 2017). First, involving a variety of partners and making intersectoral partnerships work have appeared to be very complex (Corbin et al., 2018; Shankardass et al., 2012). It often requires substantial time and managerial investments to start and maintain intersectoral collaborations (Axelsson & Axelsson, 2006; Clavier et al., 2012; Peters et al., 2017a). Such collaborations, for instance, tend to come across the challenge of identifying the right partners, existing cultural and structural barriers, and differences in the partners' perceptions of goals, procedures and success (Edvardsson et al., 2012; Varda & Retrum, 2012). Therefore, multi-sectoral partnerships might require investments like developing a shared mission, incorporating leadership, arranging technical assistance and support, monitoring communication, building trust, securing financial resources, making results matter, and evaluation and feedback for improvement (Corbin et al., 2018; Roussos & Fawcett, 2000).

Second, even in the presence of multi-sectoral policy and implementation networks, establishing integrated health promotion packages that address a variety of environmental determinants is not self-evident (Holt et al., 2017; Peters et al., 2016). For in-

stance, a review study on the impact of intersectoral action concluded that only a small minority of the partnerships evaluated by the primary studies addressed structural determinants of health (Ndumbe-Eyoh & Moffatt, 2013) such as physial, economical and political environments. Although intersectoral health networks may indeed support local health action addressing environmental determinants (Clavier et al., 2012), intersectoral health policy approaches still tend to favor smaller-scale interventions targeting personal behavioral determinants over broader initiatives addressing the structural environmental behavioral determinants (Clavier et al., 2012; Holt et al., 2017). This tendency was observed in a scoping review that concluded that only a minority of the evaluated government-centered intersectoral initiatives had managed to address structural determinants of health (Shankardass et al., 2012). Addressing environmental determinants may be hampered by both the absence of relevant partners in the policy and implementation networks (Bloch et al., 2014; Clavier et al, 2012) and the many barriers that intersectoral partnerships may encounter during the implementation of the integrated health promotion packages (Berman, 1981; Greenhalgh et al., 2004).

Implementing evidence-based interventions

In recent years, there has been increasing attention to the actual use of health promotion interventions in practice (Fixsen et al., 2005). Problems with their uptake include that intermediate users (e.g., the implementers in terms of health promotion professionals and policymakers) do not adopt or implement the available interventions, use these interventions only on a small scale, or do not implement them as intended by their developers (Dusenbury et al., 2003; Glasgow et al., 1999). As a result, health promotion interventions do not reach their potential public health impact (Chambers et al., 2013; Durlak & DuPre, 2008; Glasgow et al., 1999). This is in particular true for evidence-based interventions. Evidence-based practice in health promotion refers to the systematic process in which decisions and actions are made based on the best available evidence (McKibbon, 1998). In other words, such practice is about professionals and policymakers consciously choosing consciously for the implementation of interventions that have the best support for achieving the desired health-related outcomes. Such support may include that an intervention was built on theoretical insights from behavior change and practical experiences and/or that it was found to be effective in changing health behaviors in an evaluation study. As a consequence, promoting evidence-based practice is being considered an important vehicle to raise the impact of health promotion (Brownson et al., 2009; Faggiano et al., 2014; Speller et al., 2005). Hence, in intersectoral health policymaking, it is especially the implementation of evidence-based interventions that deserves attention.

To facilitate the uptake of evidence-based interventions, several tools have been developed (Milat et al., 2020; WHO & ExpandNet, 2010). The main objective of these

tools is to provide health promotion professionals and public health policymakers with the best practice according to available evidence. The providers of these tools collect the available evidence on interventions to share this in a web-based database (https://thecommunityguide.org/). In the Netherlands, such evidence-based practice is supported by the Dutch Recognition System (National Institute for Public Health and the Environment [RIVM], 2018). Part of the system is an intervention database that provides an overview of available health promotion interventions as well as the information underlying their quality, feasibility and effectiveness (https://www.loketgezondleven.nl/). While owners (e.g., health promotion institutes, Regional Public Health Organizations and universities) are invited to submit their interventions for recognition and inclusion in the database, health promotion professionals and public health policymakers are encouraged to adopt and implement such recognized interventions. Previous research revealed that the latter might be especially hampered by contextual mismatches, i.e., the perceived lack of information and support on whether evidence-based interventions fit or can be adapted to fit the unique implementation context of the intermediate user (Kok et al., 2017; Noordink et al., 2013; Van de Walle et al., 2014). This refers to the notion of intervention-context interactions, which is currently neither very well studied, nor properly understood (Greenhalgh et al., 2004).

Intervention-context interactions during implementation

Prevailing insights into implementation in health promotion underline that for a successful uptake the features of an intervention need to fit or can be adapted to the features of the context in which it is being implemented, or that, vice versa, for the intervention under consideration, during implementation the right contextual capacity is present or can be built (Damschroder et al., 2009; Evans et al., 2015; Greenhalgh et al., 2004). These two sides of the same coin are integrated in the complex systems perspective that implementation should be understood as the introduction of an intervention in a context with which it needs to interact (Hawe et al., 2009). Such a pattern would reflect the crucial areas where a specific intervention has to couple with a certain context as to perform its 'function' in terms of health improvements (Hawe et al., 2009; Hawe, 2015; Minary et al., 2018; Shiell et al., 2008). The presence of intervention-context interactions could mean that, depending on the nature of both the intervention and the context, during implementation particular patterns of key interaction points might arise (Hawe et al., 2009; Shiell et al., 2008). Identifying these patterns in such key intervention-context interaction points, which we like to call 'bottlenecks for implementation', could create opportunities to predict and intervene with implementation problems (Evans et al., 2015; Hawe et al., 2009). Better understanding such patterns could be helpful in distinguishing the usually limited number of factors that actually hamper the implementation of individual interventions (Darlington et al., 2018; Evans et al., 2015; Van der Kleij et al., 2016) from the 'hundreds' of potentially influential factors that are typically

produced by reviews of such implementation studies (Berman, 1981; Greenhalgh et al., 2004). Once identified, patterns in the 'bottlenecks for implementation' could, in turn, serve as the basis for the targeted implementation strategies that are deemed necessary to improve the uptake of interventions in health promotion policy and practice (Damschroder et al., 2009; Durlak & DuPre, 2008; Fleuren et al., 2004; Paulussen, 1994; Rogers, 2003).

Aim of the dissertation

This dissertation is dedicated to optimizing the implementation of integrated health promotion packages in local intersectoral health policymaking. All studies were carried out in the context of a governmental program on intersectoral health policymaking in Dutch municipalities and regions.

Research setting

The studies in this dissertation were conducted in the context of the Gezonde Slagkracht program (2009-2015; ZonMw, 2009). This governmental program was initiated by the Dutch Ministry of Health, Welfare and Sport, and provided municipalities with the opportunity to experiment with the development and implementation of intersectoral health policy on one or more of the following themes: overweight, alcohol and drug abuse and/or smoking. Dutch municipalities or alliances of municipalities (referred to below as projects) could apply for participation in the program. In the Netherlands, like in many other countries, municipal governments are responsible for (intersectoral) health policymaking at the local level (Atkinson et al., 2000; Storm et al., 2011).

Requirements for participation in the program were the appointment of a project leader who had to take a coordinating role in both the establishment of local partnerships and the implementation of integrated health promotion packages. The partnership networks were expected to involve a range of partners, from the health sector as well as the non-health sectors, and also private partners and citizens. Health promotion packages were expected to include different types of health promotion interventions in various local settings to address both personal and environmental health behavior determinants. Projects were additionally expected to adopt and implement evidence-based interventions from the national intervention database of the Dutch Recognition System (DRS) (https://www.loketgezondleven.nl/). The implementation of interventions was usually taken care of by one of the partners in the project (i.e., the implementer) and supported by one or more partner organizations (i.e., co-implementers working at co-implementing organizations).

The inclusion of projects in the governmental program was based on their level of experience with intersectoral health policymaking. New projects had no experience at

all with intersectoral health policy. Starting projects had developed a vision on intersectoral health policy but were lacking the knowledge on how to implement the approach. Vanguard projects had the most experience in intersectoral health policymaking, such as with implementing integrated health promotion packages and evidence-based interventions. Vanguard projects were supposed to serve as an example to the other projects by sharing their experiences with the intersectoral policy approach. These projects were also expected to submit the intervention that they had implemented for recognition to the DRS.

Thirty-four projects were included in the governmental program. The provided financial support ranged from €75,000 to €250,000 per project. The amount of support depended on the duration of the project, which varied from two to five years, and the level of experience with intersectoral health policymaking. The projects were required to match the granted sum. The financial support was meant to cover the employment of the project leader and – in part – the implementation of the health promotion interventions.

Professional support included workshops on national regulations affecting public health policy, interactive policy development, and building and strengthening intersectoral collaboration. Projects were also offered workshops on the selection of evidence-based health promotion interventions, such as on how to use the DRS intervention database. Projects could also make use of additional manpower and/or vouchers to support the submission of interventions to the DRS database. Additional coaching for intersectoral health policymaking was provided on an individual basis and the developments in the different projects were shared in a monthly online newsletter.

Conceptual model

The studies in this dissertation depart from a well-known framework for implementation (Bessems et al., 2022; Fleuren et al., 2004; Paulussen, 1994). The framework distinguishes three stages in an implementation process: adoption, implementation and continuation of an intervention. Here, intervention refers to the integrated health promotion intervention packages that were being implemented by the municipal projects participating in the Gezonde Slagkracht program. The extent to which these intervention packages were adopted, implemented and continued as a result of the intersectoral health policymaking in the various projects served as an outcome in three of the studies in this dissertation.

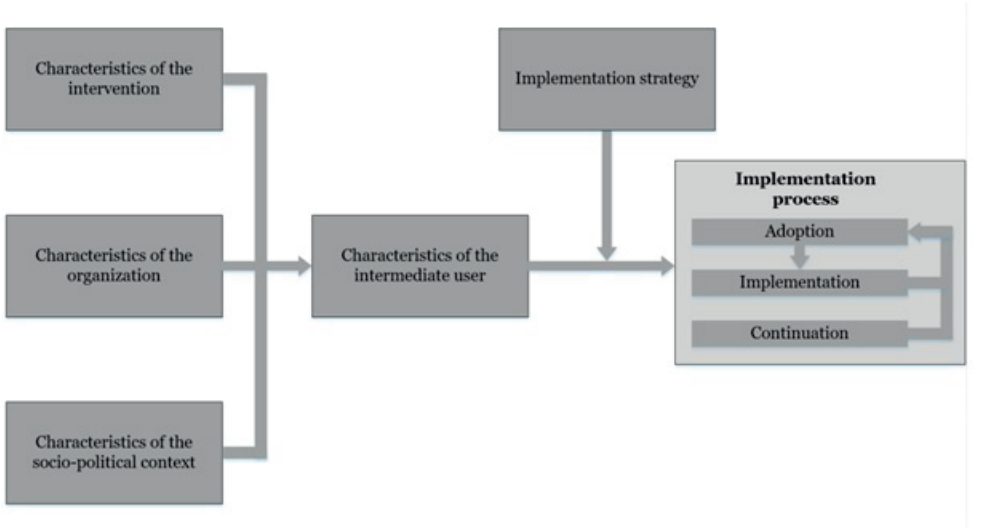


Figure 1. Determinants of Implementation model (DIM model) (Bessems et al., 2022 based on previous work of Fleuren et al., 2004 and Paulussen, 1994)

The framework additionally indicates that the implementation process is influenced by four categories of conditions. The most proximal category includes the characteristics of the intermediate user. Here, the intermediate user refers to the implementers of the intervention packages and, against the background of intersectoral health policymaking, also to the co-implementers (i.e., professionals and or citizens). Examples of such conditions are the perceived knowledge, skills and motivation of both these intermediate users. According to the framework, this category mediates the influence of three distal categories of conditions on the implementation process.

The first distal category of conditions involves the characteristics of the intervention. Here, these conditions include both objective and subjective features. The objective features refer to an intervention's health theme, its strategies of change and the health behavioral determinants that it addresses. Another objective feature is whether or not an intervention has been recognized as evidence-based. The subjective features refer to perceptions and are numerous. They include, for instance, the perceived accessibility of an intervention for the target group and its expected adaptability to the implementation context.

The second distal category of conditions are the perceived features of both the implementer's and the co-implementers' organizations. Examples of such conditions are the perceived presence of organizational support for the health theme and the financial resources that are expected to be available from an organization.

The third distal category of conditions are the characteristics of the socio-political context. Here, these too include both objective and subjective features. The objective features refer to the implementation setting, i.e., the location in which an integrated health promotion package is actually being implemented. These settings include, among others, the school setting, community buildings and the home setting. The subjective features of the socio-political context include, for instance, the perceived presence of administrative support for the interventions in the packages and the extent to which these are expected to fit the political agenda.

A final element of the framework is the implementation strategy. Implementation strategies are the actions taken to enhance the adoption, implementation, and continuation of interventions (Powell et al., 2015). The framework expects that the influence of the conditions on the innovation process will be moderated by the implementation strategy that is being employed. The implementation strategies that are subject of the studies in this dissertation are based on insights from the fields of intersectoral health policymaking and evidence-based health promotion.

The conceptual model for this dissertation additionally includes the notion of 'contextual fit'. This notion reflects the assumption that during implementation an intervention needs to connect to the context in which is it being implemented to achieve its intended function in terms of improved health (Hawe et al., 2009; Hawe, 2015; Minary et al., 2018; Shiell et al., 2008). Such an intervention-context interaction may require either adaptation of the intervention, or capacity building in the context, or both. This means that all elements of the framework for implementation may be involved in attaining the necessary contextual fit (Damschroder et al., 2009; Evans et al., 2015; Greenhalgh et al., 2004).

Studies in this dissertation

The first three studies included in this dissertation each assessed the added value of an implementation strategy for implementing integrated health promotion packages in the context of intersectoral health policymaking. Their findings gave rise to a fourth study that, starting from intervention-context interactions, more closely examined the conditions that such implementation strategies might take into account. For an overview of the studies, see Table 1.

Chapter 2

The study presented in Chapter 2 started from the hypothesis that involving more *and* more diverse partners in the adoption and implementation of interventions would result in intervention packages that have a more integrated composition (Bloch et al., 2014; Jackson et al., 2006; Kickbusch et al., 2008). Despite the investments needed to

involve the right partners and manage diversely composed implementation networks (Axelsson & Axelsson, 2006; Clavier et al., 2012; Koelen et al., 2012; Peters et al., 2017a), there was only limited empirical support for the added value of such multisectoral partnerships in this respect (Clavier et al., 2012). This subject matter was further examined in an observational longitudinal multiple-case study. The main research question was whether partnership diversity in intersectoral policymaking matters for the composition of the health promotion intervention packages that are being adopted and implemented. First, the study describes the diversity of the adoption and implementation partnerships in the Gezonde Slagkracht projects. Next, it reports the composition of the health promotion intervention packages that were being adopted and implemented. Finally, the study presents the associations between partnership diversity and intervention package composition.

Chapter 3

The hypothesis for the study described in Chapter 3 stated that involving more sectors in intersectoral health policy networks would be associated with implementing more integrated health promotion intervention packages. Due to the increasing complexity of multisectoral networks (Klijn & Koppenjan, 2016), other important conditions might be the active networking by the project leader, the active participation of the network actors, and the presence of trust in the network (Bryson et al., 2006; Klijn & Koppenjan, 2016). As the interplay of these conditions was unknown (Carey et al., 2014; Roussos & Fawcett, 2000), this was examined in an observational cross-sectional study. The main research question was under which conditions a policy network – whether it is multi-sectoral or not – is able to implement integrated intervention packages in term of including a fair share of strategies addressing environmental determinants of health behavior. The study first describes the composition of the policy networks of the project leaders, and the levels of active networking, active participation and trust in these networks. It then reports on the composition of the implemented intervention packages. The study finally presents those combinations of conditions that – in the presence or absence of a multisectoral network – were necessary and/or sufficient for the implementation of integrated health promotion intervention packages.

Chapter 4

The study reported on in Chapter 4 started from the premise that evidence-based practice is an important vehicle to improve the effectiveness of health promotion (Brownson et al., 2009; Faggiano et al., 2014; Speller et al., 2005). However, against the background of intersectoral health policymaking, the uptake of evidence-based health promotion interventions might be hampered by – actual or perceived – mismatches with the characteristics of the implementation context (Kok et al., 2017; Noordink et al., 2013; Van de Walle et al., 2014). As it was unclear how the Dutch Recognition System (DRS) served

as a tool in this respect, this subject matter was further explored in a mixed-methods study. The main research question was which role the DRS, including its database with certified interventions, played in the uptake of evidence-based interventions. The study first describes whether and when the Gezonde Slagkracht project leaders visited the DRS database. Next, it reports which percentage of the interventions, that were being considered, adopted, implemented and continued in the projects, originated from the database, and how many interventions were submitted for inclusion in the database. Finally, the study presents the project leaders' reasons for making use or not of the DRS, and the role of the perceived contextual fit of recognized interventions in that respect.

Chapter 5

The study presented in Chapter 5 started from the complex systems perspective that implementation should be understood as the introduction of an intervention in a context with which it needs to interact to achieve its intended effects (Hawe et al., 2009). Both the study hypotheses related to the presence of – and regularities in – such intervention-context interactions. These could point at bottlenecks for implementation, and thus create opportunities to predict and intervene with implementation problems (Evans et al., 2015; Hawe et al., 2009). As empirical studies on intervention-context interactions are important but scarce (Greenhalgh et al., 2004), they were examined in a cross-sectional observational study. This study focused on the interventions systems (i.e., combinations of interventional and contextual elements) that were most frequently present in the Gezonde Slagkracht projects. The main research question was whether similar systems (i.e., that addressed the same health theme with an identical intervention strategy in a comparable setting) would come across a similar set of bottlenecks for implementation. The study first describes the interventions systems in the projects. It then reports on the conditions hampering implementation in these systems and on the regularities in these bottlenecks. Finally, the study explains to what extent these bottlenecks were to be expected due to the interventional and/or the contextual components of the intervention system.

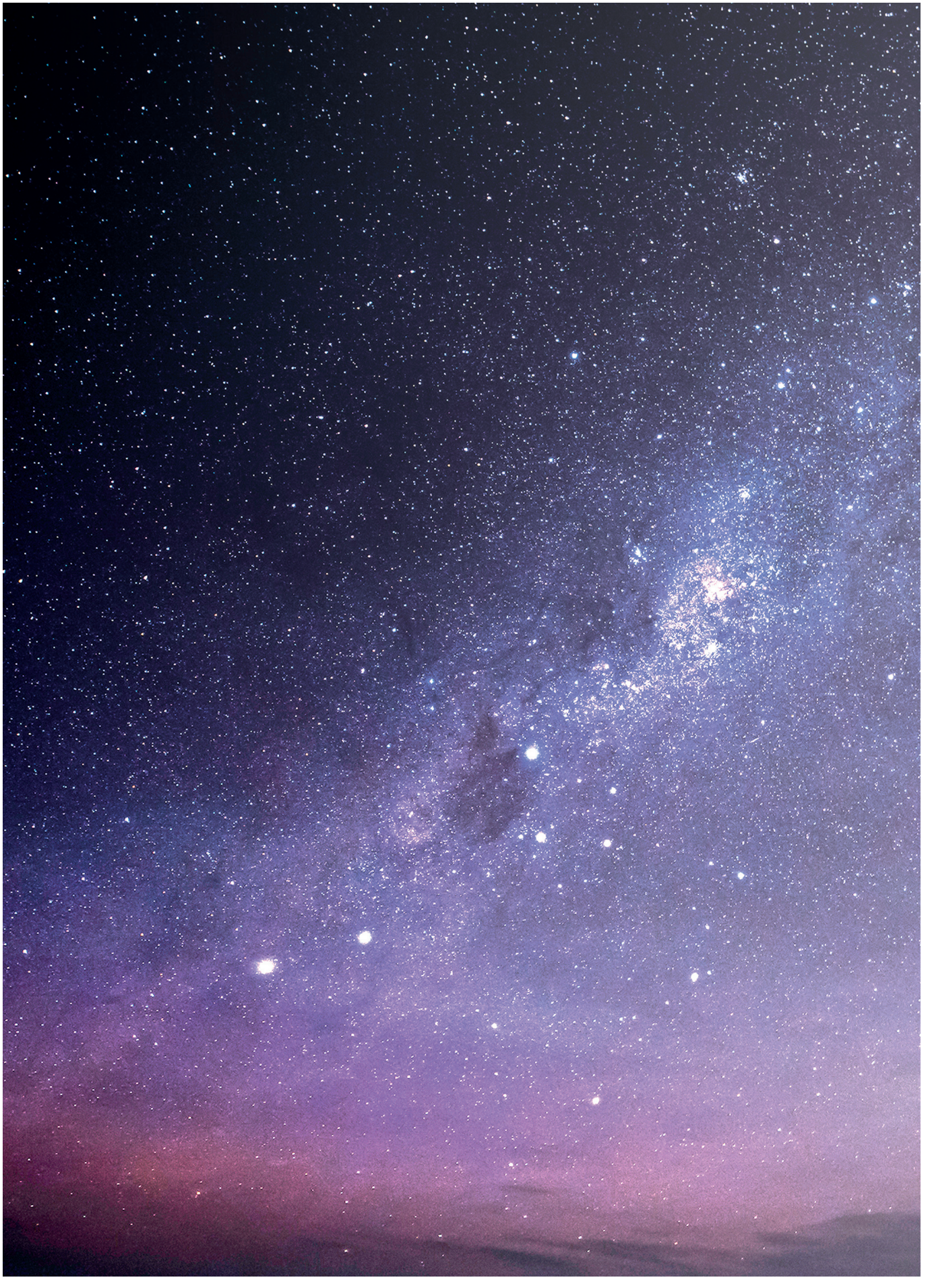
Methodology

Three studies in this dissertation were observational multiple-case studies (Table 1). One of these had a longitudinal design, the other two were cross-sectional in nature. The fourth study was an observational cross-sectional mixed-methods study. Characteristic for all studies were the – relatively – large numbers of participating projects and project leaders, and large to very large numbers of included implementers and interventions. In all studies, data was collected from various data sources using multiple data collection instruments, while each study used a different data analysis technique to assess the study outcomes and to answer the main research question.

Table 1. Overview of studies in this thesis

Chapter	Research question	Design	Sample	Data collection	Data analysis	Outcomes
Studies on implementation strategies						
2	Does partnership diversity during adoption and implementation of interventions matters for the composition of health promotion intervention packages?	Observational longitudinal multiple-case study	31 projects; 31 project leaders; 152 implementers; 302 interventions	Questionnaires (paper and pencil) Project proposals	Descriptive analyses Association crosstabs	Composition of the adoption and the implementation networks Composition of the health promotion intervention packages Association between partnership diversity and composition of the intervention packages
3	Which conditions enable policy networks – being multi-sectoral or not – to implement interventions that address environmental determinants of health and health behavior?	Observational cross-sectional multiple-case study	29 projects; 29 project leaders; 240 network actors; 158 interventions	Questionnaires (web-based and paper and pencil)	Descriptive analyses Fuzzy set Qualitative Comparative Analysis	Composition and networking characteristics of the policy networks of the project leaders Composition of the health promotion interventions in terms of strategies addressing environmental determinants Combinations of necessary and/or sufficient conditions for policy networks to implement integrated health promotion intervention packages

Chapter	Research question	Design	Sample	Data collection	Data analysis	Outcomes
Studies on implementation strategies						
4	What role does the Dutch Recognition System (DRS) play in the adoption, implementation and continuation of evidence-based interventions in the context of intersectoral health policymaking?	Observational cross-sectional mixed-methods study	34 projects; 34 project leaders; 158 implementers; 714 considered, 657 adopted, 489 implemented and 127 continued interventions	Questionnaires (paper and pencil) Face-to-face and telephone qualitative interviews Project proposals	Descriptive analyses and some Kruskal-Wallis and Mann-Whitney tests (questionnaires) Structured content analysis (interviews)	Visits that project leaders paid to the DRS database Percentages of interventions (being considered, adopted, implemented and continued) that originated from the DRS database Number of interventions that were submitted for inclusion in the DRS database Reasons project leaders gave for making use or not of the DRS database
Studies on conditions for implementation						
5	Which intervention-context interactions – and patterns therein – occur in the various intervention systems, and how are these 'bottlenecks for implementation' associated with the intervention systems' characteristics?	Observational cross-sectional multiple-case study	30 projects 120 implementers 243 interventions	Questionnaires Project proposals	Descriptive analyses Qualitative comparisons	Characteristics of frequently present intervention systems (health theme, strategy of change, implementation setting) Conditions hampering implementation in these systems and patterns in these bottlenecks for implementation Whether or not the observed bottlenecks can be expected based on the characteristics of the intervention system in which they occurred



Chapter 2

Does partnership diversity in intersectoral policymaking matter for health promoting intervention packages' composition?

A multiple-case study in the Netherlands

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ABSTRACT

Intersectoral policymaking to improve public health includes integrated health promotion intervention packages that address a variety of health behavior determinants. The involvement of different partners is assumed to be necessary to implement such integrated packages. We examined how partnership diversity was associated with the composition of intervention packages implemented in Dutch municipalities.

In a longitudinal multiple-case study (2012-2014), we collected questionnaire data among 31 project leaders and 152 intervention implementers in 31 (alliances of) municipalities. Package composition was assessed in terms of intervention strategies, implementation settings and targeted behavioral determinants. Partnership diversity during the adoption and implementation phases was assessed in terms of the actors and sectors, as well as private partners and citizens involved. The association between partnership diversity and package composition was examined using crosstabs.

Almost all packages integrated multiple strategies, but mostly education, facilitation and case finding, in multiple, but mostly health and public settings, such as schools. They targeted diverse behavioral determinants, but typically personal and social environmental factors. A variety of partners from multiple sectors was involved, during both adoption and implementation of the packages. However, primarily partners from the health, welfare and education sectors were involved. More partnership diversity, especially during implementation, was associated with more integrated intervention packages.

In intersectoral policymaking, investment in diversely composed partnerships seems worthwhile for implementing integrated intervention packages. However, investments in other conditions, like framing health issues and network management, are also needed to make environmental health behavioral determinants the object of health promotion.

INTRODUCTION

Countries worldwide are facing high economic and social burdens due to a pandemic of non-communicable diseases (Mayer-Foulkes, 2011; WHO, 2018). These diseases are primarily caused by unhealthy lifestyle behaviors (e.g., poor diet, sedentary behavior, and alcohol and drugs abuse) (Mayer-Foulkes, 2011; WHO, 2018) and have a 'wicked' character (Rittel & Webber, 1973; Signal et al., 2012). This wicked character refers, among other things, to the complex interactions between personal (e.g., attitudes, skills, motivation) and environmental behavioral determinants (e.g., social, physical, economic and political) (Australian Government, 2007; Sallis et al., 2008). To effectively promote health, experts therefore often advocate intersectoral health policy (Kickbusch & Gleicher, 2012; Smedley & Syme, 2000). In essence, such a policy integrates complementary policy strategies from different policy sectors as to achieve the coordinated action needed to address the variety of determinants underlying health and health behavior (Smedley & Syme, 2000).

In many countries, including the Netherlands, it is local governments who are responsible for intersectoral health policymaking at the local level (Atkinson et al., 2000; Storm et al., 2011). Preferably, this would result in the implementation of 'integrated health promotion (HP) packages' (Australian Government, 2007; Hunter, 2009). Here, 'integrated' means that these packages are composed of complementary intervention strategies (e.g., education and regulation), are situated in a variety of local settings (e.g., schools and public places), and are targeted at both personal and various types of environmental behavioral determinants (Bloch et al., 2014; Jackson et al., 2006; Storm et al., 2011). Such packages are assumed to require diverse partnerships (Bloch et al., 2014; Jackson et al., 2006; Kickbusch et al., 2008), as to ensure the necessary collaborative action of a variety of partners that goes beyond the health sector (Clavier et al., 2012). As part of intersectoral policymaking, this 'partnership diversity' is expected to be needed both when the decisions to adopt interventions are made (i.e., the adoption phase) and when the target population is actually exposed to interventions (i.e., the implementation phase) (Pentz, 2004; Saxe et al., 1997; Valente et al., 2007).

Take for example an integrated HP package to reduce alcohol abuse among young people. Such a package may include regulatory measures, such as age limits for buying alcohol, which should be adopted by councilors, and implemented by both public security officials and alcohol distributors. The same HP package may include educational strategies, to inform young people about the harmfulness of alcohol, which should be adopted by both school directors and parents' councils, and implemented by teachers. This simplified example illustrates the common idea that both partnership diversity and integrated intervention packages are conditional for intersectoral health policy.

Although the relevance of intersectoral health policymaking has been widely stressed, in practice it remains difficult (Holt et al., 2017). For example, involving a variety of partners as well as making intersectoral partnerships work have appeared to be very complex (Corbin et al., 2018; Shankardass et al., 2012). It often requires substantial time and managerial investments to start and maintain intersectoral collaborations (Axelsson & Axelsson, 2006; Clavier et al., 2012; Peters et al., 2017a), due to, for instance, cultural and structural barriers, as well as differences in the partners' perceptions of goals, procedures and success (Edvardsson et al., 2012; Varda & Retrum, 2012). In search of how to deal with these barriers, a review study found that positive partnership processes tend to include various core elements, such as developing a shared mission, incorporating leadership, monitoring communication, building trust, balancing roles and structures depending upon mission, and evaluation for improvement (Corbin et al., 2018).

Despite the required investments, there is only limited empirical support for the assumed positive relationship between partnership diversity and the realization of integrated HP packages. One qualitative multiple-case study found that intersectoral health networks may indeed support local health action addressing environmental determinants (Clavier et al., 2012). However, two other multiple-case studies on intersectoral programs found that, despite the program's intentions, even in the presence of a variety of partners establishing integrated HP packages that address a variety of environmental determinants is not self-evident (Holt et al., 2017; Peters et al., 2016). These contrasting findings may illustrate the conclusion of another review, that only a minority of the evaluated government-centered intersectoral initiatives had managed to address structural determinants of health (Shankardass et al., 2012). As most of the studies in this review did not provide much documentation (Shankardass et al., 2012), it is not surprising that a third review particularly observed a paucity of research examining the relationship between intersectoral partnership processes and objective outcome measures (Corbin et al., 2018). For example, as evidence of a partnership's impact, such as health policies developed and health promotion programs implemented, is difficult to collect, quantitative outcomes like these were not assessed in the evaluation of partnerships in the WHO Healthy Cities network (Lipp et al., 2010).

Another limitation of the available evidence is that the scarce studies that did examine the relationship between partnership processes and outcomes did not differentiate between different phases in the process of realizing HP interventions. Therefore, it is currently unclear when partnership diversity would be most important: when adoption decisions are made about the composition of the HP packages or when such packages are implemented in practice (Van der Kleij et al., 2015; Varda & Retrum, 2012). We argue that the investments required, the difficulties engaged and the uncertainty of the

evidence available, warrant further – and also quantitative – study of the premise that partnership diversity contributes to the implementation of integrated HP packages.

To determine whether it is indeed worth continuing the challenging 'endeavor' of involving diverse partners in local intersectoral health policymaking, we aimed to clarify the following research question: 'Does partnership diversity matter for the composition of intervention packages implemented?' To answer this question, we used quantitative data from health policy programs in Dutch municipalities to assess: (1) the composition of the HP packages in terms of the strategies, settings, and targeted behavioral determinants of the interventions, (2) partnership diversity during the adoption and implementation phases, in terms of the partners and sectors involved, as well as the involvement of private partners and citizens, and (3) the association between partnership diversity during both the adoption and implementation phase and the composition of the packages actually implemented.

METHODS

Setting

The Gezonde Slagkracht program (Decisive Action for Health program; 2009-2015) was a program of the Dutch Ministry of Health, Welfare and Sport (ZonMw, 2009). The program gave municipalities the opportunity to experiment with intersectoral health policymaking over a period of 24 to 48 months on one or more of the following themes: nutrition, physical activity, alcohol, drugs, and smoking. The program could be characterized as a procedural program (Clavier et al., 2012), i.e., a governmental tool that determines guidelines and provides resources, but no specific prescriptions on the content. Municipalities could apply for participation in the program. The requirements included the appointment of a municipal project leader who had to take a coordinating role in both the establishment of local partnerships and the implementation of integrated HP packages. Partnerships were expected to involve a wide range of partners, from the health sector as well as the non-health sectors, and also private partners and citizens. HP packages were expected to include different types of HP interventions in various local settings as to address both personal and environmental health behavior determinants. The ministerial program provided financial support, ranging from 75 000 to 250 000 euro per project, to cover the appointment of the project leader and the implementation of HP packages. Additional professionals support offered by the ministerial program included workshops on national regulations affecting public health policy, interactive policy development, implementing evidence-based interventions, and policy continuation.

Study design

Data were collected as part of a longitudinal multiple-case study among 33 out of the 34 municipalities or alliances of municipalities that participated in the program (referred to below as projects), as one municipality prematurely ended its participation. Data collection took place at different points in time during the 2012-2014 period. Each project was approached twice a year and invited to complete two data collection instruments. However, due to the variety in the starting and end dates of projects, and taking into account the different rates of progress of the projects (e.g., delay in decision making or implementation), the number of times that data were collected differed between projects.

The study was exempt from ethical review according to prevailing Dutch standards because the study was conducted among adults, considered to be low risk, participation was voluntary, and completion of the questionnaires was considered to be equivalent to assent (CCoRIH, 2014).

Data collection instruments

To capture the composition of the packages and partnership diversity, two questionnaires were developed: one for project leaders and one for each person with the prime responsibility for the implementation of at least one intervention (i.e., prime implementers). Project leaders who were also prime implementers received both questionnaires. After pretesting, the questionnaires were sent in printed form by postal mail and as Word documents by e-mail, and could be completed handwritten or electronically.

The 33 *project leaders* were invited to fill in the questionnaire in April of 2012, 2013, and 2014. Questions relevant for the current study addressed: (1) characteristics of the project leader (years of working experience, name of organization), (2) confirmation of the project's health theme(s) and target group(s) as derived from the project proposal, (3) partners involved in the decisions to adopt interventions over the previous year, (4) the number and names of interventions implemented over the previous year, and (5) the prime implementers of these interventions.

If project leaders did not return the questionnaire, they were reminded three times: twice by e-mail and once by phone. When project leaders returned an incomplete questionnaire, they were approached by phone to clarify or complete their answers. Project leaders were also asked to send an announcement e-mail to the indicated prime implementers in their project including a request to participate in the study. In this phase, two projects refused permission to approach prime implementers (e.g., for reasons of time investment), and were therefore excluded from data analyses.

One hundred and ninety-five *prime implementers* for whom correct contact information was available were asked by the research team to complete the questionnaire for each of their interventions separately. A first set of open questions addressed the characteristics of the prime implementer (e.g., years of work experience, name of their organization). Regarding the intervention, a second set of open questions asked the prime implementer to concisely describe the intervention's aim, content and implementation setting. Next, a pre-structured question asked to tick off the behavioral determinants that the intervention addressed (i.e., personal determinants and/or determinants in the social, physical, political and/or economic environment). An explanation for each of these categories was provided in the questionnaire. Finally, an open question asked the prime implementers to list which other partners were involved during implementation.

When implementers did not return the questionnaire, reminder e-mails were sent twice. If a non-responding implementer was responsible for more than one intervention, they were also reminded by telephone. We encouraged implementers to ask colleagues to help with filling in the questionnaire(s). We also offered to help by filling in the questionnaire(s) together during a phone call. A total of 38 out of the 85 (44.7%) implementers made use of the latter option, especially those who had to report more than one intervention.

Data processing

To prepare for data analysis, we first classified the answers to the open questions about the intervention and the partners involved. The strategies employed in an intervention were retrieved from the description of its aim and content, and categorized into (Eldredge-Bartholomew et al., 2016): education (e.g., school learning module), regulation (e.g., legislation regarding the sale of alcohol products in sports cafeteria's during youth activities), facilitation (e.g., environmental or organizational changes such as new play gardens, supplying sports activities or materials), citizen participation (e.g., citizens organizing a walking event), and case finding (e.g., spotting drunk youngsters in nightlife). The setting(s) were categorized into (Poland et al., 2000): school or preschool, sports facility, outdoor public site (e.g., playgrounds, nature areas), home (including websites to be consulted at home), health or welfare building (e.g., hospital, welfare organization, addiction center), public building (e.g., library, community centers), and commercial building (e.g., supermarkets, bars, restaurants). The partners involved were classified into the following sectors: municipal government organization (e.g., policy employees from various departments), education, sports, welfare, public health (e.g., regional public health organizations), primary care (e.g., addiction institutes), secondary care (e.g., hospitals), cultural/recreational/social (e.g., community centers), transportation and safety (e.g., police), bars and restaurants, and other businesses (e.g., retail stores, supermarkets). In addition to the sectors, partners were also categorized as private (for-profit market organizations) or non-profit, and as citizen group or not. The types of

behavioral determinants targeted by the interventions were primarily derived from the pre-structured question on this topic. If the description of the aim and content of the intervention revealed that other determinants were being addressed, this information was merged with that of the pre-structured question.

Data analysis

At *intervention level*, descriptive analyses were used to describe the characteristics of the interventions (themes, target groups, strategies, settings, and targeted behavioral determinants) and partner involvement and partnership diversity during intervention implementation (sectors involved, number of different partners and sectors involved, and involvement of private and citizen partners).

To enable analyses of the *intervention packages*, we aggregated the data that were collected at the intervention level to the level of projects. Descriptive analysis was also used to describe the characteristics of the intervention packages, the composition of the packages in terms of the number of interventions, and the numbers of different strategies, settings and targeted behavioral determinants, as well as partnership diversity during the phases of adoption and implementation. The association between partnership diversity during the adoption and implementation phases and the composition of the intervention packages was assessed using crosstabs, crossing the numbers of different strategies, settings, and targeted behavioral determinants with the numbers of different partners and sectors involved and the percentage of projects with private partners and citizen partners. Additionally, the numbers of different strategies, settings, and targeted behavioral determinants were crossed with the total number of interventions per project. We used IBM SPSS Statistics for Windows (Version 21.0 Armonk, NY: IBM Corp) for data analyses.

RESULTS

Response

Depending on the start and end date of their projects, the project leaders either returned one (n=1), two (n=16) or all three annual questionnaires (n=14). In the 31 projects, 209 prime implementers implemented 488 interventions. The 195 implementers for whom we possessed correct contact information were responsible for the implementation of 423 interventions. Data on 315 of these interventions (74.0%) were returned by 158 of the invited implementers (response rate 81.0%). Thirteen questionnaires returned by six implementers were excluded from data analysis since less than 20% of the questionnaire items had been completed. In the end, data on 302 of the initial 488 interventions (61.9%) from 152 of the initial 209 implementers (72.7%) were available. Between projects, the response rate among the implementers varied, ranging from 28.6% to 100%.

Characteristics of the project leaders and implementers

Most project leaders and prime implementers were female (Table 1). Some project leaders and implementers were in the early stages of their careers (e.g., 2 years of work experience), while others had extensive work experience (up to 40 years). On average, project leaders had worked for 10.9 years, and implementers for 10.0 years. A majority of the project leaders worked for a municipal government organization. Almost half of the implementers worked at a health organization (e.g., public health service).

Table 1. Characteristics of the respondents (31 project leaders and 152 implementers from 31 projects)

	N	Percentage or mean (SD)
Project leaders		
Female (%)	28	90.3
Mean years of work experience		10.9 (8.8) [2-40]
Type of organization (%)		
Municipal government organization	18	58.1
Regional Public Health Organization	11	35.5
Other[a]	2	6.5
Implementers		
Female (%)	110	72.4
Mean years of working experience (Valid N=143)		10.0 (7.7) [0-35]
Type of organization (%)		
Municipal government organization	21	13.8
Health organization[b]	71	46.7
Non-health organization[c]	57	37.5
Other[d]	3	2.0

[a] = university, high school, welfare organization

[b] = Regional Public Health Services, addiction care organizations, homecare services, dieticians, general practitioners

[c] = (pre)schools, sports organizations, welfare and citizens organizations, research institutions, libraries, police stations

[d] = intervention/project organizations, self-employed

Characteristics of the individual interventions

Most of the individual interventions aimed to increase physical activity or reduce alcohol abuse, and tried to reach youth aged between 4-18 years as well as their parents (Table 2). In the individual interventions, education was the most prevalent strategy, while regulation and citizen participation were least often employed. Almost half of

all interventions were implemented in the school or preschool setting, and a majority targeted personal (e.g., knowledge) and social environmental behavioral determinants (e.g., social norms within families). The physical (e.g., availability of playgrounds in the neighborhood), economic (e.g., costs of alcohol) and the political (e.g., legislation regarding the sale of alcohol products in sports cafeterias during youth activities) environmental behavioral determinants were less often targeted.

Partner involvement in the individual interventions

On average, four different partners from 2.68 different sectors were involved during the implementation of an intervention (Table 2). There was a minority of interventions in which just one partner was involved during implementation. The most frequently involved partners were from the municipal government (i.e., primarily employees from the departments of public health, education and welfare), and from the education, public health and primary care sector. Partners from the secondary care sector and bars and restaurants and other businesses were least often involved. Approximately 60% of the interventions involved no private or citizen partners.

Table 2. Individual interventions: characteristics and partners involvement (N=302)

	N	Percentage or mean (SD) [range]
Characteristics of individual interventions		
Theme* (%; N=292)	100	34.2
Nutrition	124	42.5
Physical activity	120	41.1
Alcohol	48	16.5
Drugs	32	11.0
Smoking		
Intended target group* (%; N=292)		
Age groups:	15	5.1
0-4 years	122	41.8
4-12 years (primary school)	101	34.6
13-18 years (secondary school)	59	20.2
Adults	111	38.0
Specific groups:	44	15.1
Parents	27	9.2
Low socio-economic status	5	1.7
Ethnic groups		
Pregnant women		
Strategy* (%; N=292)		
Education	210	71.9
Regulation	37	12.7
Facilitation	87	29.8
Citizen participation	22	7.5
Case finding	49	16.8

Table 2. Individual interventions: characteristics and partners involvement (N=302) (*continued*)

	N	Percentage or mean (SD) [range]
Setting* (%; N=289)		
School/Preschool	116	40.1
Sports facility	47	16.3
Outdoor public site	57	19.7
At home	27	9.3
Health or welfare building	42	14.5
Public building	67	23.2
Commercial building	34	11.8
Targeted behavioral determinant* (%; N=291)		
Personal	255	87.6
Social environment	171	60.0
Physical environment	81	28.3
Political environment	38	13.3
Economic environment	22	7.7
Partners involvement in implementation		
Two or more partners involved (%; N=288)	242	84.0
Mean number of partners (N=288)		4.0 (3.7) [1-43]
Mean number of different sectors (N=286)		2.7 (1.5) [1-8]
Sectors* (%; N=286)	141	49.0
Municipal government organization	115	39.9
Education	78	27.1
Sports	82	28.5
Welfare	107	37.2
Public health	117	40.6
Primary care	16	5.6
Secondary care	48	16.7
Cultural/recreational/social	35	12.2
Transportation and safety	13	4.5
Bars and restaurants	19	6.6
Other businesses		
Private partners involved (%; N=288)	117	40.6
Citizens involved (%; N=288)	113	39.2

*more than one answer was allowed

Composition of the intervention packages

The intervention packages that were implemented each included between 1 and 36 different interventions, with an average of about 17 interventions (Table 3). Nutrition, physical activity and alcohol were more often themes in intervention packages than drugs and smoking. The number of intervention strategies varied between 1 and 5, and on average 3.45 different strategies were employed in the packages. In the intervention

packages, education, facilitation, and case finding were most frequently employed, while regulation and citizen participation were employed less often. The number of different settings in which packages were implemented ranged from 1 to 7, with an average of 4.45. Most packages included interventions that were implemented in school or preschool settings, outdoor public sites, health or welfare buildings, and public buildings. Interventions were less often implemented at home and in commercial buildings (e.g., supermarkets). The packages targeted an average of 3.48 different behavioral determinants, the numbers ranging between 2 and 5. None of the packages targeted just one determinant. The most commonly targeted behavioral determinants were personal factors and factors in the social environment. Factors in the economic and political environments were least often targeted.

Partnership diversity during adoption

An average of approximately 12 different partners from about 6 different sectors was involved when decisions to adopt interventions were made (Table 3). In all projects, at least 5 different partners from at least 4 different sectors were involved during this adoption phase. Partners from the municipal government, welfare, public health, primary care, and education sectors were involved in most projects. Partners from the secondary care sector and bars and restaurants and other businesses were least often involved. A majority of the projects involved private partners and citizens in adoption decisions, but they constituted a small percentage of the total number of partners.

Partnership diversity during implementation

During the implementation of the packages, an average of about 19 different partners was involved, from about 7 different sectors (Table 3). In this implementation phase, projects involved at least 5 and up to 42 partners, from at least 3 to a maximum of 10 different sectors. Partners from the municipal government organization and the education, welfare, public health and primary care sectors were most often involved, whereas partners from the secondary care sector and bars and restaurants and other businesses were least often involved. Private partners and citizens were involved in the implementation of almost all the packages, but again constituted a small percentage of the total number of partners.

Table 3. Intervention packages: characteristics and composition, and partners involvement and diversity during the adoption and implementation phases (N=31)

	N	Percentage or mean/ median (SD) [range]
Characteristics of the intervention packages		
Mean number of interventions implemented		16.8/14.0 (11.1) [1-36]
Theme* (%)		
Nutrition	19	61.3
Physical activity	20	64.5
Alcohol	18	58.1
Drugs	14	45.2
Smoking	15	48.4
Target group* (%)		
Age groups:	9	29.0
0-4 years	24	77.4
4-12 years (primary school)	26	83.9
13-18 years (secondary school)	21	67.7
Adults	27	87.1
Specific groups:	15	48.4
Parents	13	41.9
Low socio-economic status	4	12.9
Ethnic groups		
Pregnant women		
Mean number of strategies [range 1-5]		3.45/4.00 (1.26) [1-5]
Strategy* (%)	30	90.9
Education	16	51.6
Regulation	23	74.2
Facilitation	13	41.9
Citizen participation	25	80.6
Case finding		
Mean number of settings [range 1-7]		4.45/5.00 (1.71) [1-7]
Setting* (%)		
School/Preschool	26	78.8
Sports facility	18	58.1
Outdoor public site	23	74.2
At home	13	41.9
Health or welfare building	22	71.0
Public building	23	74.2
Commercial building	13	41.9
Mean number of targeted behavioral determinants [range 1-5]		3.48/4.00 (0.90) [2-5]
Targeted behavioral determinants* (%)	31	100.0
Personal	29	93.5
Social environment	22	71.0
Physical environment	13	41.9
Political environment	13	43.3
Economic environment		

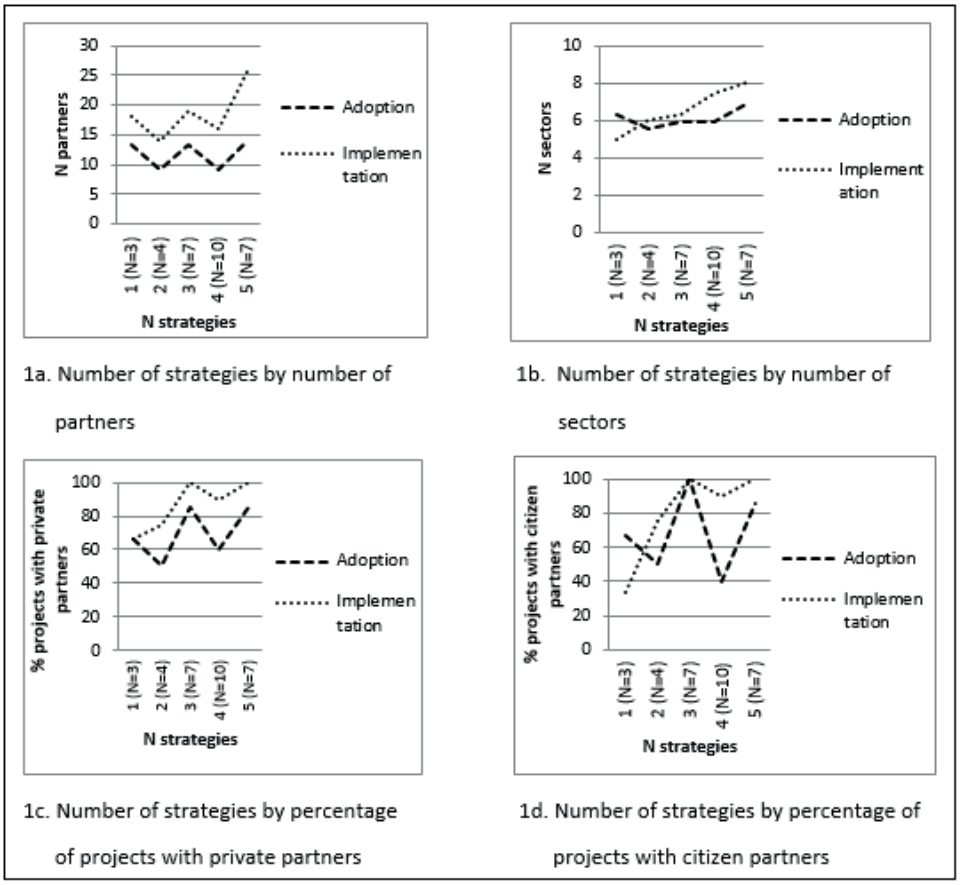
Table 3. Intervention packages: characteristics and composition, and partners involvement and diversity during the adoption and implementation phases (N=31) (*continued*)

	N	Percentage or mean/ median (SD) [range]
Partners involvement and diversity during the adoption phase		
Mean number of partners		11.6/10.0 (5.7) [5-27]
Mean number of different sectors [range 1-11]		6.1/6.0 (1.7) [4-10]
Sectors* (%)	27	87.1
Municipal government	19	61.3
Education	15	48.4
Sports	26	83.9
Welfare	26	83.9
Public health	26	83.9
Primary care	8	25.8
Secondary care	13	41.9
Cultural/recreational sector/social affairs	14	45.2
Transportation and safety	7	22.6
Bars and restaurants	8	25.8
Other businesses		
Private partner involved (%)	22	71.0
Mean % of private partners among the total number of partners involved (N=24)		17.3/16.7 (14.6) [0-55.6]
Citizens involved (%)	21	67.7
Mean % of citizen partners among the total number of partners involved (N=22)		11.0/10.5 (10.3) [0-36.4]
Partners involvement and diversity during the implementation phase		
Mean number of partners		18.7/17.0 (10.9) [5-42]
Mean number of different sectors [range 1-11]		6.9/7.0 (2.1) [3-10]
Sectors* (%)	26	83.9
Municipal government organization	24	77.4
Education	19	61.3
Sports	28	90.3
Welfare	25	80.6
Public health	29	93.5
Primary care	11	35.5
Secondary care	18	58.1
Cultural/recreational/social	14	45.2
Transportation and safety	10	32.3
Bars and restaurants	9	29.0
Other businesses		
Private partners involved (%)	28	90.3
Mean % of private partners among the total number of partners involved (N=28)		21.1/21.7 (12.2) [0-40]
Citizen partners involved (%)	27	87.1
Mean % of citizen partners among the total number of partners involved (N=27)		17.2/17.1 (11.7) [0-40]

*more than one answer was allowed.

Associations between partnership diversity and composition of packages

Figures 1a-1d show that partnership diversity during the adoption phase had no clear association with the number of *strategies*. During the implementation phase, the number of strategies tended to be higher if more partners and more sectors were involved and if private partners and citizens were involved.



1a. Number of strategies by number of partners

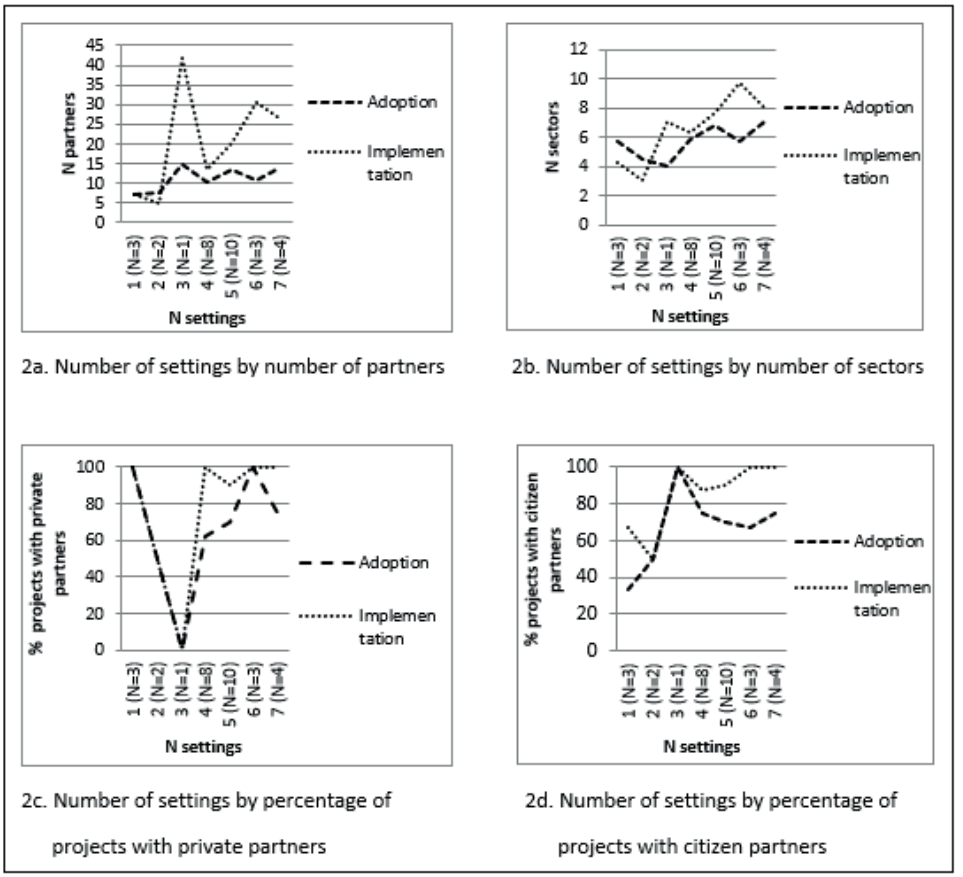
1b. Number of strategies by number of sectors

1c. Number of strategies by percentage of projects with private partners

1d. Number of strategies by percentage of projects with citizen partners

Figure 1. Associations between the number of strategies and partnership diversity during the adoption and implementation phases

Figures 2a-2d show that the number of *settings* tended to be higher if more sectors were involved during the adoption phase. During the implementation phase, the number of settings also tended to be higher if more partners and more sectors were involved, and if private and citizen partners were involved.



2a. Number of settings by number of partners

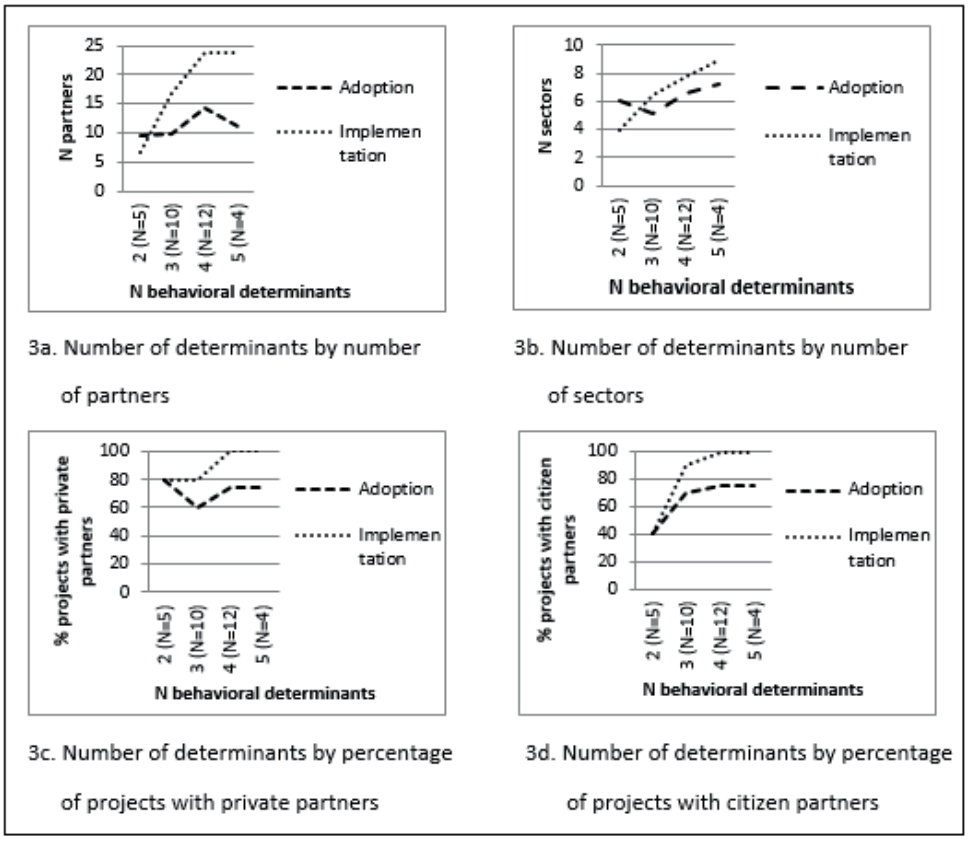
2b. Number of settings by number of sectors

2c. Number of settings by percentage of projects with private partners

2d. Number of settings by percentage of projects with citizen partners

Figure 2. Associations between the number of settings and partnership diversity during the adoption and implementation phases

Figures 3a-3d show that the number of *targeted determinants* tended to be higher if more sectors were involved and if citizens were involved during the adoption phase. During the implementation phase, the number of determinants also tended to be higher if more partners and more sectors were involved, and if private partners and citizens were involved.



3a. Number of determinants by number of partners

3b. Number of determinants by number of sectors

3c. Number of determinants by percentage of projects with private partners

3d. Number of determinants by percentage of projects with citizen partners

Figure 3. Associations between the number of targeted determinants and partnership diversity during the adoption and implementation phases

Finally, there was a positive association between the number of interventions and the numbers of strategies, settings, and targeted determinants (Figure 4).

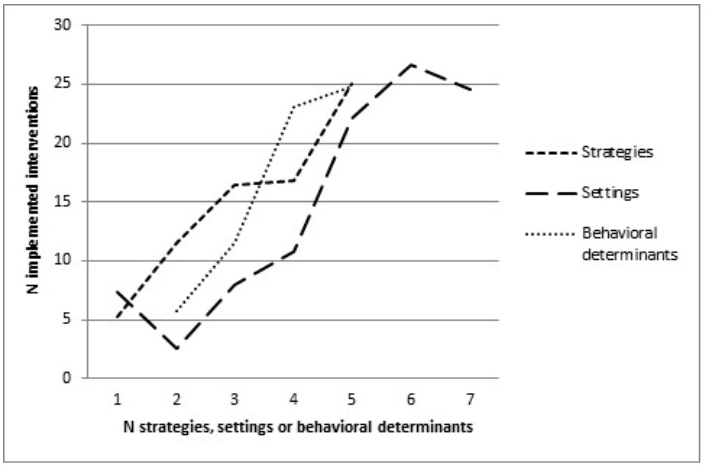


Figure 4. Association between the number of interventions and composition of the intervention package

DISCUSSION

In the context of intersectoral health policymaking, our multiple-case study was guided by the question whether partnership diversity mattered for the composition of integrated health promotion (HP) packages implemented in Dutch municipalities. Almost all projects implemented integrated packages in the sense that they employed several strategies in different settings targeting a variety of behavioral determinants. However, the majority of packages employed particularly education and facilitation strategies in public settings targeting personal behavioral determinants. Also, projects primarily included partners from the health, welfare and education sectors, rather than from other policy sectors, private partners and citizens. We found that greater partnership diversity, reflected by more different partners and sectors as well as more private partners and citizens, was associated with more integrated intervention packages, reflected by more diverse strategies, settings and behavioral determinants. This association was especially present during the implementation phase.

Our study is the first to provide quantitative evidence for the association between greater partnership diversity and more integrated intervention packages. Nonetheless, the principal sectors involved (i.e., health, welfare and education), strategies employed (i.e., education and facilitation) and behavioral determinants addressed (i.e., personal), still represent a low degree of policy integration according to the typology of inter-

sectoral health policy (Kickbusch, 2010). Although even such a low degree of policy integration may be a noteworthy achievement (Axelsson & Axelsson, 2006; Edvardsson et al., 2012; Varda & Retrum, 2012), two qualitative studies on intersectoral policy found a similar tendency to favor smaller-scale interventions targeting personal behavioral determinants over broader policies targeting structural (i.e., physial, economical and political) environmental behavioral determinants (Clavier et al., 2012; Holt et al., 2017). Similarly, in a review study on the impact of intersectoral action, only a small minority of the partnerships evaluated by the primary studies addressed structural determinant of health (Ndumbe-Eyoh & Moffatt, 2013). We argue that this more common pattern implies that the association we found between partnership diversity and integration of HP packages is not an unconditional one. Although of importance, partnership diversity by itself was found to be insufficient for establishing an approach that targets the full variety of environmental determinants of health behavior (Peters et al., 2017b).

A first condition that may facilitate diversely composed partnerships to implement integrated HP packages, is 'framing'. For example, one study showed (Holt et al., 2017), that framing health as a means to achieve the objectives of non-health sectors supported the introduction of healthier practices into various settings (i.e., a 'passive' setting approach; Whitelaw et al., 2001) rather than policies targeting the health-affecting features of these settings (i.e., a 'structural' setting approach; Whitelaw et al., 2001). Therefore, it has been questioned whether putting health – or health behavior, as was the case for the Dutch program – at the center is the best approach to intersectoral policymaking (Breton, 2016; Holt et al., 2017). More than that, it has been suggested that starting with the health argument may be counterproductive (Carlisle, 2010; De Leeuw, 2017; Strøm Synnevåg et al., 2018), and that avoiding 'the 'H' word' altogether would provide better opportunities to involve non-health sectors in intersectoral partnerships (Howard & Gunther, 2012 p 35; De Leeuw, 2017), To facilitate structural environmental determinants underlying health and health behavior to become the objects of intervention, a more promising approach could be to make clear how the non-health sectors' core operations (e.g., ensuring optimal educational opportunities; maximizing anti-poverty measures) contribute to health (Hendriks et al., 2015; Holt et al., 2017; Pinto et al., 2015). As support for such an approach, an early analysis of the policy plans of the projects in the current study concluded that a less central role for the health sector, and formulating broad policy goals, provided better opportunities for higher levels of policy integration in terms of partners involved and strategies employed (Peters et al., 2016). However, encouraging municipalities to frame health problems in line with the structural environmental determinants may require more substantive governmental directions than those provided by a procedural program (Carlisle, 2012; Clavier et al., 2012). Such directions may include predetermining the aims and content of the integrated public health policies and programs to be implemented (De Leeuw, 2017; Rayner & Howlett, 2009).

A second condition that may facilitate diversely composed partnerships to implement integrated HP packages, is 'management'. Network management, defined as all deliberate attempts to facilitate or guide interaction processes in a network (Koppejan & Klijn, 2004) could be a means to support diversely composed partnerships to achieve collective outcomes. Two additional studies on the projects in the present study indeed revealed that partnership diversity was only effective, in terms of implementing integrated HP packages that addressed the full variety of environmental determinants of health, in the presence of intense network management (Harting et al., 2019; Peters et al., 2017b). In diversily composed networks, such management may contribute to collective outcomes by reducing the complexity in the network (e.g., through connecting values and interests) and by creating the active participation and trust needed for non-health sectors to invest in intersectoral health policy (Koppejan & Klijn, 2004; Varda & Retrum, 2012; Weiss et al., 2016). Apart from managing this 'policy reality', project leaders should similarly manage the 'epidemiological reality' in order to frame health problems in line with the structural environmental determinants (Peters et al., 2016). Such a complex management task may require highly developed competencies which perhaps should play a more important role in the education and appointment of project leaders in intersectoral policymaking (De Leeuw & Peters, 2015). Such competencies may include awareness of what boundaries between sectors imply for public health action as well as boundary spanning skills to encourage collaborations across these sectors (Holt et al., 2018; Williams, 2002).

Finally, our study showed that partnership diversity mattered less when decisions were made about the composition of the intervention packages than when these packages were implemented in practice. This finding seems to contradict the suggestion that non-involvement in the adoption phase would be a barrier to partners becoming involved in the implementation phase (Provan & Milward, 2001). However, both the adoption and implementation of integrated HP packages in the projects we studied may be considered to have taken place at the level of operationalized program elements rather than at the abstract level of general policy ideas and norms (Rayner & Howlett, 2009). We argued that the low level of policy integration, reflected by the composition of partnerships and intervention packages, may have been induced by the ministerial program's focus on health behaviors. Hence, to enable municipal projects to develop ideas for – and reach agreement about – the implementation of more integrated intervention packages at the operational program level, the involvement of non-health sectors, private sectors and citizens may be also required at the abstract level of general policy ideas and norms, that is, in the conception of procedural intersectoral policymaking programs.

Limitations

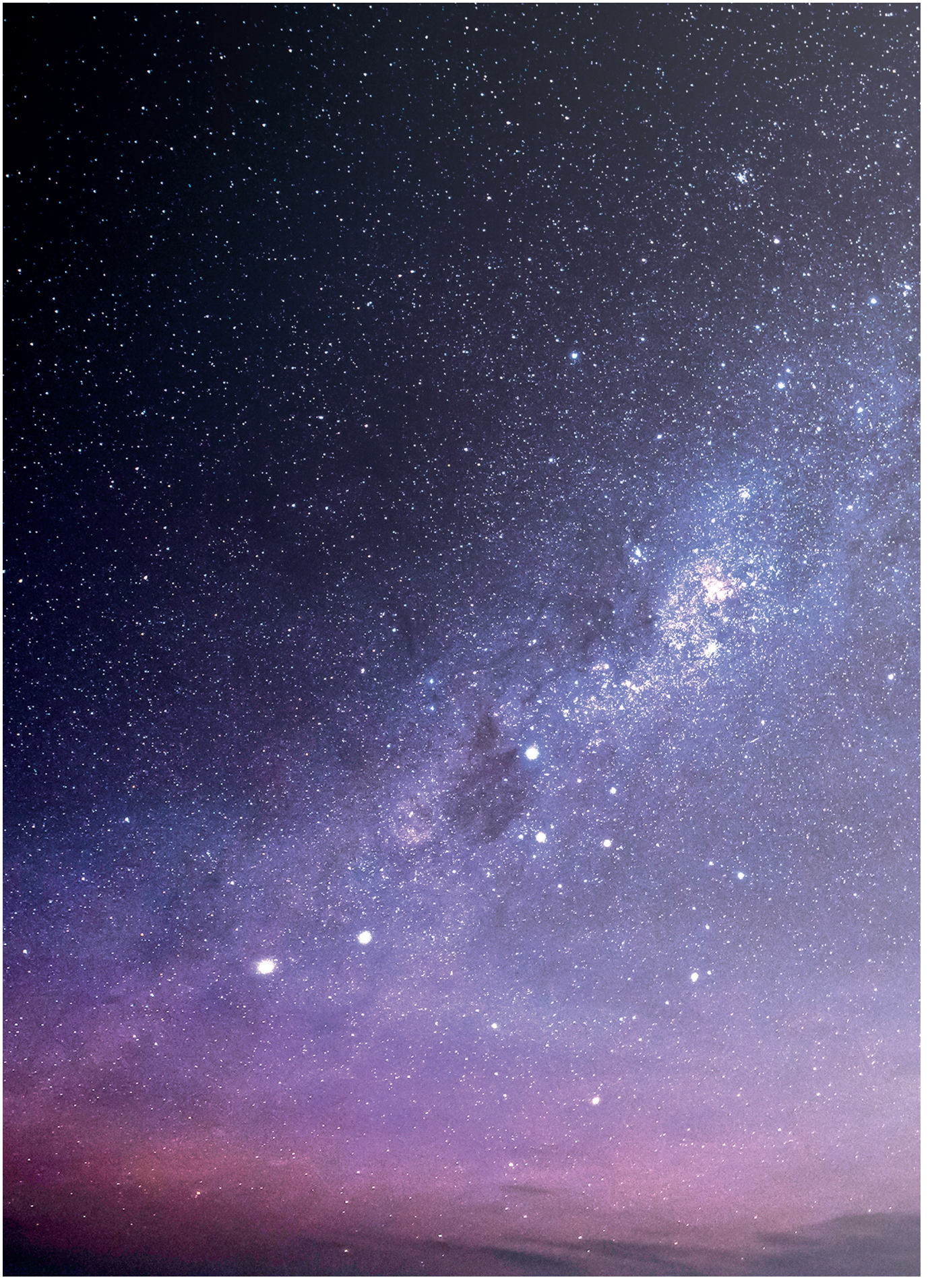
A first limitation is that the present study took a quantitative approach, without as well collecting in-depth qualitative data on the process of intersectoral health policymaking or on potentially influential contextual municipal characteristics. Important reasons for this approach were the large number of projects in the ministerial program, the great deal of actors in the local partnerships, and the great many interventions that were implemented. However, other study components of our longitudinal multiple-case study, cover part of the policymaking process (Harting et al., 2019; Peters et al., 2016; Peters et al., 2017b). We used those findings to help us interpret the findings from the present study.

A second limitation is that we do not know to what extent the municipal projects that participated in the Dutch ministerial program reflect current policy practice in other Dutch municipalities and other countries. Collecting data from municipalities that did not apply for participation in the program, or that applied but were not allowed to participate, exceeded the scope and the resources of our study. However, the patterns we identified in the composition of the partnerships and intervention packages were quite comparable to those identified in other western countries (Clavier et al., 2012; Holt et al., 2017). This may imply that in such countries the association we found between both these conditions may also be quite similar.

A final limitation is that we operationalized integrated intervention packages in terms of the strategies these employed and the determinants these addressed. However, apart from these two conditions, policy integration also includes whether interventions are implemented in assimilation rather than in isolation or fragmented (De Leeuw & Peters, 2015; Rayner & Howlett, 2009). The sometimes uncertain coherence that was visible in the action plans of the projects included in our study (Peters et al., 2016), indicates that collecting in-depth data on this aspect of policy integration would definitely be an important addition for future studies.

Conclusion

Our study is the first to provide quantitative empirical evidence for the assumption that partnership diversity matters for the composition of IHP packages. Thus, in order to implement integrated HP packages as a means to improve public health, it seems worthwhile to invest in the challenging endeavor of collaborating with many different partners. However, to bring the structural environmental determinants of health behavior within the reach of health promotion, additional investments will be needed, such as in the framing of health issues and in network management.



Chapter 3

Implementing multiple intervention strategies in Dutch public health-related policy networks

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ABSTRACT

Improving public health requires multiple intervention strategies. Implementing such an intervention mix is supposed to require a multisectoral policy network. As evidence to support this assumption is scarce, we examined under which conditions public health-related policy networks were able to implement an intervention mix.

Data were collected (2009-2014) from 29 Dutch public health policy networks. Surveys were used to identify the number of policy sectors, participation of actors, level of trust, networking by the project leader, and intervention strategies implemented. Conditions sufficient for an intervention mix (≥ 3 of 4 non-educational strategies present) were determined in a fuzzy-set qualitative comparative analysis.

A multisectoral policy network (≥ 7 of 14 sectors present) was neither a necessary nor a sufficient condition. In multisectoral networks, additionally required was either the active participation of network actors (≥ 50% actively involved) or active networking by the project leader (≥ monthly contacts with network actors). In policy networks that included few sectors, a high level of trust (positive perceptions of each other's intentions) was needed – in the absence though of any of the other conditions. If the network actors were also actively involved, an extra requirement was active networking by the project leader.

We conclude that the multisectoral composition of policy networks can contribute to the implementation of a variety of intervention strategies, but not without additional efforts. However, policy networks that include only few sectors are also able to implement an intervention mix. Here, trust seems to be the most important condition.

INTRODUCTION

Background

To effectively promote health, an integrated public health policy is strongly recommended (Kickbusch & Gleicher, 2012; Smedley & Syme, 2000). Such a policy is needed because of the intrinsic complexity of health and health behaviors, i.e., both are influenced by personal and environmental determinants (Krieger, 2001; Swinburn et al., 1999). Personal determinants include an individual's motivation and capability to perform health behaviors, whereas environmental determinants refer to opportunities to perform these behaviors (Michie et al., 2011). Therefore, interventions to promote health behavior should preferably target both kinds of determinants (Bartholomew et al., 2011). Personal determinants may be effectively influenced by health education strategies, while changing the environment, in terms of physical (e.g., housing), social (e.g., community networks), economic (e.g., employment), or political determinants (e.g., smoking bans), generally requires other strategies, such as regulation, facilitation, case finding and/or citizen participation (Bartholomew et al., 2011; De Leeuw, 2007; De Leeuw et al., 2014). Therefore, interventions (or packages of interventions) targeting both kinds of determinants should include multiple intervention strategies (Jackson et al., 2006). Such integrated interventions are also called an 'intervention mix'.

Such an intervention mix is assumed to require the involvement of different policy sectors and actors within those sectors (Kickbusch & Gleicher, 2012; Krieger, 2001). Although health education strategies are largely under the control of the health sector itself (Kickbusch & Gleicher, 2012; McQueen, et al., 2012), non-educational strategies are generally controlled by other policy sectors (Kickbusch & Gleicher, 2012; McQueen et al., 2012). Therefore, the development and implementation of an intervention mix usually take place in multisectoral policy networks (Booher & Innes, 2002; Provan & Milward, 1995). Although multisectoral networks are considered an appropriate response to health challenges (Kickbusch & Gleicher, 2012), there is not much evidence for this presumption (Breton & De Leeuw, 2011; Hayes et al., 2012). Moreover, the public administration literature identifies at least three other conditions that may be of importance for network performance: (a) the active involvement of network actors, (b) trust among network actors, and (c) active networking by a project leader (Bryson et al., 2006; Klijn & Koppenjan, 2016). Although these conditions have been recognized in the public health literature as well (Aarts et al., 2011; Carey et al., 2014; Zakocs & Edwards, 2006), we still need to better understand the factors affecting the capacity to promote health (Carey et al., 2014; Roussos & Fawcett, 2000).

Study aim

The aim of the present study was to strengthen the evidence for an integrated public health policy by answering two research questions: (1) Is a multisectoral policy network indeed necessary for the implementation of an intervention mix that includes multiple intervention strategies; (2) Which other conditions or combinations of conditions are necessary for a multisectoral policy network to achieve this kind of network performance?

Theoretical framework

(a) In multisectoral policy networks, policy development and implementation are dependent on the deployment of various actors' resources. This means that the *active participation* of these actors is an essential pre-condition (Gage & Mandell, 1990; Kickert et al., 1997; Lewis, 2000; Milward & Provan, 2000). However, more active involvement of network actors also increases network complexity, which in turn may impede network performance (Klijn & Koppenjan, 2016). Hence, we expect that active participation is particularly beneficial for the implementation of an intervention mix in combination with conditions that mitigate complexity, such as trust and active networking (Klijn & Koppenjan, 2016). This is further explained in sections (b) and (c).

(b) In policy networks, interdependent but autonomous actors have to work together. As these actors have their own interests and strategies, which may be unconnected or conflicting, *trust* may enhance both the development and implementation of innovative policies (Klijn et al., 2010a; Provan et al., 2009; Sako, 1998). Trust, meaning that actors have positive perceptions of the intentions of other actors (Klijn et al., 2010a), is expected to reduce complexity and improve network performance because (Klijn et al., 2010a; Rousseau et al., 1998; Sako, 1998): (1) actors are more inclined to take other actor's interests into account; (2) actors will invest more in stable relations without the need for complex contracts to tame opportunistic behavior; and (3) actors are more willing to share information and to participate in innovation. Because of its importance for innovative policy solutions, we expect trust to contribute to the implementation of an intervention mix.

(c) Since governance processes in multisectoral networks are complex, outcomes are not easily achieved without active managerial effort (Klijn & Koppenjan, 2016; McGuire & Agranoff, 2011). The actors have different (sectoral) values and interests that may hinder the achievement of integrated public health policy approaches. *Active networking by a project leader* is identified as one of the essential conditions to achieve success (Kickert et al., 1997; Klijn et al., 2010b; McGuire & Agranoff, 2011; Provan & Kenis, 2008). It facilitates coordination and information sharing, and mitigates conflicts and non-cooperation (Klijn & Koppenjan, 2016; McGuire & Agranoff, 2011). Managerial net-

working, in terms of network managers having extensive contacts with other actors, is also positively related to network performance (Akkerman & Torenvlied, 2013; Meier & O'Toole, 2003). Therefore, we expect that active networking by the project leader will be positively related to implementing an intervention mix – in particular if multiple sectors are included in the network.

Policy context

The present study was performed in the context of the *Gezonde Slagkracht* (Decisive Action for Health) program. This program (2009-2015), initiated by the Dutch Ministry of Health, Welfare and Sport, provided support for municipalities or alliances of municipalities (further referred to as 'projects') to build multisectoral policy networks to develop and implement integrated policies on overweight, alcohol and drug abuse and/or smoking (ZonMw, 2009). Financial support depended on the level of experience with integrated policy, and ranged from 75,000-250,000 euro for a period between two and five years. Professional support included workshops on national regulations affecting public health policy, interactive policy development, implementing evidence-based interventions, and policy continuation.

METHOD

Qualitative Comparative Analysis

Our theoretical framework indicates that it is the combination of conditions that is important for network performance, rather than the influence of conditions separately. Therefore, we performed a fuzzy set qualitative comparative analysis (fsQCA): a qualitative, set-theoretical method to comparatively analyze medium-n cases (Ragin, 2008; Schneider & Wagemann, 2012). In fsQCA, cases are understood as configurations of conditions (here: multisectoral network, active participation of network actors, trust among network actors, and active networking by the project leader) that produce a certain outcome of interest (here: network performance in terms of an intervention mix). Relationships between conditions and the outcome are expressed in terms of necessity and sufficiency, which are identified by comparatively analyzing the cases.

Design

Our observational cross-sectional study included the 34 local public health networks within the *Gezonde Slagkracht* program.

Data collection

Data were collected through three surveys. A further specification of the measurement of conditions is presented in Appendix I.

Conditions

In a first web-based survey, the *multisectoral network* composition was assessed by asking project leaders (completed by n=38; 100% response) who they kept in touch with in the context of the *Gezonde Slagkracht* program. Actors were assigned to sectors by one researcher [DP] and a research assistant using a framework that included 14 sectors that are commonly identified as potential participants in Dutch municipal policy processes (Goumans, 1997). In the same survey, the level of *active networking* was assessed by asking project leaders to indicate their average contact frequency with each of the actors involved in each of the individual networks (Akkerman & Torenvlied, 2013). In a second web-based survey, we assessed the level of *active participation* by asking the network actors (completed by n=240; 49% response) to indicate their level of involvement in the project (Edelenbos et al., 2010). In the same survey, we measured *trust* by asking project leaders and network actors how they perceived the intentions of the other actors (Klijn et al., 2010a).

Performance

A third paper-and-pencil survey assessed the interventions that were implemented by the networks. For that, we asked the principle implementer of each individual intervention to report its aims and components (completed by n=158; 81% response). Two researchers [KG and PvA] used this information to categorize the intervention strategies (Bartholomew et al., 2011; De Leeuw, 2007) into health education (e.g., school learning module), regulation (e.g., legislation on the sale of alcohol products in sport cafeterias during youth activities), facilitation (environmental or organizational changes e.g., new playground, supply of sports activities or materials), citizen participation (e.g., organization of a walking session), and case finding (e.g., health (behavior) screening activities).

Cases

For 29 of the 34 projects that participated in the *Gezonde Slagkracht* program we obtained all data needed to include them in the fsQCA (Table 1, Supplementary Appendix S2). These projects addressed either overweight (n=16), or alcohol and drug abuse (n=11), or a combination of these and other behavioral risk factors (n=2). On average, the policy networks included 20.5 actors, who represented 5.72 different sectors. Of the network actors, on average 38% reported to be actively involved. The level of trust among project partners was perceived to be positive (mean score 0.82), and project leaders had about monthly contact with the network actors (mean score 2.85). The projects managed to implement on average 8.62 interventions, which covered 2.59 different types of non-educational intervention strategies.

Table 1. Overview of projects included, scores on conditions and outcome, and fsQCA solution terms (See Appendix II for a full overview of network composition and outcome)

	Conditions								Outcome					Solutions from fsQCA			
Project	Theme	N Actors	N Sectors	N Sectors calibrated[1]	Contact Frequency	Contact Frequency (calibrated)[2]	% Actors actively involved	% Actors actively involved (calibrated)[3]	Trust	Trust (calibrated)[4]	N Interventions	N Non-educational Strategies	N Non-educational Strategies (calibrated)[5]	Solution I-a	Solution II-a	Solution III-a	Solution IV-a
AD	2	13	7	0.67	2.92	0.67	31	0.00	0.92	0.67	5	3.00	0.67	X			
AF	1	19	8	0.67	3.04	0.67	10	0.00	0.48	0.00	1	3.00	0.67	X			
AO	1	37	12	1.00	2.23	0.00	71	1.00	0.83	0.67	11	4.00	1.00		X		
AP	2	39	10	1.00	2.60	0.33	57	1.00	0.74	0.33	5	3.00	0.67		X		
BH	2	30	5	0.33	2.97	0.67	56	1.00	0.90	0.67	16	4.00	1.00			X	
AI	2	79	5	0.33	3.62	1.00	58	1.00	1.03	1.00	30	3.00	0.67			X	
AW	2	15	6	0.33	3.54	1.00	56	1.00	0.84	0.67	11	3.00	0.67			X	
BC	1	9	5	0.33	4.11	1.00	63	1.00	1.48	1.00	13	3.00	0.67			X	
AH	1	6	3	0.00	2.80	0.67	67	1.00	0.80	0.67	6	2.00	0.33			X	
AG	2	9	3	0.00	2.64	0.33	25	0.00	0.90	0.67	5	4.00	1.00				X
AN	1	14	5	0.33	2.70	0.33	38	0.00	0.80	0.67	3	3.00	0.67				X
BD	2	26	2	0.00	2.62	0.33	36	0.00	0.81	0.67	2	3.00	0.67				X
AE	1	3	2	0.00	2.50	0.33	33	0.00	0.80	0.67	7	1.00	0.00				X
AA	1	11	6	0.33	3.20	0.67	20	0.00	0.96	0.67	19	4.00	1.00				
AV	3	49	7	0.67	2.44	0.33	36	0.00	0.96	0.67	10	4.00	1.00				
AX	1	10	5	0.33	2.78	0.67	0	0.00	0.83	0.67	6	4.00	1.00				
BB	1	18	7	0.67	2.50	0.33	22	0.00	0.47	0.00	15	4.00	1.00				
AY	1	15	8	0.67	2.07	0.00	33	0.00	0.57	0.33	6	3.00	0.67				
AZ	2	6	3	0.00	3.83	1.00	33	0.00	0.87	0.67	11	3.00	0.67				

Conditions									Outcome					Solutions from fsQCA			
Project	Theme	N Actors	N Sectors	N Sectors calibrated[1]	Contact Frequency	Contact Frequency (calibrated)[2]	% Actors actively involved	% Actors actively involved (calibrated)[3]	Trust	Trust (calibrated)[4]	N Interventions	N Non-educational Strategies	N Non-educational Strategies (calibrated)[5]	Solution I-a	Solution II-a	Solution III-a	Solution IV-a
AM	1	25	10	1.00	3.05	0.67	57	1.00	0.57	0.33	6	2.00	0.33				
AS	1	26	7	0.67	2.81	0.67	60	1.00	1.19	1.00	19	2.00	0.33				
AQ	3	29	8	0.67	2.29	0.00	36	0.00	0.62	0.33	23	2.00	0.33				
AR	1	25	9	1.00	2.48	0.33	20	0.00	1.28	1.00	3	2.00	0.33				
BA	1	7	2	0.00	3.33	0.67	0	0.00	0.90	0.67	5	2.00	0.33				
BE	1	2	2	0.00	3.00	0.67	0	0.00	1.00	1.00	1	2.00	0.33				
AC	1	6	3	0.00	3.00	0.67	40	0.00	0.76	0.33	2	1.00	0.00				
AL	2	11	3	0.00	2.50	0.33	60	1.00	0.72	0.33	2	1.00	0.00				
AK	2	7	3	0.00	3.43	0.67	50	1.00	0.20	0.00	3	0.00	0.00				
AU	2	48	10	1.00	1.57	0.00	36	0.00	0.62	0.33	4	0.00	0.00				
M		20.48	5.72	0.41	2.85	0.52	38%	0.38	0.82	0.58	8.62	2.59	0.55				
SD		17.15	2.86	0.38	0.54	0.30	20%	0.49	0.25	0.30	7.22	1.18	0.35				

Conditions and outcome in fsQCA

1 = Multisectoral network; 2 = Active networking project leader; 3 = Active participation network actors; 4 = Trust within the network; 5 = Intervention mix

Solutions from fsQCA

(capitals means that condition is present; lower cast means that condition is absent)

Solution I-a	MULTISECTORAL NETWORK*ACTIVE NETWORKING*active participation
Solution II-a	MULTISECTORAL NETWORK*active networking*ACTIVE PARTICIPATION
Solution III-a	multisectoral network*ACTIVE NETWORKING*ACTIVE PARTICIPATION*TRUST
Solution IV-a	multisectoral network*active networking*active participation*TRUST

Analysis Step 1: Calibration

The first step in the fsQCA procedure is to construct a data matrix in which the cases (here: the 29 public health policy projects) are transformed into configurations of conditions (here: a multisectoral network, the active participation of network actors, trust among network actors, and active networking by the project leader) and the outcome of interest (here: an intervention mix). Conditions and outcomes are conceptualized as sets wherein the cases have membership between 0 (fully out the set; condition/outcome is not present) and 1 (fully in the set; condition/outcome is present). This involves calibration: transforming the raw data by assigning set membership to cases by using theoretical and empirical information (Schneider & Wagemann, 2012). To support the calibration we additionally used cluster analysis (for an explanation and justification of this procedure see Appendix I) (Ragin, 2008). The calibration resulted in the following categorization (Table 1). A network was considered multisectoral if ≥ 7 of 14 possible sectors were present (12 projects). Actor participation was considered active if ≥ 50% of the network actors was actively involved (11 projects). Trust was regarded present if actors held on average positive perceptions of each other's intentions (19 projects). Networking by the project leader was considered active if the average contact frequency was ≥ monthly (16 projects). Interventions were regarded as comprising multiple intervention strategies if ≥ 3 of 4 non-educational strategies were implemented (17 projects).

Analysis Steps 2 and 3: Truth table construction

Before constructing the truth table, we assessed whether each individual condition was necessary or sufficient for the outcome. As none of the conditions passed the applicable thresholds (necessity ≥ 0.90; sufficiency ≥ 0.75) (Schneider & Wagemann, 2012), they were all included in the second and third steps of the analysis: i.e., the construction of the truth table (Schneider & Wagemann, 2012). As these steps included four conditions (with 1/0 membership), cases could be distributed over 16 logically possible configurations (i.e., 2^4). After distributing the 29 cases in this study (step 2), 14 of these configurations appeared to be empirically present (Table 2). Next, we assigned the outcome (i.e., the presence or absence of an intervention mix) to each of the empirical configurations in the truth table (step 3). Assigning the presence of the outcome to a configuration implies its sufficiency to achieving an intervention mix. To this purpose, we used two consistency measures to set a cut-off point: raw consistency (≥ 0.80), and proportional reduction in inconsistency (PRI) consistency (≥ 0.70) (Schneider & Wagemann, 2012). In doing so, we excluded those configurations that could also be considered sufficient for the absence of the outcome, i.e., configuration no. 7 (Rihoux & Ragin, 2009; Schneider & Wagemann, 2012).

In the truth table (Table 2), the first six rows present configurations of conditions that were assigned the outcome. These rows cover 13 of the 29 cases, including two cases

that are logically contradictory as they did not show the outcome in our study (AH and AE). The latter eight rows present configurations that were assigned the non-outcome; these rows cover the 16 remaining cases.

Analysis Step 4: Truth table analysis

Step 4 concerns the truth table analysis. This involves the pairwise comparison of the configurations that are deemed sufficient for the outcome, in order to find those conditions that are irrelevant for producing the outcome, thereby identifying the conditions or combination(s) of conditions that do explain the implementation of an intervention mix. The guiding principle in this pairwise comparison is to express the same logical statements (i.e., the truth table rows) in a more parsimonious manner (Schneider & Wagemann, 2012). Two measures were used to interpret the truth table solution: consistency and coverage (Ragin, 2006). Consistency assesses how closely a sufficient relationship is approximated (i.e., the degree to which the empirical data are in line with the postulated relation); coverage shows how meaningful this relationship is empirically (i.e., how many cases are covered by the relationship).

Steps 2 to 4 of the analysis were performed with QCA software (Ragin & Davey, 2014). The cluster analyses were performed with Tosmana software (Cronqvist, 2011).

RESULTS

The fsQCA resulted in four solutions, i.e., configurations of conditions sufficient for the implementation of an intervention mix (Table 3-a). In multisectoral networks, an additional requirement was either active networking by the project leader in the absence of active involvement of network actors (Solution I-a), or active involvement of the network actors in the absence of active networking by the project leader (Solution II-a). In policy networks that were not multisectoral, trust between network actors was required (Solution III-a and IV-a). In the absence of both multiple sectors, active participation of network actors, and active networking by the project leader, trust was necessary for achieving an intervention mix (Solution IV-a). If the network actors were actively involved, then, besides trust, active networking by the project leader was also required (Solution III-a). The consistency scores for the truth table solution as well as for the individual solutions were well above the lowest permitted threshold of 0.75, while the solution coverage can be regarded as more than acceptable (Ragin, 2009).

Table 2. Truth table with conditions for implementing an intervention mix

Conditions							Outcome		
ConfigurationNo.	N cases covered	N Secorts (calibrated)	Contract frequency (calibrated)	Active participation of network actors Calibrated	Trust (calibrated)	N Non-educational strategies (calibrated)	Raw consistency[a]	PRI Consistency[a]	Cases covered[b]
1	1	1	0	1	0	1	1,000	1,000	AP
2	1	1	0	1	1	1	1,000	1,000	AO
3	1	1	1	0	0	1	1,000	1,000	AF
4	1	1	1	0	1	1	1,000	1,000	AD
5	5	0	1	1	1	1	0,832	0,716	AH, AI, AW, BC, BH
6	4	0	0	0	1	1	0,823	0,701	AE, AG, AN, BD
7	2	1	0	0	1	0	0,816	0,665	AR, AV
8	4	1	0	0	0	0	0,783	0,664	AU, AY, AQ, BB
9	5	0	1	0	1	0	0,763	0,636	AA, AX, AZ, BA, BE
10	1	0	1	0	0	0	0,784	0,623	AC
11	1	1	1	1	0	0	0,795	0,493	AM
12	1	1	1	1	1	0	0,872	0,493	AS
13	1	0	0	1	0	0	0,398	0,248	AL
14	1	0	1	1	0	0	0,497	0,248	AK

[a] A raw consistency value of 1.0 indicates that all the cases covered by a configuration have the outcome; lower scores indicate that at least part of the covered cases do not have the outcome. A low PRI consistency score indicates that one or more cases covered by a configuration have roughly identical consistency scores for both the presence and absence of the outcome, irrespective of the raw consistency scores. As the cut-off point for assigning the presence of the outcome, we used a PRI consistency score of ≥ 0.70 and a raw consistency score of ≥ 0.80 (Schneider & Wagemann, 2012)

[b] Cases that are underlined did not implement an intervention mix. Within a configuration, when some cases show the outcome, while others do not, this is called a logical contradiction. We tried to resolve logical contradictions as much as possible, especially by recalibrating some of the conditions (e.g., active participation of network actors), provided that either theoretical and empirical information or cluster analyses sufficiently supported this (Rihoux & Ragin, 2009; Schneider & Wagemann, 2012).

Table 3. Complex solution of truth table

3.a Conditions sufficient for implementing an intervention mix

	Conditions					Outcome	Statistics			
Solution No.	Multisectoral network	Active participation of network actors	Trust within network	Active networking by project leader	Intervention mix including multiple intervention strategies	Raw coverage	Unique coverage	Consistency	Projects (alphabetical order)
I-a	+	–		+	+	0.21	0.10	1.00	AD, AF
II-a	+	+		–	+	0.17	0.12	1.00	AO, AP
III-a	–	+	+	+	+	0.21	0.17	0.83	AH, AI, AW, BC, BH,
IV-a	–	–	+	–	+	0.29	0.19	0.82	AE, AG, AN, BD

Solution coverage 0.73

Solution consistency 0.87

Cases that are underlined did not implement an intervention mix; therefore they are logically contradictory cases

3.b Conditions sufficient for NOT implementing an intervention mix

I-b	–		–	+	–	0.36	0.23	0.70	AC, AK
II-b	–	+	–		–	0.18	0.05	0.88	AK, AL
III-b	+	+		+	–	0.20	0.18	0.89	AM, AS

Solution coverage 0.59

Solution consistency 0.79

+ means: condition or outcome is present

– means: condition or outcome is absent

DISCUSSION

This comparative case study examined (1) Whether a multisectoral policy network is necessary for the implementation of an intervention mix; and (2) Which other conditions or combinations of conditions are necessary for a multisectoral policy network to achieve this kind of network performance. To answer these questions we performed an fsQCA.

Methodological considerations

One advantage of an fsQCA is its ability to improve our understanding of integrated public health policy at an intermediate level (Ragin, 2008), providing opportunities to connect in-depth knowledge from single or small-scale case studies with the aggregated knowledge from large-N case studies (Sabatier, 2007). However, due to the many choices in an fsQCA, the robustness of its results can be questioned. One way of checking robustness is to change the operationalization of the conditions and the outcome (Skaaning, 2011). Due to the multiform conceptualization of integrated public

health policy (Tubbing et al., 2015), our operationalization of a multisectoral network can be criticized for not taking into account the number of actors, as network size may contribute to the implementation of a greater variety of intervention strategies, independent from the presence of different sectors. A similar criticism applies to the operationalization of intervention mix. Therefore, we examined the effect of a different operationalization of both these conditions, in which we additionally took into account network size and intervention package volume. Although partly covering different projects, this alternative fsQCA resulted in an almost similar solutions pattern (not shown here). Our interpretation of this similarity is that the results of the present fsQCA are robust, but that the size of the network and the volume of the intervention package should be taken into account when interpreting the results. The same applies to two other potential influential factors not included in our fsQCA: the kinds of sectors in the network (Zakocs & Edwards, 2006), and the budget available for establishing integrated public health policy (Rousseau et al., 1998). After all, the number of conditions that can be included in an fsQCA is limited (Rihoux & Ragin, 2009), although a preceding comparative analysis to select those conditions that are most likely to influence the presence or the absence of the outcomes could provide a solution here (Lucidarme et al., 2016).

Interpretation

The results from our fsQCA imply first of all that, in contrast with our premise, a multisectoral network was not a necessary condition for the implementation of an intervention mix. In networks that incorporated only a few different sectors, either the presence of trust alone (Solution IV-a) or a combination of trust, active participation of network actors, and active networking by the project leader (Solution III-a) contributed to the implementation of an intervention mix. Here, trust seemed to play its predicted role of enhancing network performance (Klijn et al., 2010a; Provan et al., 2009). In the absence of multiple sectors, however, trust may have been important to reduce transaction costs and information sharing (Klijn et al., 2010a; Lane & Bachman, 1998) rather than, as we expected, to handle conflicting between-sector interests (Provan et al., 2009; Sako, 1998). Trust may also have prevented conflicts due to different financial interests of the actors in the network (Sako, 1998). Moreover, trust may have convinced network actors to invest additional budget to collectively purchase interventions from outside the network, or persuaded them to ask actors that are inside their network – but outside the network of the project leader – to support the implementation of a variety of intervention strategies. However, the similarity of interventions included in the intervention packages of projects covered by Solution III-a indicates that the presence of trust may also have reduced within-sector competition between service providers. Still, for projects covered by both Solutions III-a and IV-a, network size and/or intervention package volume also may have contributed to the implementation of an intervention mix.

In the two other solutions, a multisectoral network was indeed part of the sufficient combination of conditions. However, the implementation of an intervention mix also needed either active networking by the project leader or the active participation of network actors. Solution I-a confirms our expectation that networks including multiple sectors require active managerial effort to reach outcomes (Klijn et al., 2010b; McGuire & Agranoff, 2011). Solution II-a supports our assumption that network performance requires the active participation of network actors as each actor is dependent on the employment of resources of other actors (Klijn & Koppenjan, 2016). Interestingly, Solutions I-a and II-a indicate the interchangeability of two conditions: if active participation of network actors was present, active networking by the project leader needed to be absent, and vice versa. Contrary to our expectation, the presence of both seems to impede rather than enhance the implementation of an intervention mix. This suggestion was confirmed in an additional fsQCA (see Table 3-b) in which the absence of an intervention mix served as the outcome of interest. There, one of the sufficient combination of conditions (Solution III-b) was the presence of both a multisectoral network, active participation of network actors, and active networking by the project leader. Apparently, in such networks, the presence of too much managerial activity increases rather than reduces complexity. Moreover, the other two solutions in the truth table (Solution I-b and II-b) confirm the importance of the presence of either a multisectoral network (as seen in Solution I-a and II-a) or trust (as seen in Solution III-a and IV-a).

On the whole, the importance of managerial effort was weaker than expected. This is probably due to our choice to operationalize this condition as networking (Akkerman & Torenvlied, 2013), i.e., the number of contacts. Yet, having many contacts does not necessarily reflect performing network management strategies (Klijn et al., 2010b) – it may also include doing the wrong things leading to conflicts. As in previous studies on multisectoral policy networks, network management strategies, such as connecting actors and exploring content, indeed proved to be important for network performance, future studies should consider a content-wise operationalization of network management.

Conclusion

A multisectoral composition of public health-related policy networks can contribute to the implementation of a variety of intervention strategies, but not without additional efforts, such as active management by a project leader or the active involvement of network actors. However, networks that include only few sectors are also able to implement an intervention mix. Here, trust seems to be the most important condition. The variety in the combination of conditions sufficient for the implementation of an intervention mix supports the recent finding that the configuration of conditions needed to achieve network performance may vary according to the local situation (Lucidarme et al., 2016). This also implies that the specific combination of favorable conditions we found in our study may not be generalizable to policy networks in other countries or that address other health-related themes. Our findings are also in line with a recent meta-synthesis which concludes that multisectoral policy initiatives require a well-thought-out infrastructure to support policy implementation (Carey et al., 2014). In order to facilitate their performance, multisectoral public-health related policy networks should be based on both the purpose and the context of the policy (Carey et al., 2014). This requires sufficient understanding of content-related policy theories as well as process-oriented theories of the policy process (Breton & De Leeuw, 2011). With our study as an example, one way forward may be further research at the interface between the scientific domains of public administration and public health.

Appendix 1.

Conditions and outcome included in the QCA: operationalization, calibration and clarification of calibration decisions

An important overall guideline was that the calibration should preferably result in an adequate distribution of projects over set values to enable mutual comparisons. For three conditions and the outcome of interest we opted for the four-value calibration scheme (see Ragin, 2008). This means that cases can have scores of 0.00 (fully out the set), 0.33 (more out than in the set), 0.67 (more in than out the set), or 1.00 (fully in the set). This allowed us to capture both differences in set membership (i.e., cases below the 0.5 cross-over point versus cases above it) and the degree of set membership (i.e., cases more out than in the set, and vice versa). For one condition, i.e., active participation of network actors, a two-value calibration scheme better reflected the empirical distribution of projects over set values. Project reports were used to corroborate the scoring of the cases.

Condition and operationalization	**Measurement**	**Calibration**		
		Raw score	**Set value**	**N projects**
Multisectoral network Number of public and societal sectors present in the public health policy network (Provan & Milward, 1995)	Actors were assigned to sectors based on a framework including 14 sectors commonly involved in Dutch municipal policy processes The framework covered 10 public sectors (public health, welfare, social support, sports, culture and recreation, education, employment and social affairs, spatial planning and environment, public housing, and safety and enforcement), 3 societal sectors (private sector, research and development, and citizens), and 1 rest category including e.g., communication departments	1-4	0.00	10
		5-6	0.33	7
		6.5	0.50	--
		7-8	0.67	7
		9-14	1.00	5

Set value interpretation	**Clarification of calibration decisions** General rule for calibration: sufficient distribution of project over sets as to allow for mutual comparison between projects
Small number of different sectors in the network Fair number of different sectors in the network Cross-over point Considerable number of different sectors in the network Large number of different sectors in the network	*Decisions based on theory and measurement* (a) Based on minimum (1) and maximum (14) possible number of sectors in the network (b) Number of different sectors should be sufficient to implement different kinds of intervention strategies (c) Sectors should also differ enough in a qualitative way in order to have different policy instruments to their proposal (d) As small networks tended to include rather akin sectors (e.g., health, welfare, sport and education sector), we did not assume that these networks would not be very likely to implement a different types of non-educational intervention strategies (e) Therefore, we placed the cut-off points between clusters of sectors at a higher level than could be expected compared to the number of intervention strategies *Decision based on empirical data* Contend-based cut-off points supported by cluster analysis

Condition and operationalization	Measurement	Calibration		
		Raw score	Set value	N projects
Active networking Average contact frequency of the project leader with the other actors in the policy network (Akkerman & Torenvlied, 2013)	Contact frequency with each individual network actor measured on a five-point scale: 1=yearly, 2=few times a year, 3=monthly, 4=weakly, 5=daily	1.00-2.35	0.00	4
		2.36-2.47	0.33	9
		2.75	0.50	--
		2.76-3.50	0.67	12
		3.51-5.00	1.00	4
Active participation Percentage of actors that were actively involved in the project (Edelebos et al., 2010)	Participation in the network measured on a three-point scale: (a) actively participating in the network, (b) following the network at a distance, (c) either thinking along with the network or giving advice	0.00-0.48	0.00	18
		0.49	0.50	--
		0.50-1.00	1.00	11
Trust Average degree of positive perception of the intentions of other actors in the policy network (Klijn, et al., 2010)	Measured as the extent to which partner organizations (a) follow up on their agreements; (b) take account of each other's interests; (c) do not misuse each other's efforts for personal gain; (d) assume that each other's intentions are good; (e) do have a good mutual connection Items were scored on five-point Likert scale ranging from -2=completely disagree to 2=completely agree	-2.00-0.49	0.00	3
		0.50-0.79	0.33	7
		0.79	0.50	--
		0.80-0.99	0.67	14
		1.00-2.00	1.00	5
Intervention mix Number of non-educational strategies incorporated in the interventions that were implemented by the network (Bartholomew et al., 2011; De Leeuw, 2007)	Strategies based on common classification of policy instruments, i.e., communication, regulation and facilitation, and on specific strategies reported by the included projects, i.e., citizen participation and case finding Strategies were assigned to an intervention based on the implementer's description of its aims and components The total number of strategies does therefore mostly exceed the total number of interventions implemented	0.00-1.49	0.00	5
		1.50-2.49	0.33	7
		2.50	0.50	--
		2.51-3.49	0.67	10
		3.50-4.00	1.00	5

Set value interpretation	Clarification of calibration decisions General rule for calibration: sufficient distribution of project over sets as to allow for mutual comparison between projects
Contact frequency closest to few times a year Contact frequency more than few times a year but less than monthly Cross-over point Contact frequency about monthly Contact frequency closest to weekly	*Decisions based on measurement* Calibration guided by measurement of the conditions, that is, the answering categories used in the survey *Decision based on empirical data* Content-based cut-off points supported by cluster analysis Final decision was also based on the best fit with the set-based QCA approach
Less than half of the network actors actively involved Cross-over point Half or more of the network actors actively involved	*No clear theoretical guidance available* *Decisions based on measurement* Half of the actors actively participating in the network served as the most plausible cross-over point *Decision based on empirical data* Cluster analyses indicated that the major threshold was at 49% active participation; we therefore decided to opt for a crisp set (1/0) for the present condition
Average perceptions of trust are at best neutral Average perceptions of trust are neutral rather than positive Cross-over point Average perceptions of trust are positive rather than neutral Average perceptions of trust are positive	*Theory-based decisions* Theory and empirical findings suggest that good network performance (here: in terms of implementing an intervention mix) should at least require that trust among actors in a network is positive *Decisions based on measurement* Average scores below 0.00 indicate distrust among actors; scores between 0.00 and 0.50 indicate neutral perceptions of trust; scores above 1.00 indicate trust among actors *Decision based on empirical data* Cluster analyses indicated that 0.79 was a preferable cross-over point, creating two additional clusters with from 0.50 and 0.79, and from 0.80 and 0.99
Next to health education, either no other or one other intervention strategy present Next to health education, two other intervention strategies present Cross-over point Next to health education, three other intervention strategies present Next to health education, all four other intervention strategies present	*No clear theoretical guidance available* *Decisions based on measurement* (a) Based on minimum (0) and maximum (4) possible non-educational strategies in the intervention package *Decisions based on empirical data* Content-based cut-off points supported by cluster analysis

Appendix 2.

Overview of projects included, scores on conditions and outcome, and fcQCA solution terms

		Network composition															Conditions			
Project	Theme	N Actors	N Actors Public Health	N Actors Wellfare	N Actors Social Support	N Actors Sports N Actors Culture and Recreation		N Actors Education N Actors Employment and Social Affairs		N Actors Spatial Planning and Environment	N Actors Public Housing N Actors Safety and Enforcement		N Actors Privat Sector N Actors Research and Development		N Actors Community	N Actors Others	**N Sectors**	**N Sectors calibrated[1]**	**Contact Frequency**	**Contact Frequency calibrated[2]**
AD	2	13	2	2	0	1	0	0	1	0	0	4	0	1	0	2	**7**	**0.67**	**2.92**	**0.67**
AF	1	19	9	2	1	3	0	1	0	1	0	1	0	0	0	1	**8**	**0.67**	**3.04**	**0.67**
AO	1	37	11	5	1	2	2	3	2	2	2	0	5	1	0	1	**12**	**1.00**	**2.23**	**0.00**
AP	2	39	5	11	0	1	1	6	0	1	0	5	3	3	0	3	**10**	**1.00**	**2.60**	**0.33**
BH	2	30	23	1	0	0	0	0	0	1	0	2	0	3	0	0	**5**	**0.33**	**2.97**	**0.67**
AI	2	79	23	0	0	9	0	18	0	0	0	20	0	0	0	9	**5**	**0.33**	**3.62**	**1.00**
AW	2	15	3	1	0	1	0	3	0	0	0	5	0	0	0	2	**6**	**0.33**	**3.54**	**1.00**
BC	1	9	3	2	1	0	0	1	0	0	0	0	0	0	2	0	**5**	**0.33**	**4.11**	**1.00**
AH	1	6	1	2	0	3	0	0	0	0	0	0	0	0	0	0	**3**	**0.00**	**2.80**	**0.67**
AG	2	9	5	0	0	0	0	3	0	0	0	1	0	0	0	0	**3**	**0.00**	**2.64**	**0.33**
AN	1	14	5	1	0	1	0	6	0	0	0	0	0	1	0	0	**5**	**0.33**	**2.70**	**0.33**
BD	2	26	25	0	0	0	0	0	0	0	0	1	0	0	0	0	**2**	**0.00**	**2.62**	**0.33**
AE	1	3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	**2**	**0.00**	**2.50**	**0.33**
AA	1	11	6	1	0	1	0	1	0	0	0	0	1	1	0	0	**6**	**0.33**	**3.20**	**0.67**
AV	3	49	4	13	0	2	0	9	0	4	0	8	0	0	0	9	**7**	**0.67**	**2.44**	**0.33**
AX	1	10	3	3	0	1	0	0	0	2	1	0	0	0	0	0	**5**	**0.33**	**2.78**	**0.67**
BB	1	18	6	1	1	2	0	6	0	0	0	0	1	0	0	1	**7**	**0.67**	**2.50**	**0.33**
AY	1	15	5	1	0	2	3	1	0	0	1	1	1	0	0	0	**8**	**0.67**	**2.07**	**0.00**
AZ	2	6	0	3	0	0	0	1	0	0	0	2	0	0	0	0	**3**	**0.00**	**3.83**	**1.00**
AM	1	25	6	4	2	4	1	4	1	0	0	0	1	1	0	1	**10**	**1.00**	**3.05**	**0.67**
AS	1	26	6	2	0	7	0	7	0	0	0	0	2	1	0	1	**7**	**0.67**	**2.81**	**0.67**
AQ	3	29	5	2	1	8	4	7	0	1	0	1	0	0	0	0	**8**	**0.67**	**2.29**	**0.00**
AR	1	25	2	5	0	7	1	4	0	0	2	1	2	1	0	0	**9**	**1.00**	**2.48**	**0.33**
BA	1	7	4	0	0	3	0	0	0	0	0	0	0	0	0	0	**2**	**0.00**	**3.33**	**0.67**
BE	1	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**	**0.00**	**3.00**	**0.67**
AC	1	6	4	0	0	1	0	0	0	1	0	0	0	0	0	0	**3**	**0.00**	**3.00**	**0.67**
AL	2	11	6	4	0	0	0	0	0	0	0	1	0	0	0	0	**3**	**0.00**	**2.50**	**0.33**
AK	2	7	2	4	0	0	0	0	0	0	0	0	0	0	0	1	**3**	**0.00**	**3.43**	**0.67**
AU	2	48	2	5	1	1	1	32	0	0	0	0	2	2	1	1	**10**	**1.00**	**1.57**	**0.00**
M		20.48	6.14	2.59	0.34	2.10	0.45	3.90	0.14	0.45	0.21	1.83	0.62	0.52	0.10	1.10	**5.72**	**0.41**	**2.85**	**0.52**
SD		17.15	6.53	3.09	0.55	2.55	0.99	6.70	0.44	0.91	0.56	4.00	1.18	0.87	0.41	2.32	**2.86**	**0.38**	**0.54**	**0.30**

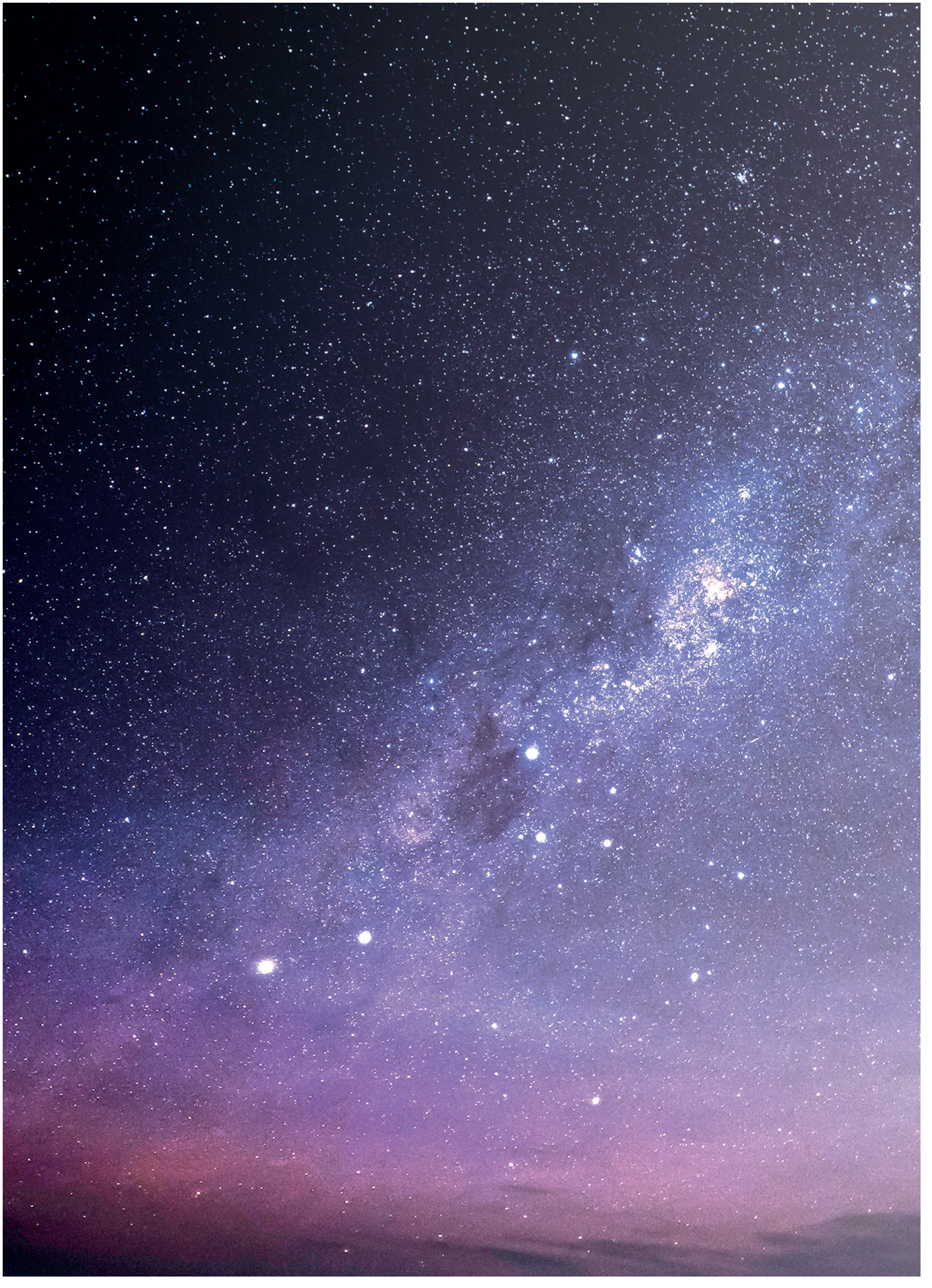
Conditions and outcome in fsQCA

1 = Multisectoral network; 2 = Active networking project leader; 3 = Active participation network actors;
4 = Trust within the network; 5 = Intervention mix

Solution terms fsQCA (capitals means that condition is present; lower cast means that condition is absent)

Solution I-a	MULTISECTORAL NETWORK*ACTIVE NETWORKING*active participation
Solution II-a	MULTISECTORAL NETWORK*active networking*ACTIVE PARTICIPATION
Solution III-a	multisectoral network*ACTIVE NETWORKING*ACTIVE PARTICIPATION*TRUST
Solution IV-a	multisectoral network*active networking*active participation*TRUST

					Composition intervention package						Outcome					
	% Actors Actively Involved	% Actors Actively Involved calibrated[3]	Trust	Trust calibrated[4]	N Interventions	N Strategies Health Education	N Strategies Facilitation	N Strategies Regulation	N Strategies Case Finding	N Strategies Citizen Participation	N Non-educational Strategies	N Non-educational Strategies calibrated[5]	Solution I-a	Solution II-a	Solution III-a	Solution IV-a
	31%	**0.00**	**0.92**	**0.67**	5	6	0	1	3	2	**3.00**	**0.67**	X			
	10%	**0.00**	**0.48**	**0.00**	1	1	1	1	1	0	**3.00**	**0.67**	X			
	71%	**1.00**	**0.83**	**0.67**	11	6	7	2	2	3	**4.00**	**1.00**		X		
	57%	**1.00**	**0.74**	**0.33**	5	5	1	4	1	0	**3.00**	**0.67**		X		
	56%	**1.00**	**0.90**	**0.67**	16	9	1	5	1	1	**4.00**	**1.00**			X	
	58%	**1.00**	**1.03**	**1.00**	30	28	1	5	4	0	**3.00**	**0.67**			X	
	56%	**1.00**	**0.84**	**0.67**	11	10	1	5	1	0	**3.00**	**0.67**			X	
	63%	**1.00**	**1.48**	**1.00**	13	7	4	0	3	4	**3.00**	**0.67**			X	
	67%	**1.00**	**0.80**	**0.67**	6	4	4	0	1	0	**2.00**	**0.33**			X	
	25%	**0.00**	**0.90**	**0.67**	5	5	1	2	2	1	**4.00**	**1.00**				X
	38%	**0.00**	**0.80**	**0.67**	3	5	2	1	2	0	**3.00**	**0.67**				X
	36%	**0.00**	**0.81**	**0.67**	2	4	0	1	2	1	**3.00**	**0.67**				X
	33%	**0.00**	**0.80**	**0.67**	7	7	5	0	0	0	**1.00**	**0.00**				X
	20%	**0.00**	**0.96**	**0.67**	19	14	10	1	1	1	**4.00**	**1.00**				
	36%	**0.00**	**0.96**	**0.67**	10	9	1	2	2	1	**4.00**	**1.00**				
	0%	**0.00**	**0.83**	**0.67**	6	2	4	2	2	2	**4.00**	**1.00**				
	22%	**0.00**	**0.47**	**0.00**	15	15	14	2	3	1	**4.00**	**1.00**				
	33%	**0.00**	**0.57**	**0.33**	6	1	4	1	0	2	**3.00**	**0.67**				
	33%	**0.00**	**0.87**	**0.67**	11	11	1	2	2	0	**3.00**	**0.67**				
	57%	**1.00**	**0.57**	**0.33**	6	4	5	0	2	0	**2.00**	**0.33**				
	60%	**1.00**	**1.19**	**1.00**	19	13	9	0	0	1	**2.00**	**0.33**				
	36%	**0.00**	**0.62**	**0.33**	23	19	6	0	1	0	**2.00**	**0.33**				
	20%	**0.00**	**1.28**	**1.00**	3	1	1	0	0	2	**2.00**	**0.33**				
	0%	**0.00**	**0.90**	**0.67**	5	4	3	0	2	0	**2.00**	**0.33**				
	0%	**0.00**	**1.00**	**1.00**	1	1	1	0	1	0	**2.00**	**0.33**				
	40%	**0.00**	**0.76**	**0.33**	2	3	0	0	2	0	**1.00**	**0.00**				
	60%	**1.00**	**0.72**	**0.33**	2	3	0	0	2	0	**1.00**	**0.00**				
	50%	**1.00**	**0.20**	**0.00**	3	3	0	0	0	0	**0.00**	**0.00**				
	36%	**0.00**	**0.62**	**0.33**	4	5	0	0	0	0	**0.00**	**0.00**				
	38%	**0.38**	**0.82**	**0.58**	8.62	7.07	3.00	1.28	1.48	0.76	**2.59**	**0.55**				
	20%	**0.49**	**0.25**	**0.30**	7.22	6.09	3.47	1.62	1.06	1.06	**1.18**	**0.35**				



Chapter 4

The role of the Dutch Recognition System as a tool to support the promotion of evidence-based health promotion practices in the context of intersectoral policymaking

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ABSTRACT

Although evidence-based practices are considered important to raise the impact of health promotion, their uptake has remained challenging. This study aimed to assess and explain the use of the Dutch Recognition System (DRS) and its intervention database, as a possible support tool for evidence-based practice (EBP), in municipal projects within a governmental program that provided Dutch municipalities opportunities to experiment with the implementation of integrated packages of health promotion interventions. The study's conceptual framework stated that the use of the DRS may be determined by the DRS itself, the unique and dynamic local contexts in the municipalities, the (potential for) contextual fit of the recognized interventions, and the required and supported use of the DRS by the program.

In a mixed method study, longitudinal data were collected in 34 projects among 34 project leaders and 158 implementers of interventions, using questionnaires. Additionally, face-to-face interviews were conducted with the project leaders early in the project period, and telephone interviews at the end of the project period. Data were collected on whether and when project leaders visited the DRS database, the uptake of interventions that originated from the database, the submission of interventions for inclusion in the database, and reasons for using or not using the DRS.

The database of the DRS was not frequently visited by most projects. Most projects implemented interventions that originated from the database, and about half the projects submitted at least one intervention. The number of adopted, implemented and continued DRS interventions, and submitted interventions, all represented less than 13% of all interventions. In several projects, the use of the DRS was stimulated by the governmental program's required and supported use of the DRS. Factors hindering the use of the DRS related to the perceived low user-friendliness of the database, the limited availability of interventions for certain themes, target groups, and behavioral determinants, the limited availability of adaptable interventions and local capacity for adjustments of DRS interventions to their own implementation context, the time-intensive development and submission process, and a general lack of awareness of the importance of EPB among professionals.

We conclude that the role of the DRS was limited but certainly not negligible in supporting and achieving EBP. EPB can be stimulated by requirements of grant providers, but in addition requires improvements in the implementation strategy and the DRS itself, and a more comprehensive support system that raises awareness and debate among professionals about EBP in general and facilitates intervention development and evaluation and local capacity building in transferability, intervention adaptation to improve contextual fit, and skills to monitor the local context and intervention-context interactions.

INTRODUCTION

Background

Unhealthy lifestyle behaviors, such as a poor diet, alcohol abuse and sedentary behavior, are the prime cause of the current pandemic of non-communicable diseases (WHO, 2018). To reverse this public health problem, many countries have invested in the development of health promoting (HP) interventions, and research into the potential impact of these interventions (ZonMw, 2019; WHO, 2014). In recent years, in addition to intervention development and evaluation, there has been increased attention to problems with the implementation of these HP interventions in practice (Fixsen et al., 2005). Available interventions are not used at all by the intermediate users, only used on a small scale, or not used as intended by the developers (Dusenbury et al., 2003; Glasgow et al., 1999). As a result, HP interventions do not have the impact they could and should have (Chambers et al., 2013; Durlak & DuPre, 2008; Glasgow et al., 1999). Many and diverse barriers for the proper implementation of HP interventions have been identified, such as the perceived complexity of the intervention by the intermediate users, a lack of political support, and low self-efficacy expectations of the intermediate user towards the implementation of the intervention (Fleuren et al., 2004; Paulussen, 1994).

A specific element of the problematic implementation of HP interventions concerns evidence-based practice (EBP). EBP in health promotion refers to the systematic process in which decisions and actions are made based on the best available evidence (McKibbon, 1998). In other words, EBP is about HP professionals and policymakers consciously choosing for the implementation of interventions that have the best support for achieving the desired outcomes. Promoting EBP has been positioned as an important vehicle to raise the impact of health promotion on public health (Brownson et al., 2009; Faggiano et al., 2014; Speller et al., 2005), and several tools have been developed to facilitate the uptake of EBP worldwide. The providers of these tools collect available evidence on interventions and share information and academic data regarding the evidence of interventions in a digital database. These tools all have the main objective to provide professionals with the best practice according to available evidence. Examples are the Community Guide (United States; https://thecommunityguide.org/; Jetha et al., 2008), the Canadian and European Best Practices Portals (https://cbpp-pcpe.phac-aspc.gc.ca/; https://webgate.ec.europa.eu/dyna/bp-portal/), and the evidence-based recommendations of the National Institute for Health and Care Excellence (NICE) (United Kingdom; https://www.nice.org.uk/; Kelly et al., 2010).

In the Netherlands, EBP in health promotion is supported by the Dutch Recognition System (DRS) (RIVM, 2018). This system was initiated in 2008 and is currently a joint recognition system of seven Dutch institutes for interventions in multiple sectors, including the health promotion field. An open access intervention database on the website of the National Institute for Public Health and the Environment of the Ministry of Health, Welfare and Sport (RIVM) (https://www.loketgezondleven.nl/) provides professionals and policymakers with information on the quality, feasibility, and effectiveness of available HP interventions. Owners of interventions (e.g., HP institutes, Regional Public Health Organizations, universities) can apply for recognition of their intervention, and thereby for its inclusion in the intervention database. Application requires delivery of a completed comprehensive pre-structured worksheet, for which applicants receive support from independent advisors assigned by the DRS. Intervention owners can apply for the ascending recognitions 'well described', 'well substantiated' or one of three ascending levels of proven effectiveness (i.e., first, good or strong indications). Independent multi-disciplinary expert committees rate the submitted descriptions of these interventions based on predefined criteria for the different recognition levels. Besides the aim to provide insight in best practices according to available evidence, the DRS also aims to create upward pressure aimed at intervention developers steering them towards theory-based interventions thereby improving the quality of interventions (Brug et al., 2010; RIVM, 2018).

Evaluation studies of the DRS have revealed that over the years many professionals and policymakers have become familiar with the database of HP interventions and the system of recognition (Lanting et al., 2012; Noordink et al., 2013; Wolt et al., 2009). Overall, the database is well appreciated by its users for its availability of information about the quality and effectiveness of interventions (Gelinck et al., 2018; Noordink et al., 2013; RIVM, 2012). However, the database has not reached all target adopting and implementing professional groups and policy makers yet, and an important barrier for the implementation for recognized interventions concerns the limited offer of interventions in the database (Gelinck et al., 2018; Noordink et al., 2013). More specifically, users are of the opinion that the database includes relatively few interventions for certain specific target groups (e.g., with a low social economic status), of a certain type (e.g., complex interventions, policy interventions), for certain themes, and recognized on a level of effectivity (Lanting et al., 2012; Noordink et al., 2013; RIVM, 2012). Additionally, users have indicated that the information in the database about the practical feasibility of the interventions could be improved (Gelinck et al., 2018; Lanting et al., 2012; Noordink et al., 2013; Van de Walle et al., 2014; Wolt et al., 2009). The complicated and time-consuming process of application for inclusion in the database, and of the development of interventions that can apply for recognition in general, have been suggested as possible reasons for the perceived incompleteness of the database (Gelinck et al.,

2018; Kok et al., 2017; Lanting et al., 2012; RIVM, 2012). Another important barrier for using interventions from the DRS database concerns a perceived lack of information and support on whether recognized interventions would fit or could be adapted to fit the new unique implementation context of the intermediate user and final target group (Kok et al., 2017; Noordink et al., 2013; Van de Walle et al., 2014)

Study aims and setting

In the present study, we aimed to explore the role of the DRS as a possible tool to support EBP in the context of the Gezonde Slagkracht program (Decisive Action for Health program; 2009-2015), which was a program of the Dutch Ministry of Health, Welfare and Sport (Grêaux et al., 2020; ZonMw, 2009). Municipalities or alliances of municipalities (referred to below as projects) could apply for participation in the program. Thirty-four projects were granted the opportunity in terms of subsidiary budgets (100 000 to 250 000 euros per project) and professional support to experiment with intersectoral health policymaking and the implementation of integrated packages of health promotion interventions over a period of 24-48 months. More specifically, we aimed to assess and explain the use of the DRS within the municipal approaches.

The prerequisites for program participation included the formal appointment of a project leader. In most cases, the project leader was working at the Municipal Government Organization (MGO) or the Regional Public Health Organization (RPHO). The project leader had to take a coordinating role in the establishment of local partnerships involving partners from health and non-health sectors, including private partners and citizens.

The packages of health promotion interventions were expected to focus on one or more of the following themes: nutrition, physical activity, alcohol, drugs, and smoking, and to include different types of interventions in various local settings addressing both personal and environmental behavior determinants. Indeed, the projects implemented multiple interventions on one or more of the themes, and incidentally on other themes (e.g., fall prevention) (Grêaux et al., 2020). The interventions targeted different age and population groups (e.g., children, adults, parents) and applied a variety of behavior change strategies (e.g., education, facilitation, regulation), targeting various behavioral determinants (e.g., personal determinants, determinants in the physical environment) in different settings (e.g., school, sports facility, commercial building, health and welfare building).

An additional condition imposed from the governmental program on the packages of health promotion interventions was the choice of evidence-based interventions whenever possible at any level of recognition. Projects were required to consult the DRS and to submit interventions that were implemented as part of the project and that

were either already existing or newly developed for inclusion in the DRS. In this respect, projects were categorized by the governmental program based on the level of expertise with the implementation of integrated packages of interventions, i.e., in ascending order, new, starting and vanguard projects. New projects were specifically requested to consult the DRS for potentially relevant interventions, while vanguard projects were specifically motivated to submit interventions to the DRS, and to serve as an example for other projects.

As part of the professional support organized by the governmental program, projects were provided with diverse workshops, such as on how to work with the DRS, as well as with the opportunity to request support (manpower) or a voucher to employ support for submitting interventions to the DRS.

In most cases, the local partnerships took the adoption decisions about the interventions to be implemented, and subsequently one project partner took the main responsibility for the implementation of a specific intervention (referred to below as the prime implementer), often supported by one or more other partners (referred to below as co-implementers) (Grêaux et al., 2020; ZonMW, 2009).

Theoretical framework

Our study was guided by prevailing insights about the implementation of innovations in the health promotion field. These insights underline the influence of both the characteristics of the innovation and the context of implementation (Durlak & DuPre, 2008; Fleuren et al., 2004; Greenhalgh et al., 2004; Paulussen, 1994; Rogers, 2003), but above all, that for successful implementation the features of the innovation need to fit or can be adapted to the features of, and stakeholders in, unique and dynamic implementation contexts (contextual fit) (Damschroder et al., 2009; Moore et al., 2015). Additionally, prevailing insights underline the importance of targeted implementation strategies (Powell et al., 2015).

In our conceptual model (figure 1), implementation was defined as the use of the DRS in terms of visiting the DRS, taking up (i.e., to adopt, implement and continue (in this study based on implementer's definition) interventions that are included in the DRS, and submitting interventions for inclusion in the DRS. The requirement and the support of the governmental program to use the DRS were seen as the main implementation strategy. The characteristics of the DRS and the characteristics of the interventions in the database, were both seen as the innovation characteristics. The context in the present study concerned the participating municipalities and the partners involved in each of the local settings. The bold arrows between the innovation and the local context visualize the concept of contextual fit. The framework's rationale is that the use of the

DRS is determined by the DRS itself, the unique and dynamic local contexts in the municipalities, the (potential for) contextual fit of the interventions, and the required and supported use of the DRS as a tool for EBP.

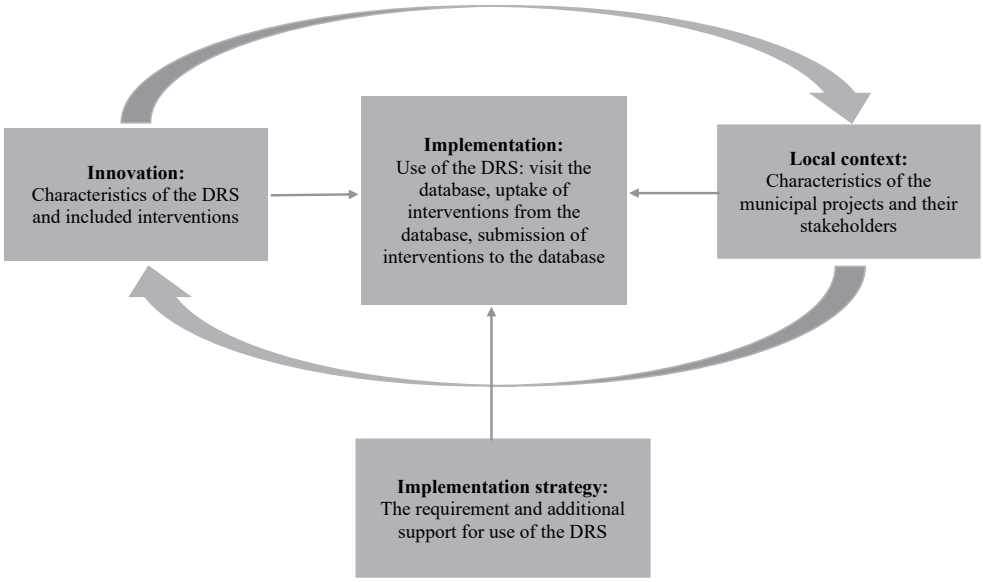


Figure 1. Conceptual model of factors influencing the use of the recognition system as a tool to support evidence-based practices

Research questions

Two main sets of research questions were derived from the conceptual model. Our first set of research questions related to the use of the DRS i.e., (i) Do program participants visit the database, take up (adopt, implement and continue) interventions from the database, and submit interventions for inclusion in the DRS? The second set of research questions related to reasons for use of the DRS, i.e., (ii) What are the reasons for using or not using the DRS in terms of the characteristics of the innovation, local context, contextual fit and implementation strategy?

METHODS

Study design

For the present mixed method study, data were used that were collected as part of a larger longitudinal study (2011-2014). Details about the data collection procedures are reported elsewhere (Grêaux et al., 2020). Data collection took place among the

34 *project leaders* in April of 2012, 2013 and 2014 with a questionnaire, a face-to-face interview early in the program period (April-June 2011), and a telephone interview at the end of the project period (the start date and the length of the project period varied between the 34 projects). Data from *prime implementers of interventions* in the projects were collected once during the project period with a questionnaire. Prime implementers completed a separate questionnaire for each of the interventions implemented by them.

Data collection

Project leader questionnaire

To assess the use of the DRS, the questionnaire items addressed:

(i) database visit; was the DRS database visited in the previous year (4-point answering scale: from not at all to very often), and if so, during which project phase (categorical answering scale: during project preparation, during planning, implementation or continuation of interventions);

(ii) uptake (i.e., to adopt, implement and continue) of interventions from the database; by collecting the number and names of all adopted, implemented and continued interventions in the previous year independent of their presence in the DRS. This was done by completing a project specific intervention list prepared by the researchers based on the project's grant application and the questionnaire completed in the previous year;

(iii) submission of interventions; which interventions were submitted for inclusion in the DRS in the previous year (open ended).

With regard to reasons for use, the first yearly questionnaire included four statements: 'Visiting the DRS website was a result of participation in the Gezonde Slagkracht program', 'Participation in the Gezonde Slagkracht program resulted in the adoption of evidence-based interventions', 'The level of recognition of interventions in the DRS played a role in taking the adoption decision', and 'Submitting implemented interventions for inclusion in the DRS was a result of participating in the Gezonde Slagkracht program'. The statements could be answered on a 5-point Likert scale ranging from strongly disagree to strongly agree. The fourth statement on submitting interventions was included in the second and third yearly questionnaire as well.

Finally, two open-ended items respectively assessed the project leader's years of relevant work experience and name of their organization.

Prime implementers questionnaire

To assess theme, target group, main intervention strategy, main implementation setting and targeted behavioral determinant of all interventions, a set of open questions asked the prime implementers to describe concisely the intervention's aim, content and implementation setting. A pre-structured question asked the implementer to tick off the behavioral determinants that the intervention addressed (i.e., personal determinants and/or environmental determinants in the social, physical, political and/or economic environment). One other item asked the prime implementer if the intervention was included in the DRS database (yes/no). As in the project leader questionnaire, two open-ended items assessed the prime implementers' years of relevant work experience and name of their organization, respectively.

Face-to-face and telephone interviews with the project leaders

In both interviews, to assess reasons for use of the DRS in relation to the innovation, local context, contextual fit and implementation strategy, the project leaders were asked to elaborate on their (intended) behavior regarding visiting the database, adopting, implementing and continuing interventions from the database, and submitting interventions for inclusion in the database, respectively. Both types of semi-structured interviews were audio-recorded. Each interview was prepared and adapted according to the available information from the specific project's grant application and the previous interview on intended interventions, intended processes of intervention adoption and intentions for submission of interventions, respectively.

Data processing and data analysis

Quantitative data

To verify the answers provided by the prime implementers regarding the DRS recognition of their intervention, a DRS employee retrospectively checked if the intervention was included in the DRS at the time of adoption and with which recognition level. The verified data were used in the analyses even when there was discrepancy with the data provided by the implementer. The data on the number of adopted, implemented and continued interventions in each project that were collected per project year, were merged into data for the total project period of that specific project.

From the description of the aim and content of the interventions by the prime implementer, we retrieved and categorized the main strategies employed in all interventions into: education (e.g., school learning module), regulation (e.g., legislation regarding the sale of alcohol products in sports cafeteria's during youth activities), facilitation (e.g., environmental or organizational changes such as new play gardens, supplying sports activities or materials), citizen participation (e.g., citizens organizing a walking event)

and case finding (e.g., spotting drunk youngsters in nightlife). The main setting of all interventions was categorized into: school or preschool, sports facility, outdoor public site (e.g., playgrounds, nature areas), home (including websites to be consulted at home), health or welfare building (e.g., hospital, welfare organization, addiction center), public building (e.g., library, community centers) and commercial building (e.g., supermarkets, bars, restaurants).

The work organizations of the project leaders were categorized into Municipal Government Organization (MGO), Regional Public Health Organization (RPHO) and other. The work organizations of the prime implementers were categorized into MGO, health organization, non-health organization and other. The projects were categorized in type of project, i.e., new, starting or vanguard, along the categorization of the governmental program.

Descriptive statistics were used to answer our first set of research questions related to the use of the DRS (i.e., database visit, uptake of interventions from database and submission of interventions for recognition). Descriptive analyses were also used for the four statements measuring the reasons for use of the DRS according to the project leaders. Additionally, differences between project leaders from different types of projects and project leaders from different work organizations in the scoring of the four statements were assessed with respectively Kruskal-Wallis and Mann-Whitney tests.

IBM SPSS Statistics for Windows (Version 27.0) was used to process and analyze the data.

Qualitative data

An independent research assistant transcribed all interviews verbatim. If words or sentences were unclear, KG was consulted to complete the transcript, based on annotations that were made during the interview and a summary of the most important information that was made right after the interviews.

The coding of the transcripts, using the QSR qualitative data analysis software NVivo 12 Pro (QSR International, Doncaster, Victoria, Australia), primarily aimed to order the data. Firstly, open codes helped to categorize the data into two broad categories regarding the use of the DRS, i.e., 'visiting the website in general' or 'using the DRS in/for own project'. Using the DRS in/ for own project was subdivided into uptake interventions from DRS and submission of interventions. Secondly, within the previous categories of use 'reasons for uptake' or 'reasons to submit' and 'reasons against uptake' or 'reasons against submission' were identified. In line with the study's conceptual model, these reasons were further divided into reasons related to: characteristics of the innovation, characteristics of the local context, the contextual fit, and the implementation strategy.

RESULTS

Response and participants

Of the 34 project leaders, 2 project leaders returned one annual questionnaire, 18 project leaders returned two annual questionnaires and 14 project leaders returned all three questionnaires. The number of completed questionnaires varied due to the different start and end dates of the projects, and was not the result of non-response. This was except for one project leader who completed only the first annual questionnaire because the project ended its participation in the program prematurely.

In total, the projects reported 714 considered interventions, 657 adopted interventions, of which 489 interventions were implemented by 209 prime implementers. Contact information from 31 projects was available of 195 prime implementers who implemented 423 interventions. Data on 315 of these interventions (74%) were returned by 158 of the invited prime implementers (response rate 81%). Except for the one project leader of the project that ended prematurely, all project leaders participated in both the interview sessions.

All the collected data were included in the analyses, also the data from the study participants who did not participate in all measurements or did not answer all questions (see valid N's in tables).

Background information on the participating projects, project leaders and prime implementers is provided in table 1.

Table 1. Characteristics of the projects, project leaders and implementers

	N	Percentage or mean (SD) [range]
Projects (N=34)		
Type of project (%)		
New	6	17.6
Starting	14	41.2
Vanguard	14	41.2
Project leaders (N=34)		
Mean years of relevant work experience (SD)		11.5 (9.0) [2-40]
Type of organization (%)		
Municipal Government Organization (MGO)	20	58.8
Regional Public Health Organization (RPHO)	12	35.3
Other[a]	2	5.9
Prime implementers (N=158)		
Mean years of relevant work experience (SD)Valid N=144)		10.0 (7.7) [0-35]
Type of organization (%) (Valid N=153)		
Municipal Government Organization (MGO)	21	13.7
Health organization[b]	72	47.1
Non-health organization[c]	57	37.3
Other[d]	3	2

Use of the DRS

Visit the database

Based on project leaders' data, almost 70% of the projects visited the DRS database in the first year (table 2). This percentage dropped to 60% in the second year, and less than 50% of the projects in the third year. Most projects that visited the database during a project year did so sporadically. A few projects reported to have visited the database regularly, and one project reported to have visited it very often during the second assessment year. Of the projects that reported on the project phase in which they used the database (more than one phase of use was possible), around 65% reported to have visited the database before the start of the project, i.e., during project preparation. Over the years, the database was mostly visited while planning and implementing interventions. A few projects visited the database while focusing on the continuation of interventions or for 'other' reasons.

Uptake of DRS interventions

Including the information from the grant applications, 83 DRS interventions were at least considered by the projects (see table 2). Twenty-eight projects reported to have adopted DRS interventions. Together, these projects adopted 75 DRS interventions, which is 11.4% of all adopted interventions. In 24 projects, 63 of the adopted DRS intervention(s) were actually implemented (12.9% of all implemented interventions). In 9 projects, the implementation of 13 DRS interventions was continued after initial implementation (10.2% of all continued interventions.

Of all the 83 considered DRS interventions, 29 were recognized as well described (4.1% of all considered interventions), 52 as well substantiated (7.3% of all considered interventions), and 2 as having good indications for effectiveness (0.3% of all considered intervention) (data not mentioned in table).

Table 2. Use of the DRS by the projects (N=34)

	n	Percentage
Visit the DRS database		
Visit in 2012 (% of the project) (valid N=33)		
Did not visit	10	30.3
Visited sporadically	18	54.5
Visited regularly	5	15.2
Visited very often	0	0.0
Visit in 2013 (% of the projects) (valid N=30)		
Did not visit	12	40.0
Visited sporadically	14	46.7
Visited regularly	3	10.0
Visited very often	1	3.3
Visit in 2014 (% of the projects) (valid N=13)		
Did not visit	7	53.8
Visited sporadically	4	30.8
Visited regularly	2	15.4
Visited very often	0	0.0
Moment (project phase) of visits in 2012 (% of the projects) (valid N=23)[a]		
During project preparation	15	65.2
During planning of interventions	8	34.8
During implementation of interventions	8	34.8
During continuation of interventions	1	4.3
Other: (example needed or for comparisons)	1	4.3
Moment (project phase) of visits in 2013 (% of projects) (valid N=17)[a]		

Table 2. Use of the DRS by the projects (N=34) (*continued*)

	n	Percentage
During planning of interventions	8	47.1
During implementation of interventions	9	52.9
During continuation of interventions	1	5.9
Other: (for general knowledge, not program related)	2	11.8
Moment (project phase) of visits in 2014 (% of projects) (valid N=13)[a]		
During planning of interventions	4	66.7
During implementation of interventions	1	16.7
During continuation of interventions	2	33.3
Other: (search for inspiration/ options)	1	16.7
Implementation of DRS interventions		
Projects that have adopted at least 1 DRS intervention (valid N=33)	28	84.8
Projects that have implemented at least 1 DRS intervention (valid N=33)	24	72.7
Projects that have continued at least 1 DRS intervention (valid N=33)	9	27.3
Considered DRS interventions (% of all 714 considered interventions)	83	11.6
Adopted DRS interventions (% of all 657 adopted intervention)	75	11.4
Implemented DRS interventions (% of all 489 implemented interventions)	63	12.9
Continued DRS interventions (% of all 127 continued interventions)	13	10.2
Submission of interventions for inclusion in the DRS		
Projects that have submitted interventions (valid N=33)	18	54.5
Submitted interventions for inclusion (% of all 489 implemented interventions minus 63 interventions already included in the database = 426)	44	10.0

[a] **More than one answer was possible**

The prime implementers provided data on the content of 50 out of the 63 implemented DRS interventions. Table 3 (left columns) shows that most of these DRS interventions focused on nutrition, physical activity and alcohol, targeting the 4-12 years and 12-18 years old children and their parents, and were implemented in schools or in a health or welfare building. Most of the interventions were educational, and targeted personal behavioral determinants and behavioral determinants in the social environment. Relatively more well substantiated than well described DRS interventions were implemented for the themes of alcohol, drugs, and smoking, the target group of 12-18 year olds, the strategies of education and regulation, the school and preschool setting (Table 3, middle columns).

Table 3. Specification of implemented DRS interventions (valid N=50) and interventions submitted for inclusion in the DRS (valid N=40)

	Total DRS interventions (N=50)		Well described (N=16)	Well substantiated (N=33)	Effective (N=1)	Submitted interventions for inclusion in DRS (N=40)	
	n	%	n	n	n	n	%
Theme[a]							
Nutrition	21	42.0	8	13	0	14	35.0
Physical activity	18	36.0	8	9	1	14	35.0
Alcohol	23	46.0	4	19	0	20	50.0
Drugs	11	22.0	1	10	0	12	30.0
Smoking	13	26.0	1	12	0	12	30.0
Other	8	16.0	4	4	0	14	35.0
Intended target group[ab]							
Age groups:							
0-4 years	3	6.0	2	1	0	2	5.0
4-12 years (primary school)	19	38.0	8	11	0	16	40.0
12-18 years (secondary school)	12	24.0	3	9	0	12	30.0
Adults	7	14.0	3	4	0	7	17.5
Specific groups:							
Parents	18	36.0	6	12	0	22	55.0
Low socio-economic status	8	16.0	4	4	0	10	25.0
Ethnic groups	3	6.0	3	0	0	6	15.0
Pregnant women	1	2.0	1	0	0	2	5.0
Anders	15	30.0	3	11	1	11	27.5
Strategy[a]							
Education	45	90.0	13	31	1	37	92.5
Regulation	8	16.0	1	7	0	7	17.5
Facilitation	11	22.0	6	5	0	5	12.5
Citizen participation	5	10.0	1	4	0	4	10.0
Case finding	12	24.0	5	7	0	8	20.0
Setting[a]							
School/ Preschool	27	54.0	6	21	0	22	55.0

Table 3. Specification of implemented DRS interventions (valid N=50) and interventions submitted for inclusion in the DRS (valid N=40) (*continued*)

	Total DRS interventions (N=50)		Well described (N=16)	Well substantiated (N=33)	Effective (N=1)	Submitted interventions for inclusion in DRS (N=40)	
Sports facility	6	12.0	3	3	0	4	10.0
Home/online	5	10.0	2	3	0	4	10.0
Health or welfare building	13	26.0	5	8	0	10	25.0
Outside public places	5	10.0	4	1	0	3	7.5
Public building	6	12.0	2	3	1	7	17.5
Commercial building	4	8.0	2	2	0	3	7.5
Targeted behavioral determinant[ab]							
Personal	48	98.0	15	32	1	38	95.0
Social environment	33	68.8	10	23	0	31	77.5
Physical environment	20	40.0	6	14	0	11	27.5
Political environment	9	18.4	2	7	0	2	5.0
Economic environment	5	10.2	2	3	0	4	10.0

[a] Multiple answers were possible [b] One missing value

Submission of interventions for inclusion in the DRS

Eighteen projects reported to have submitted interventions for inclusion in the DRS (table 2). In total, 44 interventions (10%) were submitted by these projects. The prime implementers provided content data on 40 of these submitted interventions.

Table 3 (right columns) shows that these submitted interventions covered all themes, mostly targeted the 4-18 years old children and their parents and were implemented in schools. The submitted interventions were mostly educational, and targeted personal and social environmental behavioral determinants.

Differences between projects by project leaders and type of project

The percentage of projects led by a project leader from a MGO that adopted, implemented and continued DRS interventions almost equaled the percentage of projects led by a project leader from a RPHO, i.e., 85 versus 75% for adoption, 70 versus 66.6% for implementation, and 25% for continuation in both categories (data not in table, but additional to the data for the total group in table 2). The same accounted for submitting interventions for inclusion in the database, i.e., 50 versus 58.3%.

Adoption and implementation of DRS interventions took place in more vanguard projects (92.8% adoption, 78.6% implementation) than in new projects (83.3% adoption, 66.7% implementation) and starting projects (71.4% adoption, 64.3% implementation) (data not in table, but additional to the data for the total group in table 2). The same accounted for submitting interventions for inclusion in the database, i.e., 78.6% of the vanguard projects and 33.3% and 33.5% for new and starting projects respectively. Continuation of DRS interventions took place in 35.7% of the starting projects, in 28.6% of the vanguard project, and in none of the new projects.

Reasons for using or not using the DRS

The influence of the Gezonde Slagkracht program for using the DRS (statements)

Table 4 shows that a minority of the responding project leaders agreed or strongly agreed that visiting the DRS website was a result of participation in the Gezonde Slagkracht program, that participation in the Gezonde Slagkracht program resulted in the adoption of evidence-based interventions, and that the level of recognition of interventions in the DRS was of influence for adoption. A small majority (53.9%) of the project leaders agreed or strongly agreed that submitting an implemented intervention for inclusion in the DRS was a result of participating in the Gezonde Slagkracht program.

The extended table 4 (see Supplementary file 1) shows that, on average, project leaders from an MGO agreed more with the statement that visiting the DRS website was a result of participation in the Gezonde Slagkracht program than project leaders from a RPHO ($U=20.50$, $p = 0.03$). No other statistically significant differences between project leaders or type of projects were found.

Table 4. Statements on reasons for using the DRS

	n	Percentage or mean (SD) [min-max]
Visiting the DRS website was a result of participation in the GS[c] program (%) (valid N=22)[a]		
Mean (SD)[range]		0.3 (1.0)[-2-2]
Strongly disagree	1	4.5
Disagree	3	13.6
Disagree/agree	9	40.9
Agree	7	31.8
Strongly agree	2	9.1
Participation in the GS[c] program resulted in the adoption of evidence-based interventions (%) (valid N=26)[a]		
Mean (SD)[range]		-0.3 (1.2)[-2-2]
Strongly disagree	5	19.2
Disagree	5	19.2
Disagree/ agree	9	34.6
Agree	6	23.1
Strongly agree	1	3.8
The level of recognition of interventions in the DRS played a role in taking the adoption decision (%) (valid N=24)[a]		
Mean (SD)[range]		0.0 (1.2)[-2-2]
Strongly disagree	3	12.5
Disagree	6	25.0
Disagree/ agree	5	20.8
Agree	8	33.3
Strongly agree	2	8.3
Submitting implemented interventions for inclusion in the DRS was a result of participating in the GS[c] program (%) – last answer (valid N=26) [ab]		
Mean (SD)[range]		0.6 (1.3)[-2-2]
Strongly disagree	2	7.7
Disagree	3	11.5
Disagree/ agree	7	26.9
Agree	6	23.1
Strongly agree	8	30.8

[a] Statements were coded from -2 (strongly disagree) to 2 (strongly agree)

[b] Variable was measured yearly (2012, 2013,2014). The last valid answer per project was taken into account.

[c] GS = Gezonde Slagkracht

Elaborations on use of the DRS by project leaders (interviews)

Elaborations at the start of the project

At the start of the projects, most project leaders were not yet considering the role the DRS could or should have in their project, but the possibilities for using the DRS were kept open. A few project leaders explicitly expressed no intention to use the DRS. In some projects the DRS was already being used for searching interventions, and in some projects intentions or plans for submission of an intervention were present.

The most frequently mentioned reason (4 projects) for using the DRS for finding interventions was to make use of what is available and '*not reinvent the wheel*' (MGO, starting). Two project leaders said that the DRS is a useful and inspirational source of information. Three project leaders indicated that the (intended) use of the DRS was linked to the evidence-base of the interventions: *'We can assume that those interventions are good. They contain all elements that a good intervention should have. You may expect … for these to contribute…* (MGO, starting) and '*You do not want to invest the available money in interventions that have not been proven effective'* (MGO, starting).

The most frequently mentioned reason (9 projects) for *not* intending to implement interventions from the DRS was related to the perceived contextual mismatch of the interventions: *'Since in this project we are highly dependent on the citizens, it is not always possible to implement a national intervention from the DRS to fit a very local need (e.g., walking routes, community gardens)'* (MGO, vanguard), and '*The interventions on the DRS website are mostly extensive interventions which are difficult to implement in local situations, or are very locally specific and you need to find out yourself how to implement these in a different setting*' (MGO, vanguard). Several project leaders felt no need to use the DRS, because they had other sources to find information about evidence-based interventions, such as information from other projects, colleagues or other websites or databases (5 projects), or because they had '*enough interventions available to choose from*' (1 project MGO, vanguard), or would only use the DRS when their intervention package would lack a certain intervention (1 project), or because no new interventions would be implemented in their project (1 project).

One project leader questioned the importance of evidence-based interventions: '*The success of an intervention depends on the right person, …personal skills, such as enthusiasm and being a leader'* (MGO, starting), and another principled reason entailed that the attention for the DRS of the health domain in the program, goes against the ideology of intersectoral policymaking.

Other reasons for not using the DRS for finding interventions were related to the use of the database itself, such as the difficulty to search for interventions in the DRS (5 projects) (*'The DRS is extensive, whilst containing many similar interventions…It is difficult to make choices…Can't see the wood for the trees…'* (MGO, starting)), and the limited availability of interventions in the DRS targeting specific themes or target groups (3 projects) (*'There are not much interventions targeting alcohol among adults and seniors...'* (RPHO, starting)). One project leader did not know the DRS existed. Two other project leaders indicated that they had no health promotion background, and therefore the DRS website would not be visited by themselves, but by other actors involved in the project (*'Most of the times a RPHO's coworker is assigned with the task to search for information about an intervention*' (MGO, starting).

A reason for *submitting* of interventions for inclusion in the DRS was the requirement of the program (3 projects) *('... You are more or less forced to submit interventions …. but I say that with a wink…They do that very cleverly, but I support it'* (RPHO, vanguard)). Another reason for submitting related to the importance of sharing knowledge (2 projects): *'Intervention recognition does not necessarily have a value for us … It is mainly about disseminating knowledge and gaining national knowledge'* (Other, vanguard).

The most frequently mentioned reason for not submitting interventions for inclusion was that the evaluation research that is needed for recognition of an intervention is not feasible due to lack of manpower, skills, time, and funding (6 projects): '*there is not much budget available for research. The epidemiologist has some hours for planning research, but not for conducting it … It's a complicated project, implemented in difficult neighborhoods, a simple questionnaire won't work'* (MGO, vanguard). One project leader considered the required research a '*waste of time*' (MGO, starting), and two questioned the requirement for the evaluation studies *('The people behind the DRS have little experience with evaluating these type of interventions, … an RCT is simply not possible…'* (MGO, vanguard). Four project leaders indicated to find the mere process of submission to be too time invasive: '*The submission process takes a lot of time*' (RPHO, vanguard).

Other reasons related to not being the intervention owner and therefore not having the rights to submit the intervention, and a preference to submit intervention descriptions to other (sector) databases.

Elaborations at the end of the project period

At the end of the project period, no major differences came forward in the reported use, perceptions and opinions of the project leaders compared to the start of the project. Some project leaders reported that their initial positive perceptions of the DRS being an inspirational source had been confirmed, and that interventions that have already been

tested elsewhere and proved to work, also work in the context of their own project. One project leader had experienced that even though local adaptations of interventions included in the DRS were necessary, those adaptations could still be done faster than 'reinventing the wheel'. Three project leaders mentioned that intervention submission was made possible by the support provided by the DRS advisors.

For the majority of the project leaders, the evidence-base of the interventions had indeed not been important for adoption decisions, but more importantly the contextual fit of interventions, financial resources, and the enthusiasm of those who have to implement the intervention. One project leader indicated that the evidence-base had been important during the project period due to creating political commitment: *'When proposing interventions to the Municipality Council, it was important to be able to say that the interventions were evidence-based or well substantiated, and included in the DRS'* (MGO, starting).

DISCUSSION

Summary and discussion of findings

The objective of this study was to explore the role of the DRS as a possible tool to support EBP in the context of intersectoral policymaking in 34 local projects in the Netherlands. To do so, we examined its use and sought to understand the reasons for its use or non-use, in terms of visiting the database, adopting, implementing and continuing interventions from the database, and submitting interventions for inclusion in the database.

Our results indicate that the DRS was not a frequently used tool in most projects. The DRS database was not visited at all by a large part of the projects in the different project years. Over the years, and thereby over the project phases, the visits to the database decreased. Despite the limited visits to the database, most projects implemented interventions from the DRS database. In total, many interventions were implemented in the 34 projects, but the number of adopted, implemented and continued DRS interventions represented only a small fraction of all interventions that were adopted, implemented and continued. In addition, just over half of the projects submitted interventions for inclusion in the DRS, and this is also only a small fraction of all interventions that were implemented and could have been submitted because they were not yet included in the database.

Not all projects that adopted a DRS intervention eventually implemented it, and only a quarter of the projects continued a DRS intervention. In this "drop-out" from adoption to continuation, DRS interventions did not differ from interventions that were not in the

DRS, from which we infer that DRS interventions are not "more difficult" to implement or continue than other interventions. It also means that if projects are encouraged and supported to choose DRS intervention at the outset, the likelihood of continuation of those interventions is as high as for interventions not included in the DRS.

In terms of explaining the observed level of use, our results show that in multiple projects, participation in the Gezonde Slagkracht program, and the related support and requirement to use the DRS, stimulated the use of the DRS and thus EPB. The influence appears to be the greatest for the submission of interventions for inclusion in the DRS. The interview data revealed that interventions were sometimes submitted because of the profession's desire to contribute to EPB, but sometimes only because of the requirement from the Gezonde Slagkracht program. Thus, a large proportion of the 44 submissions can be considered a unique result of the Gezonde Slagkracht program and the implementation strategy used.

Certain themes, target groups, settings, strategies and targeted were overrepresented among the DRS interventions implemented. The results from our own interviews and from previous studies endorse that this is due to the 'incompleteness' of the database in terms of availability of a broad spectrum of interventions (Gelinck et al., 2018; Noordink et al., 2013; Lanting et al., 2012; RIVM, 2012). Unfortunately, the interventions submitted as a result of the governmental program appeared to be little complementary to the existing offer, and therefore contributed only marginally to completing the database. Thus, other strategies are needed to achieve more balance in the supply of interventions in the database.

Most DRS interventions implemented were recognized as well substantiated and only two interventions as effective. The latter also relates to a previously noted 'incompleteness' of the database, i.e., the limited number of interventions in the database recognized at a level of effectiveness (Noordink et al., 2013). We also found that well substantiated were more often used than well described interventions. This means that if interventions of all levels of recognition are available in the database, the interventions with the highest levels will be used more.

The type of project did seem to influence the use of the DRS to some extent, in the sense that adoption and implementation of DRS interventions and submission of interventions occurred most in vanguard projects. Continuation of DRS interventions happened especially in starting projects and not at all in new project. Thus, the required example behavior by vanguard projects was visible, except for the continuation of DRS interventions. Consultation of the DRS was not more profound in new projects. This indicates that the specific requests to new and vanguard projects as part of the implementation

strategy had some impact on the use of the DRS in vanguard projects, but not in new projects. Additionally, the impact of the implementation strategy seemed to be slightly greater among project leaders from an MGO as they agreed more with the statement that visiting the DRS website was a results of participation in the Gezonde Slagkracht program than project leaders from a RPHO. These results endorse that it is worthwhile to further explore how to better coach frontrunners as models in an implementation strategy and how to better tailor an implementation strategy to actors who are less familiar with the DRS and EPB in general.

The reasons stated for using the DRS mainly had to do with not wanting to waste resources on ineffective interventions, and finding interventions and getting inspiration for interventions that can achieve project goals. However, there was also resistance to using the DRS in some projects. In some cases, this resistance was more fundamental, as comments on the usefulness of the evidence touch on the debate on the nature of the evidence (Tang et al., 2003). Project leaders also questioned the added value of EBP, possibly because they are primarily focused on and judged on the implementation of feasible and visible interventions in daily practice and not on the evidence-base of those interventions. Indeed, many project leaders reported that the level of recognition played almost no role in the choice of interventions to be implemented. This could say something more general about available knowledge, existing views or rather the lack of debate about EPB among Dutch professionals (Tang et al., 2003), and thus about the importance of raising awareness and debate among professionals about EPB. Initiatives to raise awareness of the importance of EBP could be supported by examples of positive experiences of political engagement as a result of implementing recognized interventions, which also emerged in our study.

Many project leaders reported good intentions, but seemed beleaguered by features of the DRS, among others the low user-friendliness of the database. This call for technical facilitation of use also emerged in previous research (Gelinck et al., 2018; Noordink et al., 2013). Another hindering factor concerned the aforementioned limited availability of interventions for certain themes, target groups, and determinants. The perceived contextual mismatch of the interventions in the DRS database played a major role. DRS interventions were considered unsuitable for the context of one's own project, both in terms of their connection to local needs and because of perceptions of the adjustments one should or could not make for local implementation. This finding also seems to relate to a perceived lack of information and support on issues concerning adaptation of recognized interventions that emerged in previous research (Kok et al., 2017; Noordink et al., 2013; Van de Walle et al., 2014), previous calls to improve the information in the database about the practical feasibility of the interventions (Gelinck et al., 2018; Lanting et al., 2012; Noordink et al., 2013; Van de Walle et al., 2014; Wolt et al., 2009),

and perceptions that evidence-based interventions are inherently more complex to implement because they are more detailed, resource intensive, and require structural and financial provisions (Kok et al., 2017; McMichael et al., 2005). However, the latter seems to be refuted by the finding mentioned earlier that DRS interventions did not distinguish from interventions that were not in the DRS, in their "drop-out" from adoption to continuation. Our findings on the perceived contextual mismatch also relate to previous conclusions that evidence-based interventions do offer limited possibilities for adjustments to contextual factors (Bolton et al., 2016). This requires adjustments in the DRS assessment criteria and presentation of the interventions in the database.

In terms of solutions, previous studies have highlighted the importance of a comprehensive support system that helps professionals working with evidence-based interventions (Dawes et al., 2005; Lehane et al., 2019). As part of such a broader support system, professionals might benefit from the steps provided by Schloemer et al., (2021) to select an appropriate intervention for a target context by anticipating transferability, i.e., the extent to which an effective intervention identified in a specific context is also effective in another context (Cambon et al., 2012). Furthermore, it could provide support and tools on *how* to adapt recognized interventions in a systematic way, with or without the intervention owners (Dawes et al., 2005; Hailemariam et al., 2019; Lehane et al., 2019). Moreover, in order to assess whether and what needs to be adapted to an intervention, it has been shown that it is important to continuously monitor the constantly changing local context and the evolution of an intervention in intervention-context interactions (Moore et al., 2021; Wiltsey-Stirman et al., 2019). Knowledge about the importance, and development of skills for monitoring are therefore also important ingredients of a support system for professionals (Chambers et al., 2013; Bartelink et al., 2023). In addition, our own earlier discussion suggests that such a broad support system should additionally increase awareness and debate about EPB in general.

Finally, our results show that for all interventions, the resistance to and impossibility of submitting interventions for inclusion in the database stem mainly from the complicated and time-consuming process of developing and evaluating an intervention before it can apply for recognition. This might be especially true for interventions for certain themes, settings or behavioral determinants, as evidenced by current gaps in the intervention database. There is no easy solution to this, but the broad support system should also focus on facilitating this process. The submission process itself was also reported as time-intensive, as emerged in previous evaluation studies of the DRS (Gelinck et al., 2018; Kok et al., 2017; Lanting et al., 2012; RIVM 2012). Over the years, there has been increasing submission support for applicants from the DRS, financially and through consultants (Noordink et al., 2013; RIVM, 2012).

Strengths and limitations

Strengths of our research include the real-life study context of intersectoral policymaking in a large number of settings and a huge diversity in data among different stakeholders in a storyline. Reasons for use were only investigated with the project leaders though, while in this type of intersectoral collaboration the perceptions of a project leader might not fully represent the perceptions and experiences of all local actors. However, the project leader can be considered the most appropriate research participant. Because of the large number and variety of settings, we think that the recommendations emerging from our study are also relevant for other contexts.

On the other hand, we acknowledge that in the interviews, the key concepts of our study were not questioned very deeply because it composed only one of the components of the interviews. Examples are the limited data on the (perceived) enforcement of the requirement to use the DRS and the support that was provided by the Gezonde Slagkracht program, and its potential influence. In particular, specific features of the local context that may have been influential were only discussed to a limited extent. Additionally, in the quantitative data analysis we only included the work organization of the project leader and the type of project as context features, and that too only to a limited extent because of the small numbers. This means that context-specific recommendations cannot yet be retrieved from this study.

Conclusions

The role of the DRS was limited but certainly not negligible in supporting and achieving EBP in the Gezonde Slagkracht program. In terms of implementation strategy, we conclude that the requirement by a grant provider does have the potential to influence the use of the DRS and thus evidence-based practices. However, the implementation strategy could be improved through better use of exemplary behavior from the more experienced ones (i.e., the vanguard projects) and better tailoring the strategy to those that do not know the DRS or are more hesitant to use the DRS (i.e., the new and starting projects). Furthermore, the strategy could be much stronger if accompanied by improvements in the DRS itself, i.e., greater user-friendliness, a more balanced and higher-level recognized supply of interventions, more attention to context-specific evidence and adaptability of interventions in the assessment criteria and process and presentation of interventions in the database, and further facilitation of the intervention submission process. In addition, our study endorses the importance of a broader support system to raise awareness and debate among professionals about EPB in general, and to facilitate intervention development and evaluation, and local capacity building in transferability, intervention adaptation to improve contextual fit, and skills to monitor the local context and intervention-context interactions.

Supplementary file 1. Extended table 4 with statements on reasons for using DRS for different types of project leaders

Role of GS program for using DRS	Total		MGO		RPHO		New		Starting		Vanguard	
	n	%	n	%	n	%	n	%	n	%	n	%
Visiting the DRS website was an effect of participation in the GS program[a] (%) (N=22)												
Mean (SD)[range]	0.3 (1.0) [-2-2]		0.6 (0.8) [-1-2][*d]		-0.43 (1.0) [-2-1][*d]		0.3 (0.6) [0-1]		0.0 (1.3) [-2-2]		0.6 (0.7) [0-2]	
% Strongly disagree	1	4.5	0	0.0	1	14.3	0	0.0	1	10.0	0	0.0
% Disagree	3	13.6	1	7.1	2	28.6	0	0.0	3	30.0	0	0.0
% Disagree/agree	9	40.9	5	35.7	3	42.9	2	66.7	2	20.0	5	55.6
% Agree	7	31.8	6	42.9	1	14.3	1	33.3	3	30.0	3	33.3
% Strongly agree	2	9.1	2	14.3	0	0.0	0	0.0	1	10.0	1	11.1
Participation in the GS[c] program resulted in the adoption of evidence based interventions (%) (N=26)												
Mean (SD)[range]	-0.3 (1.2) [-2-2]		-0.1 (1.2) [-2-2]		-0.9 (1.1) [-2-1]		-0.5 (1.0) [-2-0]		-0.4 (1.4) [-2-2]		-0.1 (0.9) [-2-1]	
Strongly disagree	5	19.2	3	16.7	2	28.6	1	25.0	3	27.3	1	9.1
Disagree	5	19.2	2	11.1	3	42.9	0	0.0	3	27.3	2	18.2
Disagree/ agree	9	34.6	7	38.9	1	14.3	3	75.0	1	9.1	5	45.5
Agree	6	23.1	5	27.8	1	14.3	0	0.0	3	27.3	3	27.3
Strongly agree	1	3.8	1	5.6	0	0.0	0	0.0	1	9.1	0	0.0
The level of recognition of interventions in the DRS played a role in taking the adoption decision (%) (N=24)[a]												

Supplementary file 1. Extended table 4 with statements on reasons for using DRS for different types of project leaders (*continued*)

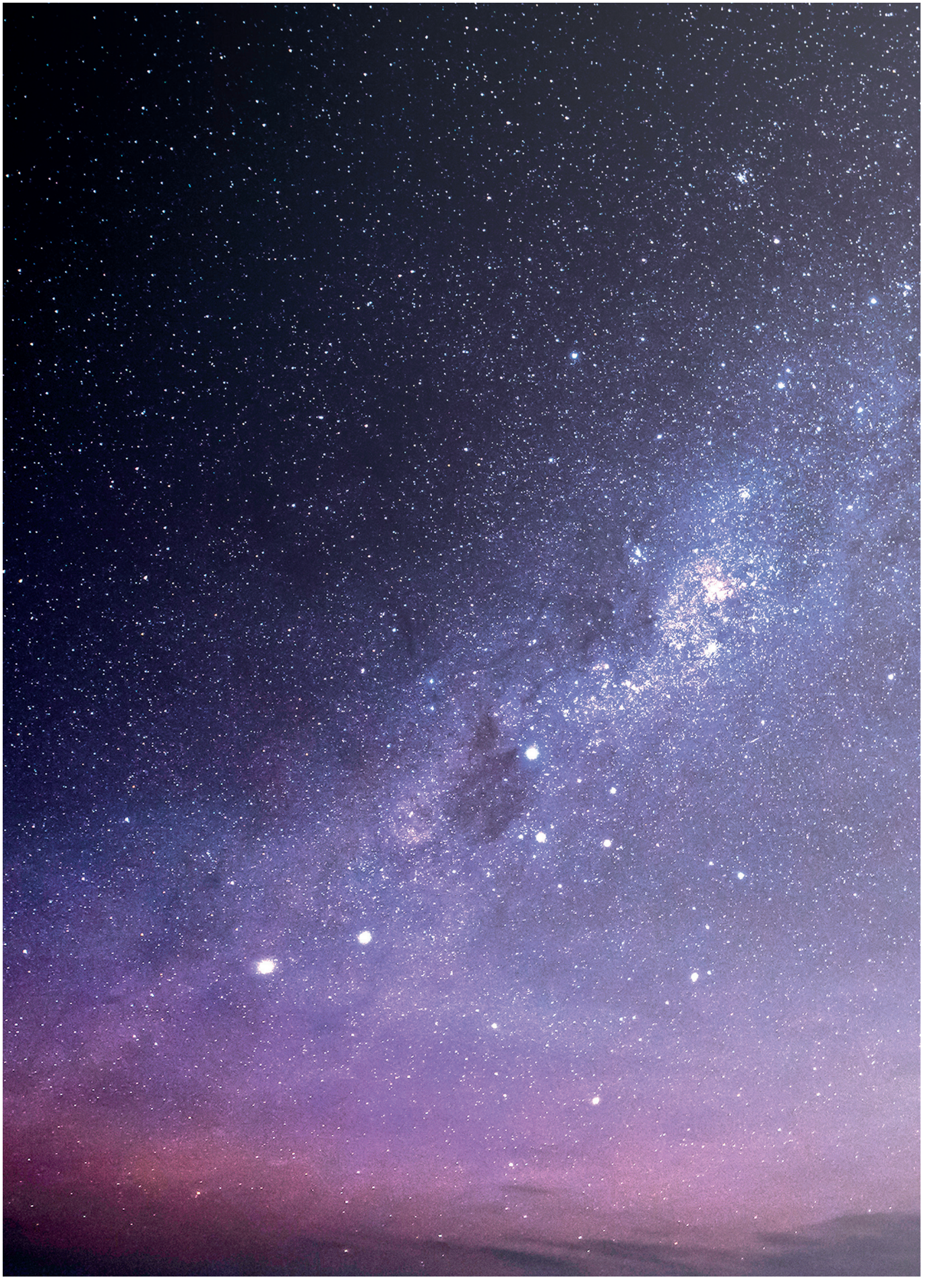
Role of GS program for using DRS	Total		MGO		RPHO		New		Starting		Vanguard	
	n	%	n	%	n	%	n	%	n	%	n	%
Mean (SD)[range]		0.0 (1.2) [-2-2]		0.2 (1.2) [-2-2]		-0.7 (1.0) [-2-1]		0 (1) [-1-1]		-0.2 (1.2) [-2-1]		0.2 (1.3) [-2-2]
Strongly disagree	3	12.5	2	11.8	1	16.7	0	0.0	2	20.0	1	9.1
Disagree	6	25.0	3	17.6	3	50.0	1	33.3	2	20.0	3	27.3
Disagree/ agree	5	20.8	4	23.5	1	16.7	1	33.3	2	20.0	2	18.2
Agree	8	33.3	6	35.3	1	16.7	1	33.3	4	40.0	3	27.3
Strongly agree	2	8.3	2	11.8	0	0.0	0	0.0	0	0.0	2	18.2
Submitting implemented interventions for inclusion in the DRS is an effect of participating in the GS[c] program (%) [ab]												
Mean (SD)[range]		0.6 (1.3) [-2-2]		0.8 (1.4) [-2-2]		0.3 (1.1) [-1-2]		0.0 (1.6) [-2-2]		0.4 (1.1) [-1-2]		1.0 (1.3) [-2-2]
Strongly disagree	2	7.7	2	12.5	0	0.0	1	25.0	0	0.0	1	9.1
Disagree	3	11.5	1	6.3	2	22.2	0	0.0	3	27.3	0	0.0
Disagree/ agree	7	26.9	2	12.5	4	44.4	2	50.0	3	27.3	2	18.2
Agree	6	23.1	5	31.3	1	11.1	0	0.0	3	27.3	3	27.3
Strongly agree	8	30.8	6	37.5	2	22.2	1	25.0	2	18.2	5	45.5

[a] Statements were coded from -2 (strongly disagree) to 2 (strongly agree)

[b] Variable was measured yearly (2012, 2013,2014). The last valid answer per project was taken into account.

[c] GS = Gezonde Slagkracht

[d] $p < 0.05$



Chapter 5

Patterns in bottlenecks for implementation of health promotion interventions: a cross-sectional observational study on intervention-context interactions in the Netherlands

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ABSTRACT

From a complex systems perspective, implementation should be understood as the introduction of an intervention in a context with which it needs to interact in order to achieve its function in terms of improved health. The presence of intervention-context interactions could mean that during implementation particular patterns of crucial interaction points might arise. We examined the presence of – and regularities in – such 'bottlenecks for implementation', as this could create opportunities to predict and intervene in potential implementation problems. H-1 state that each distinct intervention system will encounter a unique set of bottlenecks during implementation. H-2 reads that bottlenecks for implementation (H-2a) are partly associated with the specific characteristics of a particular intervention system *and* (H-2b) will partly arise independent of these characteristics.

We conducted a cross-sectional observational study against the background of municipal intersectoral policymaking in the Netherlands (n= 30 projects). We asked implementers of health promotion interventions (n=181) involved in those 30 projects to identify bottlenecks by rating the presence and importance of conditions for implementation in a range of intervention systems (n=424) by means of a questionnaire. We used descriptive statistics to characterize these systems (by their behavior change method, health theme and implementation setting) and the conditions that acted as bottlenecks. After stratifying bottlenecks by intervention system and the system's characteristics, we tested our hypotheses by qualitatively comparing the bottlenecks that emerged.

More than half of the possible conditions were identified as a bottleneck for implementation. Bottlenecks occurred in all categories of conditions, e.g., relating to the implementer, the intervention, and political and administrative support, and often connected with intersectoral policymaking, e.g., relating to the co-implementer and the co-implementer's organization. Both our hypotheses were supported: (1) Each intervention system came across a unique set of – a limited number of – conditions hampering implementation; (2) Most bottlenecks were associated with the characteristics of the system in which they occurred, but bottlenecks also appeared in the absence of such an association, or remained absent in the presence thereof.

We conclude that intervention-context interactions in integrated health policymaking may lead to both regularities and variations in bottlenecks for implementation. Regularities may partly be predicted by the function (i.e., health theme, behavior change method or implementation setting) of an intervention system, and may serve as the basis for building the capacity needed for the structural changes that can bring about long-lasting health improvements. Variations may point at the need for flexibility in further tailoring the approach to the – mostly unpredictable – problems at individual sites.

INTRODUCTION

Background

Intersectoral health policy is an important approach to improving public health (Clavier & De Leeuw, 2013; McQueen et al., 2012; Schmets et al., 2016). It usually includes the implementation of health promotion interventions that employ several behavior-change methods to address multiple health themes in a variety of local settings (Eldredge-Bartholomew et al., 2016; Jackson et al., 2006; Poland et al., 2000). From a complex systems perspective, this implementation should be understood as the introduction of an intervention in a context with which it needs to interact (Hawe et al., 2009). It is through this interaction that an intervention becomes adopted (Greenhalgh et al., 2004), changes determinants and behaviors and builds the capacity to achieve an intervention's 'function' in terms of long-lasting health improvements (Cambon & Alla, 2021; Hawe et al., 2009; Moore et al., 2019; Shiell et al., 2008). Conceiving implementation as an intervention-context interaction implies that the implementation setting serves as an active intervention element, rather than as an inactive site offering access to a population and/or a space to carry out an intervention as it is (Hawe et al., 2009; Whitelaw et al., 2021).

The presence of intervention-context interactions could mean that during implementation, depending on the nature of both the intervention and the context, particular patterns of interaction points might arise (Hawe et al., 2009; Shiell et al., 2008). Such a pattern would then reflect the crucial areas where a specific intervention has to combine with a particular context to perform its function (Hawe et al., 2009; Hawe, 2015; Minary et al., 2018; Shiell et al., 2008). Such an interaction pattern was, for instance, found in a multiple-case study that observed how the introduction of a social-emotional learning intervention in schools ran into comparable problems across different school settings, e.g., with respect to ensuring the intervention's congruence with contextual needs and resources (Evans et al., 2015). These implementation problems were interpreted as unfavorable interactions between specific intervention characteristics and typical features of the setting, requiring either adjustment of the intervention, or capacity building in the implementation setting, or transformations of both the intervention and the context (Evans et al., 2015). Identifying patterns in such key intervention-context interaction points, which we call 'bottlenecks for implementation', could create opportunities to predict and intervene in potential implementation problems (Evans et al., 2015; Hawe, et al., 2009).

As empirical studies on intervention-context interactions are considered important but scarce (Greenhalgh et al., 2004), we examined the presence of – and patterns in – such

interactions against the background of municipal intersectoral health policymaking in the Netherlands. This background offered the unique opportunity to include, as recommended (Greenhalgh et al., 2004), a diversity of health promotion interventions in a variety of local contexts in our study. In this manuscript, we will describe and compare the bottlenecks for implementation that occurred in different 'intervention systems' (Cambon & Alla, 2021; Minary et al., 2018). Such an intervention system includes both the interventional components (i.e., the behavior change method used and the health theme addressed) and the contextual elements (i.e., the implementation setting) (Cambon & Alla, 2021). We regard these components and elements as the core characteristics of an intervention's causal theory that reflects the function of an intervention in terms of its health promoting effects (Cambon & Alla, 2021; Fixsen, 2005; Hawe, 2015).

Hypothesis 1

Individual empirical studies provide two different indications for the presence of regularities in intervention-context interactions. The first is that in similar intervention systems, that have comparable intervention components and contextual elements, identical sets of bottlenecks for implementation are likely to arise. For example, one multiple-case study observed that the implementation of health promotion programs in schools was hampered by recurrent combinations of a limited number of contextual factors, such as the support from the municipality and the involvement of the community (Darlington et al., 2018). Another multiple- case study found that just some of all possible conditions for implementation, such as the formal ratification by the management, actually hampered the introduction of an intersectoral approach targeting childhood obesity in local communities (Van der Kleij et al., 2016).

The second indication of regularities in intervention-context interactions is that in dissimilar intervention systems different sets of bottlenecks for implementation tend to emerge. For example, a cross-sectional survey on the introduction of prevention programs in schools found that partly different factors were involved in the implementation of individual-level programs targeting student behavior, such as the characteristics of the program and the school, than in that of environmental-level programs addressing the school climate, such as the support from the school principle and the organizational capacity (Gottfredson & Gottfredson, 2002; Payne, 2009).

Together, these indications for the presence of patterns in intervention-context interactions led to our first study hypothesis (H-1), stating that each distinct intervention system will encounter a unique set of bottlenecks during implementation.

Hypothesis 2

In general, reviews of implementation studies do not result in a limited set of factors that would similarly influence implementation in an intervention system. Instead, such reviews typically identified 'hundreds' of different influential factors (Berman, 1981; Greenhalgh et al., 2004), of which many were found to alternatively facilitate and hampered implementation in a particular intervention system (Berman, 1981; Greenhalgh et al., 2004). Examples of factors with such a dual role were the contextual appropriateness of school-based physical activity programs for healthy youth (Naylor et al., 2015), the collaboration between community partners in intersectoral approaches targeting child obesity (Van der Kleij et al., 2015), and a multicomponent approach in home injury prevention programs for pre-school children (Ingram et al., 2012). Findings like these point at the presence of context-dependency in intervention-context interactions (Berman, 1981).

Therefore, next to expecting regularities in bottlenecks in a certain intervention system, bottlenecks should also be assumed to vary within such a system (Berman, 1981). This assumption was supported by empirical studies that, next to regularities, found variations in the conditions for implementation within a particular intervention system (Darlington et al., 2018; Gottfredson & Gottfredson, 2002; Payne, 2009). For example, despite a recurrent combination of a small number of relevant conditions across schools (see above), at the level of individual schools, the influential factors, such as the availability of staff and the cohesion of the school team, appeared to be highly specific and variable (Darlington et al., 2018). Hence, the characteristics of an intervention system, i.e., its behavior change method, health theme and implementation setting, might be both essential in themselves *and* have to interact in order to allow an intervention to realize its intended function (Berman, 1981; Hawe et al., 2004).

Together, our second study hypothesis (H-2) reads that bottlenecks for implementation (H-2a) are partly associated with the specific characteristics of a particular intervention system (due to the essentiality of these characteristics) *and* (H-2b) will partly arise independent of these characteristics (due to their mutual interaction).

METHODOLOGY

Design

We examined intervention-context interactions in a cross-sectional observational study (2012-2014). Included were 30 municipalities or alliances of municipalities participating in a ministerial program on intersectoral health policymaking. Four other projects in this

program were not eligible: one prematurely ended its participation in the program one did not implement interventions in the years concerned, and two refused permission to approach the partners responsible for the implementation of the interventions.

Study setting

The ministerial program (2009-2015) was initiated by the Dutch Ministry of Health, Welfare and Sport (ZonMw, 2009). The program gave municipalities the opportunity to experiment with intersectoral health policymaking over a period of 24-48 months. Municipalities or alliances thereof could apply for participation in the program. One requirement was the appointment of a project leader who had to adopt a coordinating role in establishing local partnerships and implementing health promotion interventions. The employment of the project leader was covered by the financial support provided by the ministerial program. This financial support also partly covered the implementation of the health promotion interventions. The ministerial program additionally provided professional support addressing, for instance, the selection and implementation of evidence-based health promotion interventions.

As previously reported (Grêaux et al., 2020), the local partnerships in the projects encompassed an average of seven different sectors (e.g., public health, education and transportation). The health promotion interventions applied a variety of behavior change methods (e.g., education, facilitation and regulation), to address overweight, alcohol use (sometimes in combination with drugs and smoking) or other health themes, in a range of local settings (e.g., school settings and outdoor public sites). The intervention-context combinations that most often were being implemented in the projects are characterized in Table 1.

The implementation of interventions was mostly carried out by one of the partners in the project (i.e., the implementer) and supported by one or more other partner organizations (i.e. co-implementers working at co-implementing organizations). Most of the implementers worked for a municipal government organization, and almost half of them for a health organization. On average, the implementers had 10 years of relevant work experience.

Table 1. Characterization of the most frequently present intervention systems

Intervention systems	Description
S1. Education-Overweight-School Setting	Interventions providing knowledge, creating awareness, or teaching how to make healthy decisions regarding nutrition and/or physical activity. The interventions were mainly implemented in primary and secondary schools. They mostly comprised educational materials and instructions for a cohesive series of teacher-led lessons. They sometimes also included smaller, once-only and easily accessible information sessions, training sessions or meetings for parents at the school.
S2. Education-Alcohol-School setting	Interventions either providing knowledge and creating awareness about the risks of alcohol, drugs and smoking, or building resilience against alcohol, drugs and smoking. The interventions were mainly implemented in primary and secondary schools. They mostly consisted of educational materials and instructions for one or more teacher-led sessions. They sometimes also included smaller, once-only and easily accessible information sessions, training sessions or meetings for parents at the school.
S3. Facilitation-Overweight-Outdoor Public Sites	Interventions typically included organizing incidental, small-scale and easily accessible physical activity opportunities in outdoor public spaces (e.g., walking, running or outdoor game activities in the neighborhood). They primarily promoted physical activity or tried to show that being physically active is fun. The interventions sometimes also included longer-lasting physical adjustments (e.g., creating playgrounds or providing sports materials or healthy nutritional products in parks/recreation areas).
S4. Facilitation-Overweight-Sports Facilities	Interventions mostly comprised organizing incidental, small-scale and easily accessible sports activities at sports facilities. The main aim was to motivate people to be more physically active or create awareness of the existence of – and promote participation in – a specific sport (e.g., sports clinics or sports introduction days, organized by a sport federation or a community organization).
S5. Education-Alcohol-Home Setting	Interventions comprised informative messages distributed via various media channels (e.g., websites, television, newsletters, letters to parents). They aimed to provide knowledge about the harmful effects of alcohol, drugs or smoking, or about newly introduced interventions targeting alcohol, drugs or smoking. The interventions sometimes also included 'home parties': incidental, small-scale and easily accessible information sessions for specific target groups (e.g., parents with an immigrant background) conducted at the home setting.
S6. Regulation-Alcohol-Commercial Building	Interventions included the implementation of and adherence to national or local regulations (e.g., age legislation for buying alcohol, a breathalyzer test before entering a bar/club, an alcohol ban during children's activities at sports clubs). These interventions aimed to control the alcohol consumption among young people.

Table 1. Characterization of the most frequently present intervention systems (*continued*)

Intervention systems	Description
S7. Education-Alcohol-Health or Welfare Building	Interventions included a diversity of small-scale, short and easily accessible courses, resilience training courses, consultations or meetings with health professionals. They aimed to provide knowledge and create awareness among parents and young people about the risks of – especially excessive – alcohol consumption. Some also addressed drugs and smoking. The activities or sessions mostly took place in an institute for care and treatment of addiction or in a hospital setting, but sometimes also at a Municipality Health Organization.
S8. Facilitation-Overweight-School Setting	Interventions in the school area included offering incidental or permanent small-scale activities to promote physical activity (e.g., school sports days) and providing easily accessible healthy food products (e.g., free fruits or fresh juices in the school canteen).
S9. Education-Overweight-Public Building	Interventions included both courses consisting of a series of sessions and incidental and brief information meetings for specific target groups (e.g., parents with an immigrant background). The interventions were provided at public buildings (e.g., library, town hall) that were accessible for free. The aim was to create awareness of healthy eating and physical activity, and to provide both content and how-to knowledge about both these behaviors.

Data collection

Details about the data collection have been reported elsewhere (Grêaux et al., 2020). In brief, the data was collected from 2012 to 2014 (inclusive). Two questionnaires were used: one for project leaders (n=30) and one for implementers of the interventions (n=181). For the present study, both the project leaders and the implementers were asked to complete questions regarding the characteristics of the intervention systems (n=424). The implementers had to complete additional questions about the conditions acting as bottlenecks for implementation.

Intervention system

Questionnaire items

The project leaders were asked to report the names of the health promotion interventions being implemented in their project. The implementers were asked, for each intervention they were responsible for, to concisely describe its aim, topic, content/components and implementation setting.

Data processing

We operationalized the intervention system using three proxy measures for its function: the core behavior change method employed, the main health theme addressed,

and the primary setting of implementation (Cambon & Alla, 2021; Middleton et al., 2014). The core method of behavior change was retrieved from the aim and content of the health promotion intervention, and categorized into (Eldredge-Bartholomew et al.,2016): education (e.g., school learning module), regulation (e.g., legislation regarding the sale of alcohol products in sports ground cafeterias), facilitation (e.g., environmental changes, such as new play gardens), citizen participation (e.g., citizens organizing a walking event), and case finding (e.g., spotting drunk youngsters in nightlife). The main health theme was inferred from the topic, aim and content of the intervention, and categorized into overweight (e.g., nutrition and physical activity), alcohol (sometimes in combination with drugs and smoking) and other health themes (e.g., fall prevention or self-defense). The primary implementation setting was derived from the description by the prime implementer, and categorized into (Poland et al., 2000): schools or preschools, outdoor public sites (e.g., playgrounds, nature areas), sports facilities, homes (including websites to be consulted at home), commercial buildings (e.g., supermarkets, bars, restaurants), health or welfare buildings (e.g., hospitals, welfare organizations, addiction centers), and public buildings (e.g., libraries, community centers).

Bottlenecks for implementation

Selecting conditions

An extensive review of the literature resulted in a list of 125 conditions necessary for the implementation of health promotion interventions in local settings (Dreisinger et al., 2012; Durlak & DuPre, 2008; Fixsen et al., 2005; Fleuren et al., 2004; Greenhalgh et al., 2004; Rogers, 2003; Stith et al., 2006). To select the conditions relevant to our study, we held 17 semi-structured telephone interviews: five with Dutch implementation experts and twelve with Dutch health promotion professionals responsible for local implementation. None of the interviewees was participating in the ministerial program. Guided by an implementation framework (Fleuren et al., 2004), but without being provided with the prepared list, they were asked to name those conditions that were most important in the context of intersectoral policymaking. The 47 conditions that were mentioned most were included in the questionnaire for the prime implementers.

Questionnaire

The relevant conditions were organized into seven categories (i-vii) (Fleuren et al., 2004), that we adapted to the context of intersectoral policymaking, in order to do justice to the importance of co-implementers and co-implementing organizations. Conditions were framed as statements: (i) five related to the prime implementer (e.g., 'I have sufficient skills to implement the intervention'); (ii) five to the co-implementer(s) (e.g., 'Other professionals are capable enough to implement the intervention'); (iii) ten to the intervention (e.g., 'The intervention is easy to carry out'); (iv) ten to the prime

implementer's organization (e.g., 'The intervention fits my organization's policy'); (v) eleven to co-implementer's organization(s) (e.g., 'Other organizations sufficiently support the intervention's health theme'); (vi) four to the broader context (e.g., 'There is enough administrative and political support for the intervention'); and (vii) two to the implementation strategy employed (e.g., 'Good materials required for implementation are available'). For the complete questionnaire, see Supplementary file 1.

To assess the extent to which the conditions for the implementation of the intervention under consideration were regarded as being present, the prime implementers had to score each statement on a five-point scale (from strongly disagree to strongly agree). To assess the perceived importance of the conditions, the prime implementers were asked to select the five conditions they regarded as most important for the successful implementation of the intervention. We opted for this top-5 of importance as to discriminate the expected limited number of crucial conditions (Darlington et al., 2018 ; Van der Kleij et al., 2016) from the myriad of potential conditions for implementation (Berman, 1981; Greenhalgh et al., 2004). For their top-5, the implementers could refer to the 47 conditions in the list or add a condition not included in the list. Of the added conditions, half could be recoded as a prelisted condition. The other half, making up 11% of all answers, were not specific enough to be categorized (e.g., a lack of time, insufficient skills or short of manpower in general), and were not further taken into account.

Data processing

For each individual intervention, the perceived presence of each of the conditions for implementation was dichotomized into being 'optimal' if a prime implementer indicated strong agreement with the corresponding statement, and being 'sub-optimal' for all alternative answers. This cut-off point was chosen because of the skewed distribution of perceived presence: any other division would have minimized the percentage of interventions for which a condition was marked as 'sub-optimal', leaving many bottlenecks undetected. Next, conditions were marked as 'important' if assigned to the top 5, irrespective of their position therein. Finally, conditions were labelled as a bottleneck if they were perceived as being both 'important' and 'sub-optimal'.

Data analysis

Descriptive statistics were used to characterize the included intervention systems, and to calculate the percentage of systems in which a condition for implementation was marked as sub-optimal, important and a bottleneck. In all analyses, a condition was regarded a bottleneck for implementation if it was marked as such in more than 10% of the systems. To warrant the availability of sufficient observations for further hypotheses testing, we selected the intervention systems that were most frequently present in our sample (n>10; Table 1).

To test our first hypothesis (H-1), we stratified the percentage of bottlenecks by frequent intervention system. To assess whether each distinct intervention system came across a unique set of bottlenecks for implementation, we qualitatively compared the number and nature of the bottlenecks that emerged in the frequent intervention systems.

To test our second hypothesis (H-2), we additionally stratified the percentage of bottlenecks by intervention system characteristics: the behavior change method, health theme and implementation setting. We then qualitatively compared the bottlenecks that emerged from both the stratification procedures. To indicate that a bottleneck was associated with the characteristics of a particular intervention system (H2a), we labelled it 'expectedly present' in that system if the condition involved also acted as a bottleneck in all systems having a characteristic in common. To indicate that a bottleneck emerged independent of the characteristics of a particular intervention system (H-2b), we labelled it 'unexpectedly present' in that system if the condition involved did not act as a bottleneck in all systems having a characteristic in common. In addition, a bottleneck was labelled 'unexpectedly absent' if the invers incongruence was true, i.e., if a condition did not act as bottleneck in a particular system, while it did so in all intervention systems having a characteristic in common.

RESULTS

Response

A total of 120 implementers (response rate 66.3%) provided data about 243 intervention systems (response rate 57.3%) implemented in 30 projects. Response details are shown in Figure 1.

Intervention systems

In all intervention systems, education was the most frequently used core method of behavior change (n=137; Table 2, Blue shaded columns). Less often applied were facilitation (n=57), regulation (n=25), case finding (n=13) and citizen participation (n=11). Overweight was the most frequently addressed health theme in the intervention systems (n=123; Orange shaded columns). Alcohol (n=102) and other health themes (n=16) were addressed less often. The school setting (n=75; Green shaded columns) most often served as the primary implementation setting. Less frequently used were outdoor public sites (n=38), public buildings (n=38), health or welfare buildings (n=24) sports facilities (n=24), commercial buildings (n=24) and the home setting (n=15).

Nine intervention systems were present more than ten times. Together, these nine frequently present systems covered 140 of all 243 systems in the sample (58%; Table 2, Purple shaded columns; see also Supplementary file 2). In five of the frequent intervention systems, the core behavior change method applied was education. Facilitation was used in three, and regulation in one of the frequently present systems. In five of these systems, the main theme addressed was overweight, and in the other four this was alcohol. Schools were the primary implementation setting in three of the frequent intervention systems. The other six such systems included a different setting each.

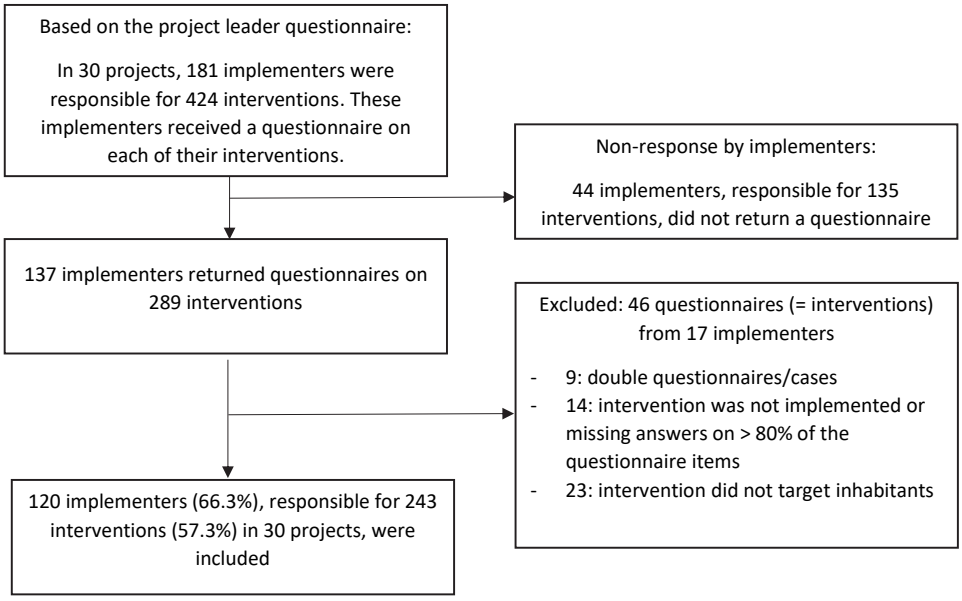


Figure 1. Flowchart of the response to the survey on conditions for implementation of interventions

Conditions

On average, conditions were considered to be sub-optimally present in 56.3% of all intervention systems (range 39.9-83.1%; Table 1; Grey shaded columns), and placed in the top 5 of importance in 7.8% of the intervention systems (range 0.4-26.7%). Conditions were regarded to be both sub-optimally present and of great importance, i.e., as a bottleneck for implementation, in 3.7% of all intervention systems (range 0-13.6%). For further details, see Supplementary file 2.

Bottlenecks

General observations

In total, 26 conditions (55.3% of all possible conditions; Table 2, Yellow shaded columns in the frequent intervention systems) were at least once perceived to act as bottlenecks for implementation, while the other 21 conditions were never identified as such. Two conditions were identified as bottlenecks in more than 10% of all intervention systems: the motivation and enthusiasm of the co-implementer(s) (13.6%) and the accessibility of the intervention for the target group (11.1%; Table 2, Grey shaded columns). These two conditions hampered implementation in five and four frequent intervention systems, respectively. Although less often identified as bottlenecks in all systems (4.9%-8.6%), one other condition acted as such in four frequent intervention systems, i.e., whether the intervention fitted the policy of the co-implementer's organization, and four others did so in three such systems, i.e., the motivation and enthusiasm of the implementer, whether the intervention fitted an integrated approach, the support for the health theme in the co-implementer's organization, and the contextual political or administrative support.

The other 19 conditions that were identified as a bottleneck at least once, acted as such in one or two of the frequent intervention systems. Eight of these conditions were found to hamper implementation in all systems relatively frequent (4.9%-8.6%). Half of these conditions referred to being offered enough time (i.e., by the implementer's and the co-implementer's organizations) and to the presence of sufficient financial means (i.e., in the implementer's organization and in the broader context). The other half included the skills of the co-implementer, if the intervention was easy to implement, if the intervention fitted the policy of the implementer's organization, and having the right materials available for the implementation strategy.

H-1*: The number and nature of bottlenecks depend on the intervention system*

The conditions perceived to be a bottleneck differed in the frequent intervention systems regarding both their number and nature (Table 2, Purple shaded columns). The average number of conditions identified as a bottleneck was 5.4, with a range of two to eight per intervention system. On average, these bottlenecks represented 3.9 categories of conditions, with a range of one to six categories per intervention system. For example, intervention system S1, in which education was used to address overweight in schools, was associated with eight bottlenecks in six categories, i.e., in all but that of the implementation strategy. Another example is S9, where education was used to address overweight in public buildings. This system was associated with two bottlenecks in one category, i.e., the characteristics of the intervention.

In terms of their nature, each set of bottlenecks had its own composition. Although each pair of frequent intervention systems had one or more bottlenecks in common, each set also included at least one condition that was not perceived to hamper implementation in any other system. For example, S4, in which facilitation was used to address overweight in sports facilities, shared one bottleneck with three other systems (S1-5-7), i.e., whether the intervention fitted the policy of the co-implementer's organization. However, implementation in S4 was additionally hampered by three unique bottlenecks in same category of the co-implementer's organization, e.g., complications because of interorganizational collaboration. The maximum number of bottlenecks that one pair of frequent intervention systems had in common was four. These were S3 and S8, in which facilitation was used to address overweight, in outdoor public sites and schools, respectively. Three common bottlenecks were whether the intervention fitted an integrated approach and the policy of the implementer's organization, and if the right materials for the implementation strategy were available. One unique bottleneck in S3 were the co-implementer's skills.

Different sets of bottlenecks were identified if a similar method was applied to address the same health theme, but in a different setting. For instance, in S3 and S4, where facilitation was applied to address overweight in different settings, bottlenecks for implementation emerged in different categories of conditions. The bottlenecks in outdoor public places were related to the implementer, the co-implementer and the intervention, and in sports facilities to the co-implementer's organization. Another example is S2 and S7, in which education was used to address alcohol in schools and health or welfare buildings, respectively. The only bottleneck for implementation that these systems had in common was the support for the health theme in the co-implementer's organization. This condition was also the only common bottleneck for implementation in S1 and S2, where education was used in the school setting, to address overweight and alcohol, respectively. This illustrates that the nature of bottlenecks also could differ in intervention systems where a similar behavior change method was used in a comparable setting, but to address a different health theme.

***H-2a**. Bottlenecks are associated with the characteristics of an intervention system*

Of all 49 bottlenecks identified for the frequent intervention systems (Table 2; Purple shaded columns), 35 were 'expectedly present' (EPBs; 71.4% of all bottlenecks; Yellow shaded columns). This means that the majority of the bottlenecks was associated with the characteristics of the intervention system. In both S5 and S6, only EPBs emerged. The conditions acting as bottlenecks in S5, in which education was used to address alcohol in the home setting, were also identified as bottlenecks in other intervention systems with the home setting. One of these bottlenecks was the financial means avail-

able from the implementer's organization. The conditions acting as bottlenecks in S6, which involved the regulation of alcohol in commercial buildings, were also identified as bottlenecks for other interventions applying regulation as a method. These conditions included, among others, whether the intervention easily could be implemented. The mean number of EPBs per frequent intervention system was 3.9 (range 1-6).

***H-2b**: Bottlenecks arise independent of the characteristics of an intervention system*

The other 14 bottlenecks identified for implementation in the frequent intervention systems were 'unexpectedly present' (UPBs; 28.6% of all bottlenecks; Table 2; Yellow shaded columns). This means that a minority of the bottlenecks emerged independent of the characteristics of the intervention system. About one third of the UPBs concerned conditions that were not identified as a bottleneck in any of the other stratified analyses. For instance, in S9, in which education was used to address overweight in public building, implementation was unexpectedly hampered by the adaptability of the intervention to the context, a condition that was not associated with any of the system's characteristics. The other two thirds of the UPBs involved conditions associated with one or more characteristics, but not with those of the intervention system itself. For example, in S8, in which facilitation was used to address overweight in schools, implementation was unexpectedly hampered by the clarity of the appointments made with the co-implementer's organization, a condition that in the other stratified analyses was associated with case finding as a method. Most conditions identified to act as an UPB did so in only one of the frequent intervention systems. One exception was the motivation and enthusiasm of the implementer, that emerged as an UPB in both S1, where education was used to address overweight in schools, and S3, where facilitation as applied on overweight in outdoor public sites. The average number of UPBs per intervention system was 1.6 (range 0-4).

For implementation in the frequent intervention systems, 35 bottlenecks were 'unexpectedly absent' (UABs). This once more indicates that bottlenecks for implementation emerged independent of the characteristics of the intervention system. In S9, for example, in which education was used to address overweight in public buildings, five conditions were not identified as a bottleneck, while they did emerge as such after stratification by the characteristics of the intervention system. The UABs in S9 also included the two conditions most frequently perceived to be a bottleneck, i.e., the motivation and enthusiasm of the co-implementer and the accessibility of the intervention for the target group. Other conditions regularly identified as UABs included the available time from both the implementer's and the co-implementer's organization, as well as the contextual political and administrative support. The mean number of UABs per frequent intervention system was 3.9 (range 2-5).

Table 1. Bottlenecks for implementation: all intervention systems, and stratified by frequent intervention syste

Conditions for implementation[1]	All intervention systems (n=243)			Frequent intervention systems[2] S1-9 Method-Theme-Setting[3] (n=140; 57.6% of all intervention systems)								
	Identified as suboptimal (%)	Identified as important (%)	Identified as bottleneck (%)	S1. Edu-Ow-Sch (n=23)	S2. Edu-Alc-Sch (n=23)	S3. Fac-Ow-Out (n=21)	S4. Fac-Ow-SpF (n=14)	S5. Edu-Alc-HS (n=13)	S6. Reg-Alc-CB (n=12)	S7. Edu-Alc-HB (n=12)	S8. Fac-Ow-Sch (n=11)	S9. Edu-Ow-PB (n=11)
i Implementer												
1. Sufficient content knowledge	51.9	6.2	1.2									
2. Sufficient skills	48.1	9.1	0.8									
3. Added value for the job	55.6	3.3	1.6	UPB								
4. Motivation and enthusiasm	39.9	14.8	4.9	UPB		UPB			EPB			
5. Capable enough	47.7	1.2	0.4									
ii Co-implementer												
6. Sufficient content knowledge	45.7	11.9	3.7		UPB							
7. Sufficient skills	46.9	9.5	5.8			EPB						
8. Surplus value for the job	41.2	4.9	2.1									
9. Motivation and enthusiasm	45.7	26.7	13.6	UAB	UAB	EPB	UAB	EPB	EPB	EPB	EPB	UAB
10. Capable enough	49.8	6.6	2.9	UPB								
iii Intervention												
11. Offers personal benefits	65.8	4.5	2.5								UPB	
12. Fits daily working routine	56.0	4.5	2.1									
13. Accessible for target group	54.7	23.5	11.1	EPB	UAB	EPB		UAB	EPB	EPB		UAB
14. Easy to implement	71.6	11.9	7.4	UAB	EPB			UAB	EPB	UAB	UAB	
15. Complicated	75.3	1.6	1.6									
16. Difficult to keep track of	65.8	0.4	0.0									
17. Adaptable to context	58.4	11.9	3.7									UPB
18. Fits integrated approach	39.9	24.7	7.8	UAB		EPB	UAB		UAB		EPB	EPB
19. Results easily made visible	76.5	6.2	4.5			UAB			EPB			
20. Has been certified	78.2	3.3	1.6									
iv Implementer's organization												
21. Offers enough time	54.7	11.1	8.6	EPB	UAB			UAB		UAB		UAB
22. Opportunities to learn	61.3	1.6	1.2									

n system and by characteristics of the intervention system

	Characteristics of the intervention systems[2]																	
	Behavior change method (n=243)					**Health theme** (n=241)			**Implementation setting** (n=238)							**Comparison of the stratified analyses**[4]		
	Education (Edu; n=137)	Facilitation (Fac; n=57)	Regulation (Reg; n=25)	Case Finding (n=13)	Citizen Participation (n=11)	Overweight (Ow; n=123)	Alcohol (Alc; n=102)	Other (n=16)	School Setting (Sch; n=75)	Outdoor Public Site (Out; n=38)	Public Building (PB; n=38)	Health/Welfare Building (HB; n=24)	Sports Facility (SpF; n=24)	Commercial Building (CB; n=24)	Home Setting (HS; n=15)	EPB[5]	UPB[6]	UAB[7]
																	1	
			B													1	2	
																	1	
										B						1		
		B	B	B	B	B	B		B	B	B	B		B	B	5		4
																	1	
																	1	
	B		B				B			B		B		B		4		3
			B				B		B					B		2		4
																	1	
		B	B			B				B			B			3		3
			B							B						1		1
	B			B				B				B			B	1		4

5

Table 1. Bottlenecks for implementation: all intervention systems, and stratified by frequent intervention syste

	All intervention systems (n=243)			Frequent intervention systems[2]								
				S1-9 Method-Theme-Setting[3] (n=140; 57.6% of all intervention systems)								
Conditions for implementation[1]	Identified as suboptimal (%)	Identified as important (%)	Identified as bottleneck (%)	S1. Edu-Ow-Sch (n=23)	S2. Edu-Alc-Sch (n=23)	S3. Fac-Ow-Out (n=21)	S4. Fac-Ow-SpF (n=14)	S5. Edu-Alc-HS (n=13)	S6. Reg-Alc-CB (n=12)	S7. Edu-Alc-HB (n=12)	S8. Fac-Ow-Sch (n=11)	S9. Edu-Ow-PB (n=11)
23. Support for health theme	43.6	8.6	3.7					EPB				
24. Enough financial resources	68.7	8.6	4.9					EPB		UPB		
25. Size complicates	57.2	0.4	0.4									
26. Hierarchy facilitates	83.1	0.4	0.4									
27. Clear appointments made	56.0	5.3	2.9									
28. Support from colleagues	52.3	5.3	3.3									
29. Support from management	55.1	3.7	0.8									
30. Fits organization's policy	45.7	19.8	7.0			EPB	UAB				EPB	
v Co-implementer's organization												
31. Offers enough time	52.7	8.6	7.0	UAB		UAB	EPB		UAB		UAB	UAB
32. Opportunities for learning	53.9	0.8	0.4									
33. Support for health theme	50.2	8.6	6.2	EPB	EPB					UPB	UAB	
34. Enough financial resources	58.0	3.7	2.5				EPB					
35. Size complicates	52.3	0.4	0.4									
36. Collaboration complicates	56.4	6.2	4.5			UAB	EPB				UAB	
37. Hierarchy facilitates	63.8	0.8	0.8									
38. Clear appointments made	47.3	11.9	4.5								UPB	
39. Support from colleagues	51.0	2.5	1.6									
40. Support from management	53.5	2.5	1.2									
41. Fits organization's policy	47.4	9.1	5.3	UPB			UPB	EPB		UPB		
vi Context												
42. Political/administrative support	58.4	18.9	8.6	EPB	UAB	UAB	UAB		EPB		EPB	UAB
43. Fits political agenda	54.7	7.4	2.1									
44. Sufficient financial means	72.8	8.2	5.8	UAB	EPB				UAB		EPB	
45. Opportunities to distinguish	67.5	4.9	2.9									
v Implementation strategy												
46. Clear implementation plan	62.1	7.4	2.9							UPB		
47. Right materials available	53.1	12.8	5.3			EPB	UAB				EPB	
Mean	**56.3**	**7.8**	**3.7**									

ɔn system and by characteristics of the intervention system (*continued*)

	Characteristics of the intervention systems[2]																			Comparison of the stratified analyses[4]		
	Behavior change method (n=243)					**Health theme** (n=241)			**Implementation setting** (n=238)													
	Education (Edu; n=137)	Facilitation (Fac; n=57)	Regulation (Reg; n=25)	Case Finding (n=13)	Citizen Participation (n=11)	Overweight (Ow; n=123)	Alcohol (Alc; n=102)	Other (n=16)	School Setting (Sch; n=75)	Outdoor Public Site (Out; n=38)	Public Building (PB; n=38)	Health/Welfare Building (HB; n=24)	Sports Facility (SpF; n=24)	Commercial Building (CB; n=24)	Home Setting (HS; n=15)	EPB[5]	UPB[6]	UAB[7]				
															B	1						
															B	1	1					
	B						B		B							2		1				
		B	B			B										1		5				
									B							2	1	1				
													B			1						
	B		B							B			B			1		2				
			B														1					
															B	1	3					
		B				B			B							3		4				
		B							B							2		2				
					B												1					
	B									B						2		1				

Table 1. Bottlenecks for implementation: all intervention systems, and stratified by frequent intervention syste

Conditions for implementation[1]	All intervention systems (n=243)			Frequent intervention systems[2]								
				S1-9 Method-Theme-Setting[3] (n=140; 57.6% of all intervention systems)								
	Identified as suboptimal (%)	Identified as important (%)	Identified as bottleneck (%)	S1. Edu-Ow-Sch (n=23)	S2. Edu-Alc-Sch (n=23)	S3. Fac-Ow-Out (n=21)	S4. Fac-Ow-SpF (n=14)	S5. Edu-Alc-HS (n=13)	S6. Reg-Alc-CB (n=12)	S7. Edu-Alc-HB (n=12)	S8. Fac-Ow-Sch (n=11)	S9. Edu-Ow-PB (n=11)
Conditions involved (n)				8	4	7	4	4	6	6	8	2
Total/mean number of conditions				49/5.4								
Categories involved (n)				6	4	5	1	3	4	5	6	1
Total/mean number of categories				35/3.9								
EPB (n)				4	3	6	3	4	6	2	6	1
UPB (n)				4	1	1	1	0	0	4	2	1
UAB (n)				5	4	4	5	3	3	2	4	5
Conditions involved (n)												
Unique conditions involved (n)												
Total EPBs, UPBs and UABs (n)												
Mean EPBs, UPBs and UABs (n)												

[1] The questionnaire including the full statements on the conditions for implementation is available in Supplementary file 1. [2] **B** = Shaded cells including one or more characters (B, EPB or UPB) indicate the presence of a bottleneck; ... = Unshaded cells that are empty or include UAB indicate the absence of a bottleneck; [3] **S1-S9** = Frequent intervention systems (characterized in Table 1).

[4] **Comparison of the stratified analyses**: a comparison of the bottlenecks being present in a frequent intervention system with those present in all systems sharing one of the frequent system's characteristics; [5] **EPB** = 'Expectedly present bottleneck' (i.e. present both for in a frequent intervention system and in all intervention systems sharing one of the frequent system's characteristics); [6] **UPB** = 'Unexpectedly present bottleneck' (i.e. present for in a frequent intervention system, but not in all interventions that share one of the frequent system's characteristics); [7] **UAB**= 'Unexpectedly absent bottleneck' (i.e. not present in an intervention system, but present in all interventions sharing one of the frequent system's characteristics).

ɔn system and by characteristics of the intervention system (*continued*)

	Characteristics of the intervention systems[2]															Comparison of the stratified analyses[4]		
	Behavior change method (n=243)					**Health theme** (n=241)			**Implementation setting** (n=238)									
	Education (Edu; n=137)	Facilitation (Fac; n=57)	Regulation (Reg; n=25)	Case Finding (n=13)	Citizen Participation (n=11)	Overweight (Ow; n=123)	Alcohol (Alc; n=102)	Other (n=16)	School Setting (Sch; n=75)	Outdoor Public Site (Out; n=38)	Public Building (PB; n=38)	Health/Welfare Building (HB; n=24)	Sports Facility (SpF; n=24)	Commercial Building (CB; n=24)	Home Setting (HS; n=15)	EPB[5]	UPB[6]	UAB[7]
	2	5	9	5	2	4	3	2	5	8	3	5	3	3	1			
			4.6				3					4						
	2	5	5	3	2	4	2	1	4	5	2	3	2	3	1			
			3.4				2.3					2.9						
																19	11	13
																	26	
																35	14	35
																3.9	1.6	3.9

5

DISCUSSION

Summary of the findings

This cross-sectional observational study examined patterns in problematic intervention-context interactions – i.e., bottlenecks for implementation – during the introduction of health promotion interventions as part of local intersectoral health policymaking in the Netherlands. Of the possible conditions for implementation, more than half acted as a bottleneck at least once, while less than a half were never identified as such. Bottlenecks were found in all categories of conditions, e.g., those relating to the implementer, the intervention, and political and administrative support, and often connected with the intersectoral policymaking, e.g., those relating to the co-implementer and the co-implementer's organization. Our qualitative comparisons supported both our hypotheses. In agreement with our first hypothesis, each distinct intervention system, i.e., each particular combination of behavior change method, health theme and local setting, came across a unique set of – a limited number of – conditions hampering implementation. Regarding the first part of our second hypothesis, we found that the bottlenecks for implementation in a particular system were more often than not associated with the system's characteristics representing its function in terms of its health promoting effects. Regarding the second part of that hypothesis, we saw – to a lesser extent – that conditions for implementation served as a bottleneck in a particular system independent of the system's characteristics, or – to a greater extent – did not act as a bottleneck despite the presence of such an association.

Interpretation

Our study provides twofold support for the complex systems perspective which says that during implementation, interventions interact with the context in which they are being introduced (Hawe et al., 2009; Minary et al., 2018; Shiell et al., 2008). First, our results support the assumed presence of patterns in these interactions (Evans et al., 2015; Hawe et al., 2009). The regularities we found in the conditions that acted as bottlenecks for implementation can possibly be explained by the way structural factors, i.e., the socio-economic and political context, are arranged, and which are operating 'one level up' from an intervention (De Souza, 2022; Pfadenhauer et al., 2017). These – often given and fixed – factors in the wider context (Berman, 1981) may more or less similarly shape the more flexible conditions of comparable local sites (Cambon & Alla, 2021; De Souza, 2022; Minary et al., 2018). For example, the observation that the bottlenecks for implementation in our study were often related to intersectoral policy making could indicate a shaping role of the – at that time – sectoral national policy landscape (Storm et al., 2011). That is, such a sectoral national policy might explain the bottlenecks we observed in the broader political and administrative support as well as those in the

co-implementer's organization, like the support for the health theme and whether an intervention fitted such a co-organization's policy.

Regularities in bottlenecks could create opportunities to predict and intervene in potential implementation problems (Evans et al., 2015; Hawe et al., 2009). Our study supports the idea that the function of an intervention, in terms of the characteristics that reflect its causal theory, could be a helpful starting point for an early identification of – probably a limited number of – bottlenecks (Cambon & Alla, 2021; Hawe et al., 2009). In view of the above-discussed role in shaping the conditions of local settings, it might be worthwhile to direct such an early assessment at structural factors, and to prioritize these in designing implementation plans (Berman, 1981; De Souza, 2022; Payne, 2009). For example, the bottlenecks that our study found in the intervention system in which regulation was used to address alcohol in local commercial buildings, might reflect the permissive cultural norm towards the consumption of alcohol in the Netherlands (WHO, 2018b). Such structural factors, i.e., those that constitute and tend to preserve the complex system in which interventions are being introduced (Hawe et al., 2009), may be effectively changed by nation-wide strategies, such as advocacy, laws and regulations (Eldredge- Bartholomew et al., 2016). Hence, it might require strategies like these to build the capacity needed to bring about the comprehensive and long-lasting health improvements that most previous programs have so far failed to achieve (Hawe et al., 2009; Moore et al., 2019).

The second type of support for the systems-based perspective is that the bottlenecks for implementation in our study seemed to be produced by, or disappear through, intervention-context interactions (Greenhalgh et al., 2004; Hawe et al., 2009). This means that not all bottlenecks for implementation can be predicted from the function of an intervention: some may be unexpectedly present, others may be unexpectedly absent. This is in agreement with previous studies which, despite the presence of regularities, found a great variation in conditions hampering the introduction of similar interventions at identical implementation sites (Berman, 1981; Darlington et al., 2018). One explanation for this variation could be that local implementation sites that make up one type of setting may still differ importantly in a number of features (Shoveller et al., 2016). That is, despite the same structural factors, such as a sectoral national policy landscape (Storm et al., 2011), the actual implementation sites may vary substantially in their local response. This can be due to differences in local factors (Berman, 1981; De Souza, 2022; Minary et al., 2018), like the degree to which a municipal policy approach is intersectoral (Storm et al., 2014). In our study, such a variation in local responses may be illustrated by the bottlenecks for implementation that either were unexpectedly present, e.g., the motivation and enthusiasm of the implementer, or unexpectedly absent, e.g., whether the intervention fitted an integrated approach. In other words, the individual make-up

of implementation sites may – through different intervention-context interactions – create unpredictable variations in the bottlenecks for implementation. This means that any initial implementation plan, including strategies aimed at changing structural factors, should be flexible to allow further local tailoring to individual sites.

Strength and limitations

We were able to analyze patterns in bottlenecks for implementation, because our study included a large number and a wide variety of health promotion interventions in a broad range of settings. This allowed us to quantitatively compute and qualitatively compare these bottlenecks in no less than nine different intervention systems. In doing so, our study may serve as an example of how the impact of context on implementation might be more systematically studied (Greenhalgh et al., 2004). Additional in-depth understanding of intervention-context interactions might come from social network studies, actor network studies or realist approaches (Cambon & Alla, 2021; Hawe & Ghali, 2007; Minary et al., 2018).

A drawback of the wide variety of interventions was that the nine frequent intervention systems that were central to our analyses covered no more than 58% of all systems included in our study. Also, these nine systems represented just 21% of all method-theme-setting combinations in our study, and less than 9% of all possible combinations. Underrepresented or absent in our analyses were interventions applying regulation, citizen participation or case finding; overrepresented were interventions implemented in the school setting. This distribution may reflect a common tendency in health promotion to use interventions that at best minimally disrupt the context in which they are being introduced (Hawe, 2015). As a consequence, our study was not able to identify bottlenecks for interventions that aim to bring about more structural changes, though our findings suggest that these bottlenecks would at least partly differ from the ones we observed.

Another strength is that our study started from the – essential – function of an intervention, rather than from its – adaptable – form or components (Hawe et al., 2004; Hawe et al., 2009). A limitation could be that 'function' was rather pragmatically operationalized: we used proxies that we could infer from the available information and that we expected to reflect the intervention's theory of change (Cambon & Alla, 2021; Hawe et al., 2009). Though these proxies enabled us to examine intervention-context interactions – or bottlenecks for implementation – in different intervention systems, their selection (e.g., the core behavior change method rather than the mix of such methods) and the high level of aggregation could also be criticized. Future studies might wish to experiment with using a more finely grained taxonomy of behavior change methods (Michie et al., 2011), specifying sub-categories within aggregated types of settings (Shoveller

et al., 2016), adding the target group or the health behavior determinants addressed (Eldredge- Bartholomew et al., 2016), or using a more general approach, such as a community or intersectoral approach, as the level of analysis (Fisher, 1995; Hawe, 2015).

A final strength is that our implementers both assessed the degree to which conditions for implementation were present and selected the ones that they regarded as the most important. Here, a first limitation could be that we labelled a condition a 'bottleneck' for implementation if the implementers had scored it as both sub-optimal and of great importance for a minimum of 10% of the interventions included in the analysis. Although this 10% cut-off point may seem low, our definition of 'very important', i.e., the implementer placed a condition in the top 5 of importance, was already very restrictive. In doing so, we aimed to select only 'real' bottlenecks, which may be assumed to encompass only a small number of the multitude of potential hampering conditions (Darlington et al., 2018; Van der Kleij et al., 2016). A second limitation could be our definition of 'sub-optimal', i.e., the implementer did not strongly agree that a condition was present. This definition implied that the other, in part equivocal perceptions of presence (i.e., strongly disagree up to and including agree) were merged and classified as 'not sub-optimal'. However, this categorization appeared to be necessary, as the skewed distribution of perceived presence would otherwise have left many bottlenecks undetected. Taken together, we believe that our approach was both sufficient selective and sensitive enough to identify the relevant bottlenecks for implementation in intervention systems. However, studies using our cut-off points and definitions might either underestimate or overestimate the real number of bottlenecks in health promotion practice.

Conclusion

Starting from a complex systems perspective on implementation, our findings support the presence of intervention-context interactions. These interactions may produce both regularities and variations in bottlenecks for implementation. Regularities may serve as the – partly predictable – basis for implementation strategies aimed at building the capacity needed for the structural changes that can bring about long-lasting health improvements. Variations in bottlenecks may point at the need for flexibility to tailor implementation approaches to the – mostly unpredictable – implementation problems at individual sites.

Supplementary file 1. Questionnaire for the survey on conditions for implementation of interventions

Indicate to what extent you agree with the following statements:	**Strongly disagree**				**Strongly agree**
i. I (the implementer)					
1. have sufficient content knowledge about the theme of the intervention					
2. have sufficient skills required for implementation					
3. perceive benefits of the implementation for my job					
4. am enthusiastic and motivated for implementation					
5. am able to implement the intervention					
ii. Co-implementer(s)					
6. have sufficient content knowledge about the theme of the intervention					
7. have sufficient skills required for implementation					
8. perceive benefits of the implementation for their job					
9. are enthusiastic and motivated for implementation					
10. are able to implement the intervention					
iii. The intervention					
11. offers the implementer(s) sufficient personal benefits					
12. fits in with / can be adapted to the daily working routine of the implementer(s)					
13. is easily accessible for the target group					
14. is easy to implement					
15. is complicated due to many implementers/organizations involved[R]					
16. it is difficult to keep track of its implementation[R]					
17. can be suitably adapted to the context (e.g., setting, target group, demands of the target group)					
18. fits into an integrated approach to the health problem					
19. the results can easily be made visible					
20. has been certified					
iv. My (the implementer's) organization					
21. offers me enough time for implementation					

Indicate to what extent you agree with the following statements:	**Strongly disagree**				**Strongly agree**
22. offers me enough opportunities to acquire knowledge and skills required for implementation					
23. gives enough support for the health theme					
24. has sufficient financial resources for implementation					
25. the organization's size complicates implementation[R]					
26. the organization's top-down bureaucracy and hierarchy facilitates implementation					
27. clear agreements have been made about my task and responsibility in the implementation					
28. colleagues give me sufficient support for implementation					
29. the management team gives me sufficient support for implementation					
30. the intervention fits the organization's policy					
v. Co-implementing organization(s)					
31. offer enough time for implementation					
32. offer enough opportunities to acquire knowledge and skills required for implementation					
33. offer enough support for the health theme					
34. have sufficient financial resources for implementation					
35. the organizations' sizes complicate implementation[R]					
36. the collaboration with the other co-organizations complicates implementation[R]					
37. the organizations' top-down bureaucracy and hierarchy facilitate implementation					
38. clear agreements have been made about everyone's tasks and responsibilities in implementation					
39. colleagues of the co-implementing organization(s) give me sufficient support for implementation					
40. the management teams of the co-implementing organization(s) give me sufficient support for implementation					
41. the intervention fits the co-implementing organizations' policies					
vi. Context					
42. there is enough political support for the intervention					
43. the intervention fits the political agenda					

Indicate to what extent you agree with the following statements:	**Strongly disagree**				**Strongly agree**
44. sufficient financial resources are provided by the political-administrative level for implementation					
45. the (results of the) intervention offer the political-administrative level opportunities to boost its profile					
vii. Implementation strategy					
46. a clear implementation plan is available					
47. the right materials required for implementation are available					

List the five most important factors that impacted the implementation of the intervention.
Make use of the above statement numbers or write down a factor if it is currently not on the list.

1.

2.

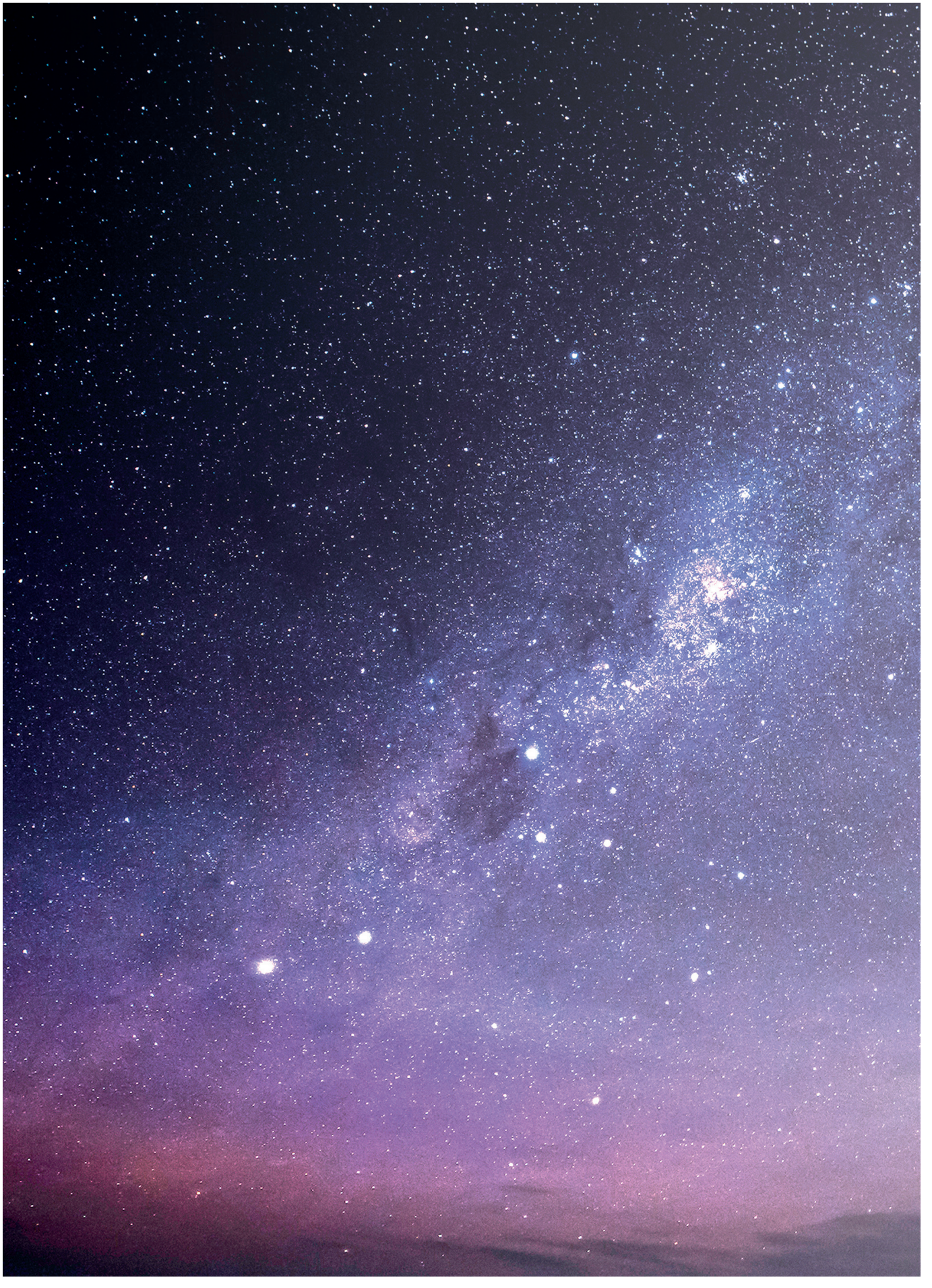
3.

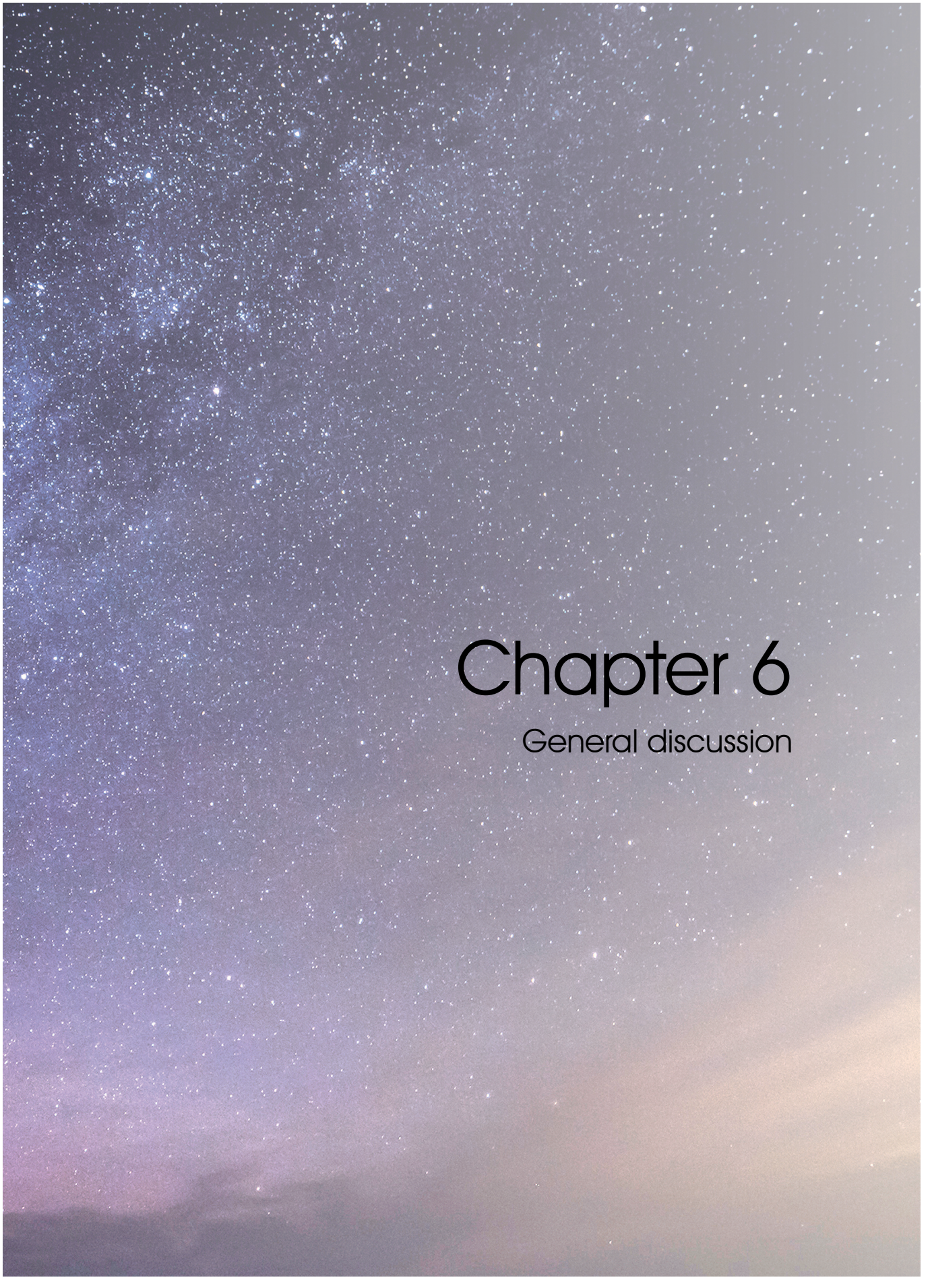
4.

5.

R = reversed scoring

Supplementary file 2. Digitally available (very big table)





Chapter 6

General discussion

GENERAL DISCUSSION

Brief outline general discussion

The discussion starts with a summary of the findings of the four studies reported in this dissertation. Subsequently, various overarching methodological issues of the research are discussed, and key conclusions and implications are presented. The discussion closes with a final statement regarding the achievement of the aim of the dissertation.

Summary of the study findings

The study in *Chapter 2* investigated whether partnership diversity during adoption and implementation matters for the composition of health promotion intervention packages.

The partnerships in the Gezonde Slagkracht projects included a variety of partners from different sectors, during both the adoption and the implementation of the health promotion packages. Partners from the municipal departments of the health, welfare and education sectors were mostly involved. Less often involved were partners from secondary care, and outside the domain of health and welfare: bars and restaurants, and other businesses. Private or citizen partners were involved in the implementation of about one third of the interventions in the packages.

The health themes addressed by the intervention packages were nutrition, physical activity and alcohol rather than drugs and smoking. Almost all packages integrated multiple strategies of change, but mostly applied were education, facilitation and case finding. The packages targeted diverse behavioral determinants, although mainly personal and social environmental factors. Schools, outdoor public sites, health and welfare buildings and public buildings most often served as implementation settings.

More partnership diversity, in terms of the involvement of more partners and more sectors, especially during implementation, was associated with more integrated intervention packages, in terms of the numbers of strategies employed, determinants addressed and settings that served as implementation sites.

The study in *Chapter 3* described the composition of the policy networks, and specifically examined under which conditions (i.e., active participation of network partners, active networking by the project leader, trust among members) a policy network – whether it is multi-sectoral or not – succeeds in implementing integrated intervention packages in terms of including strategies of change that address environmental determinants of health behavior.

The policy networks of the project leaders in Gezonde Slagkracht on average included more than 20 network actors. Most of these actors were from the sectors of public health, education, welfare and sports. Least represented were the sectors of spatial planning and environment, public housing and employment and social affairs. Also rather limited was the presence of private sector actors and community members. On average, project leaders kept in touch with their network actors about once per two months. Two fifth of the actors actively participated in the network, and most actors had positive perceptions of trust in terms of good intentions of the other actors.

The intervention packages implemented by the projects on average included between eight and nine health promotion interventions. The projects managed to implement on average 8.62 interventions. On average 2.59 of the implemented interventions targeted non-educational strategies such as facilitation, regulation, case finding and citizen participation. More than half of the projects (n=17) succeeded in implementing an 'intervention mix', meaning that their intervention packages, next to education, included three or four other strategies of change that addressed environmental determinants of health behavior.

A multisectoral policy network as such was neither a necessary nor a sufficient condition for the implementation of an intervention mix. In multisectoral networks, either the active participation of network actors or active networking by the project leaders was additionally required. In policy networks that were not considered multi-sectoral (i.e., < 7 partners), a high level of trust was needed – in the absence though of any of the other conditions to implement an intervention package that addresses also the environmental determinants of health behavior. If the network actors were also actively involved, an extra requirement for implementing an intervention mix was active networking by the project leader.

The study in *Chapter 4* explored the role of the Dutch system for the recognition of interventions (Dutch Recognition System (DRS)) in the uptake of evidence-based health promotion interventions in the context of integrated health policymaking. About two thirds of the project leaders visited the national database of evidence-based health promotion interventions of the DRS during the preparation or in the first year of the projects. This dropped to less than half of the projects in the third year. One in seven project leaders visited the database regularly, the others sporadically or not. Of the project leaders who reported on when they visit the database, 65% reported visiting the database before the start of the project.

Of all projects, 85% adopted one or more recognized interventions from the national database, while 73% implemented and 27% continued at least one such intervention.

Whether it concerned interventions that projects considered to apply or that projects actually adopted, implemented or continued, a steady 11% originated from the national database. Only two implemented interventions were recognized as having good indications for effectiveness. Of all projects, a little more than half (55%) submitted interventions for inclusion in the DRS, covering 10% of all implemented interventions. Vanguard projects adopted and implemented more interventions from the database and submitted more interventions for inclusion in the database compared to new and starting projects.

A quarter of all project leaders agreed that participation in the governmental program had boosted the adoption of interventions from the database, while two fifths agreed that the level of recognition of interventions had influenced adoption decisions. Just over half of the project leaders agreed that submission of interventions for inclusion in the database resulted from participation in the Gezonde Slagkracht program.

Reasons project leaders gave for making use of the national database were related to not wanting to 'reinvent the wheel', i.e., finding interventions and getting inspirations for interventions that can achieve project goals, and not wanting to waste resources on ineffective interventions. Among the reasons for not making use of the database was the perceived contextual mismatch of the interventions with their implementation setting and not knowing how to adapt the interventions to improve their contextual fit, and the use of other sources of information about evidence-based interventions (e.g., from other projects, colleagues or websites). Other reasons for not using the DRS were related to the use of the database itself, such as its low user-friendliness and the limited availability of certain interventions e.g., for specific target groups and having been recognized as effective.

Reasons for submission of interventions according to the project leaders were related to the requirement of the program and the importance of knowledge sharing. The main reasons for not submitting interventions were related to the unfeasibility of conducting research needed for the process of recognition and the complex and time-consuming submission process.

The study in *Chapter 5* investigated whether similar intervention systems, i.e., intervention-context combinations addressing the same health theme with an identical strategy of change in a comparable setting, would encounter a similar set of bottlenecks for implementation. In the Gezonde Slagkracht projects, nine intervention systems were present more than ten times. In five of these frequently present systems, the core behavior change method was education, while three included facilitation and one regulation. Five of the systems had overweight as their main theme, and four alcohol. Schools were

the primary implementation setting for three intervention systems, while for the other six a different setting was included in each.

On average, the conditions most frequently hampering implementation were the motivation and enthusiasm of the co-implementer and the accessibility of the intervention for the target group. Overall, bottlenecks occurred in all categories of conditions, e.g., relating to the implementer, the intervention, and political and administrative support, and were often connected with intersectoral health policymaking, e.g., relating to the co-implementer and the co-implementer's organization.

Each distinct intervention system came across a unique set of – a limited number of – conditions hampering implementation. Most of these bottlenecks were associated with the characteristics of the intervention system in which they occurred, i.e., with its health theme, strategy of change and/or implementation setting. However, bottlenecks also appeared when there was no such association or did not appear when there was an association.

Methodological considerations

The methodological considerations will focus on the real-life context and observational character of the studies, the huge amount of collected data and its belonging data collection procedures, and the type of analyses.

The studies were conducted in the *real-life context* of intersectoral policymaking. This allowed a *huge amount of data* to be generated in many projects and thus on a large number and variety of settings, health promotion interventions, project leaders and implementers, and on many outcomes and conditions for implementations. The added value of the huge amount of data generated is that the implementation of interventions in the projects could be closely followed, i.e., the implementation could be described more or less from adoption to continuation. Also in the international literature, it is very exceptional that so much data on so many projects, interventions, settings, and so on becomes available (Greenhalgh et al., 2004).

The *data collection procedures* for this large amount of data could come about because of *good cooperation from the projects*. The incentive from the ministerial program to participate in the research certainly played an important role in establishing *good participation*. In addition, the research team made every effort to make participation as easy, quick and purposeful as possible, thereby decreasing research burden and increasing fit with each study context. For example, questionnaires were customized for each project based on the grant applications and responses in previous questionnaires. Participants were reminded several times and could complete the questionnaire online

or on paper as they chose. Project leaders and implementers were offered a helping hand by completing the questionnaires together over the phone, even if that meant multiple appointments with implementers responsible for multiple interventions. Missing data were minimized by checking the data received and calling respondents in case of inconsistencies or missing answers. Finally, participants were informed about interim results. These interim results were used as input for the provided professional support of Gezonde Slagkracht (e.g., workshops, newsletters and individual coaching).

The vast amount of data collected allowed different *types of data analysis*, and this is considered a strength of the research. In the study in Chapter 2, the multiple cases allowed associations to be understood using quantitative data. Previously, these associations could usually only be surmised by describing one or a few cases using qualitative methods. Sufficient data were available for the study in chapter 3 to conduct a QCA and for the study in chapter 4 to establish the position of evidence-based interventions in the projects. In the study in chapter 5, a first qualitative empirical underpinning was possible of intervention-context interactions and of regularities in the bottlenecks that occur in them.

The large amount of data on many factors and outcomes that could be generated thanks to the real-life context of the studies also brought challenges. Huge efforts in terms of manpower, time and money were required for the data collection procedure alone, as well as for all follow-up steps toward answering research questions and data analysis. Only limited resources remained to conduct in-depth qualitative research in addition. Additionally, the intensive data collection procedures could have led to measurement bias. The close contact with the project leaders and implementers to increase response rate and minimize research burden, could have affected the quality of the data collected (e.g., socially desirable answers).

Collecting data in a real-life context also includes real life dynamics such as changes in contact persons within the projects. This certainly did not make the whole data collection process easier. This approach may not be the most ideal way to collect data, as data collection could be less objective, but it may be a better fit for all stakeholders involved in implementation research.

Due to the huge amount of data generated, data reduction to arrive at the core variables was necessary before 'real' data analyses could be conducted to answer the research questions. This also involved making choices which in turn sometimes limited the richness of the data. Difficulties were encountered in the operationalization of key concepts in this thesis. These included, for example, the operationalization of "integrated

intervention packages," "multi-sectoral networks," "bottlenecks to implementation," and "function of the intervention," as discussed in more detail in the four studies.

A rather quantitative approach was adopted. On certain concepts and outcomes not much in-depth data could be additionally collected and handled or sometimes none at all, such as on processes of intersectoral policy making and implementation, and potentially influential contextual features. Even if this had been the case, it remained challenging to formulate definitions of these types of multi-interpretable concepts as there is limited theory and evidence available that can make such an operationalization easier.

The observational character of the studies in this dissertation fitted well with the research questions at hand. Mainly descriptive statistics were used for data analysis. In addition, some simple statistical testing techniques were used (such as cross-tabs) and stratified analyses were compared qualitatively, usually without real testing. Often, statistical testing was not possible due to the low number of statistical units. However, descriptive statistics made it possible to visualize the multiple relationships and identifying relevant differences.

Overall, the considerations lead to the statement that despite all the "ifs and buts" concerning the methodology of the studies in this dissertation, that it is possible to generate important insights on how to improve the implementation of integrated health promotion packages, the role of partnership diversity and additional required collaboration/ networking skills and trust, as long as you are transparent about your rationale, choices and limitations.

Conclusions and implications

The studies in Chapters 2 and 3 looked at multi-sectoral networks as an implementation strategy. The results of these studies imply that in order to implement integrated HP packages as a mean to improve public health, it seems worthwhile to *invest in the challenging endeavor of collaborating with many different partners*. This is true both at the operational level as well as at the policy level. However, the diversity of partnerships alone proved insufficient for establishing an intervention package that targets the variety of environmental determinants of health behavior. Therefore, several additional necessary directions and efforts were substantiated, or newly identified, for facilitating diversely composed partnerships to implement integrated HP packages. One example is that the research substantiates the importance of *avoiding the health argument, 'the 'H' word', in intersectoral policy making* (Howard & Gunther, 2012 p 35; De Leeuw, 2017) but instead making clear how the non-health sectors' core operations (e.g., ensuring optimal educational opportunities; maximizing anti-poverty measures; introducing

safety measures for substance use such as alcohol) contribute to health (Hendriks et al., 2015; Holt et al., 2017; Pinto et al., 2015). Relatedly, this implies an approach with *a less central role for the health sector* and *formulating broad policy goals* in the conception of programs (i.e., health in all policies (Kickbusch, 2010). This in turn calls for more substantive *governmental directions* (Carlisle, 2012; Clavier et al., 2012) that predetermine the aims and content of the HP packages to be implemented (De Leeuw, 2017; Rayner & Howlett, 2009) than the themes provided in the Gezonde Slagkracht program which focused exclusively on risk behavior and not on structural determinants of health, such as income or education (Kröger et al., 2015).

Another set of necessary investments identified relates to the importance of *intensive network management* (Harting et al., 2019; Koppejan & Klijn, 2004; Peters et al., 2017b). Such management should aim to *reduce network complexity* (e.g., by connecting values and interests) and *create the active participation* and *trust* necessary for non-health sectors to invest in intersectoral health policies (Koppejan & Klijn, 2004; Varda & Retrum, 2012; Weiss et al., 2016). Additionally, investing in a strong network is the basis for sustainable collaboration in new projects and is recognized as the most important requirement for sustainability (Shediack & Bone, 1998). In networks with fewer or less diverse actors at policy steering level, this seems to be less important.

The above-mentioned network management and framing of health problems in line with structural environmental determinants (Peters et al., 2016) require *highly developed competencies of project leaders*. This has implications for the *training and appointment of project leaders* in intersectoral policymaking (De Leeuw & Peters, 2015). But also, future professionals can be prepared how to create working relationships with professionals from other disciplines or sectors. An example is interprofessional education, which has shown some effective results in improving professional practice in different health related disciplines (Guraya & Bar, 2018; Reeves et al., 2017). Key competencies include active networking skills, and awareness of what boundaries between sectors mean for public health action as well as boundary-spanning skills to encourage collaboration across these sectors (Holt et al., 2018; Williams, 2002).

The study in Chapter 4 examined the required and supported use of the Dutch recognition system as an implementation strategy for the uptake of evidence-based health promotion interventions. The study substantiates that such *a requirement for EBP by a grant provider* can be recommended as a strategy to encourage the use of the DRS and thus evidence-based practices. The study also indicated that the implementation strategy could be improved by making better use *of exemplary behavior from the more experienced ones (i.e., the vanguard projects) and better tailoring the strategy to those that do not know the DRS or are more hesitant to use the DRS (i.e., the new and starting projects)*.

Furthermore, the implementation strategy could be much stronger if accompanied by investments in the DRS itself. Therefore, the results underscore the importance of further efforts to *improve the user-friendliness of the DRS (*Gelinck et al., 2018; Noordink et al., 2013), *facilitate the submission process (RIVM 2012)*, and aim for a *broader range of interventions in the database* in terms of themes, settings and targeted behavioral determinants (Gelinck et al., 2018; Noordink et al., 2013; Lanting et al., 2012; RIVM, 2012) as well as for more interventions to be recognized at a higher level (Noordink et al., 2013).

The studies in both chapter 4 and 5 shed new light on the major role of contextual mismatches and offer some starting points for the enhancement of contextual fit and thus on improving implementation. It can be derived from the study in chapter 4 that in order to overcome the major barrier of perceived contextual mismatch of evidence-based interventions, *more attention should be paid to context-specific evidence and adaptability of interventions in the assessment criteria and process of the DRS*, and the *inclusion of information on context-specific evidence and adaptability in the descriptions of the interventions* in the DRS database (Gelinck et al., 2018; Lanting et al., 2012; Noordink et al., 2013; Van de Walle et al., 2014; Wolt et al., 2009). Above all, however, the studies point to the importance of engaging in local capacity building to reduce contextual mismatches. The study in Chapter 4 endorses the importance of capacity building in terms of *local professionals' competencies in transferability, adaptation of the intervention to improve context fit, and skills to monitor the local context and interactions between intervention and context* (Chambers et al., 2013; Cambon et al., 2012; Dawes et al., 2005; Hailemariam et al., 2019; Lehane et al., 2019; Schloemer et al., 2021). In addition, the study endorsed the importance of *raising awareness and discussion among professionals about EPB in general* (Dawes et al., 2005; Lehane et al., 2019). This could be extra challenging since in intersectoral policymaking we are dealing with professionals from different sectors, with each one having their specific agenda. Therefore, a tailored approach will be required to match the different agenda's. However, assuming that partners from other sectors are less or not involved with evidence-based behavior change programs, raising awareness and discussion specifically among the non- health related sectors could be expected to be more difficult.

Chapter 5 shows that, based on the function of an intervention, one could partially predict certain mismatches and anticipate them in the implementation strategy. As such, it calls for a different way of thinking and acting. Increasing local professionals' *awareness of the existence of regularities in intervention-context interactions* seems to be an important capacity building aim. After *early identification of - probably a limited number of - bottlenecks* to an intervention, the implementation strategy needs to focus specifically on overcoming these bottlenecks. In the current study setting, the conditions that most often were reported to hinder implementation were the motivation and enthusiasm of

the co-implementer (which relates to capacity building in network management) and the accessibility of the intervention to the target population. But bottlenecks appeared to occur in all categories of conditions.

More specifically it was retrieved that such an early assessment of bottlenecks should preferably be *directed at structural factors*, i.e., the socio-economic and political context, and be prioritized in designing implementation plans (Berman, 1981; De Souza, 2022; Payne, 2009). These often given and fixed factors operate 'one level up' from an intervention or, in other words, as more distal bottlenecks. Changing structural factors can be understood as a huge task. It touches on national policies and cultural norms and might even require nation-wide strategies, such as advocacy, laws and regulations (Eldredge-Bartholomew et al., 2016). At the same time, such strategies seem essential. In many cases, distal structural factors can hinder overcoming direct bottlenecks, and thereby add to program failures to bring about comprehensive and long-lasting health improvements (as has happened in many previous programs) (Hawe et al., 2009; Moore et al., 2019). At the local level, it may also mean though that it is better to *refrain from implementing interventions with a particular function* for the time being.

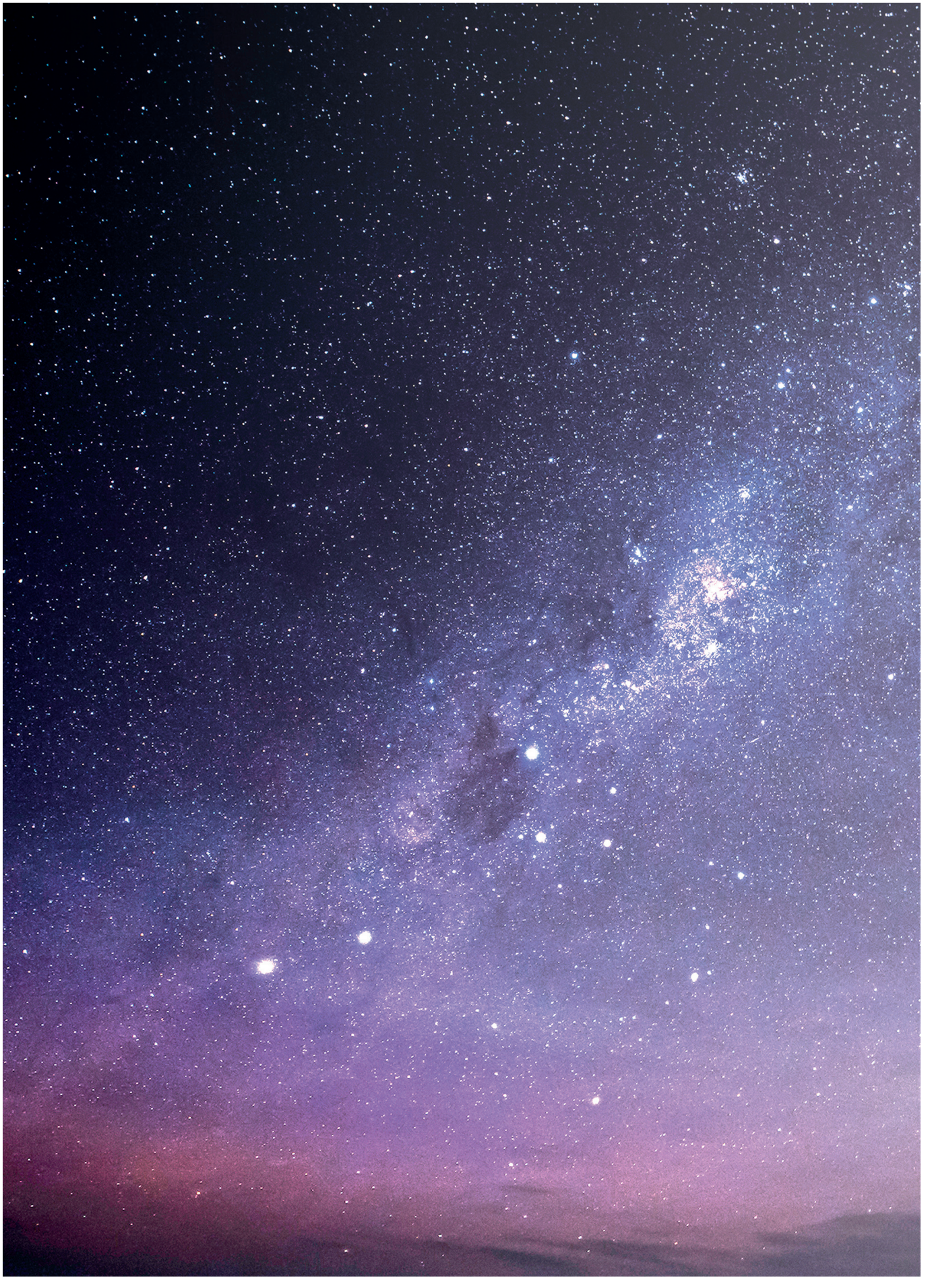
The study in Chapter 5 has another implication for implementation strategies that originates from the finding that not all implementation bottlenecks can be predicted based on the function of an intervention (Greenhalgh et al., 2004; Hawe et al., 2009). Some bottlenecks may be unexpectedly present, and others may be unexpectedly absent. This means that any initial *implementation plan must be flexible* to tailor implementation approaches to unpredictable implementation problems at individual sites.

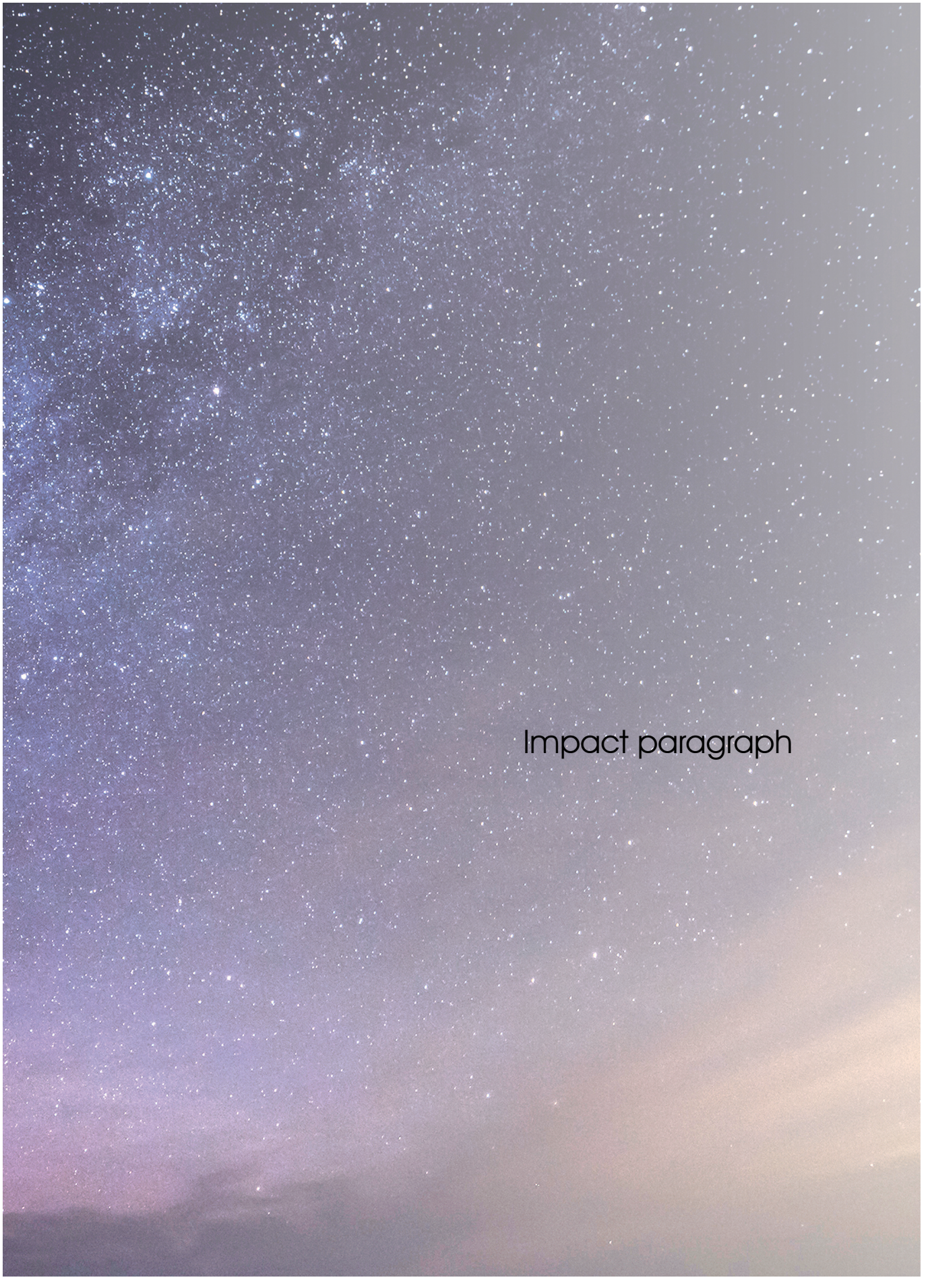
Finally, also in the process of developing and executing implementation strategies that can reduce contextual mismatches there seems to be an important role for the project leader. This raises the question whether all the project leader roles identified in the study, and the competencies these roles require, can be combined in one person. It is recommended to further *explore the roles and competences needed for intersectoral health policymaking and project leadership*. Insights from previous work of Vermeer (2013) focusing on the importance of leadership roles in intersectoral sustainable collaboration in community setting and Leurs (2008) in the school setting could be taken into consideration.

Final statement

This dissertation is dedicated to optimizing the implementation of integrated health promotion packages in local intersectoral health policymaking. The research has substantiated several directions for the improvement of implementation and generated some new directions. Several opportunities have been identified within the vast and

complex domain of health promotion and intersectoral health policymaking, which could ultimately raise the impact of health promotion. Most of these directions imply different 'ways of thinking and acting', and substantial investments and efforts from scientists and professionals in the field. The research in this dissertation has mainly contributed to substantiating the importance of these investments and thereby aims to contribute to some extend to the actual initiation and realization of these investments and/or support ongoing efforts.

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The Research goal and main Findings

Countries worldwide are facing major health problems due to non-communicable diseases which are caused by unhealthy behaviors such as poor diet, sedentary behavior, and alcohol and drug abuse. Intersectoral health policy has been proposed to effectively address these problems to improve public health. Intersectoral health policy simultaneously addresses personal determinants (such as knowledge about a health topic) and environmental determinants (such as the availability of affordable healthy foods) which are underlying these health behaviors. This requires the involvement of multiple partners from different sectors including the health- (such as the municipal department of health) and non-health related sectors (such as spatial planning) in the policy networks and partnerships to implement preferably evidence based (i.e., recognized) health promoting interventions in integrated health promotion packages fitting the implementation context. This dissertation describes four studies on the implementation process of integrated health promotion packages in 34 unique regional projects targeting different health themes, with different stakeholders supported with national funding and coaching. Results therefore should be of interest to any party planning to implement integrated health policies.

The main findings from *study one* indicated that the number of partners involved *and* the diversity of the involved partnerships, especially during implementation, were associated with more diverse health promotion packages in terms of number of change strategies, addressed behavioral determinants and number of implementation settings.

Study two indicated that a multisectoral policy network was neither a necessary nor a sufficient condition for the implementation if integrated health promotion packages. Additional requirements were active participation of network actors or active networking by the project leaders and a high level of trust among involved partners.

Study three indicated that the implementation of the Dutch Recognition System (DRS) by a grant provider could be an effective implementation strategy to increase the uptake of evidence based health promotion interventions, but requires additional investments in the DRS itself (such as its user friendliness) as well as investments to enhance contextual fit (such as capacity building) to improve implementation of these evidence based interventions.

Study four indicated that each intervention system has a unique set of implementation bottlenecks from which a majority were associated with the characteristics of the

intervention (i.e., system) itself (such as the health theme). However, bottlenecks could also appear when such an association was not present or even remained absent in the presence of such an association making the predictability of these bottlenecks complex. Therefore, a more flexible tailored approach is recommended to handle unpredictable problems at the individual implementation sites.

The Social and Scientific impacts of the findings

The findings provided many insights for multiple stakeholders from different levels (such as the national or the regional level), reflecting the multiple stakeholders required during implementation of intersectoral health policymaking.

Relevance for different stakeholders:

1. National policymakers and funders (Dutch Ministry of Health, Welfare and Sport (VWS), National Institute for Public Health and the Environment (RIVM), and ZonMw): After the Gezonde Slagkracht program, multiple projects targeting integrated approaches were financed by VWS and ZonMw. First, the findings of this dissertation indicate the importance of a user-friendly intervention database. This can be achieved by for example monitoring and evaluating the use of participants on a regular basis. Second, the intervention database should aim for a higher variability in recognized interventions on multiple themes, target groups, change strategies or implementation. An impulse for his could be grants for projects focusing on the development and implementation of these type of interventions (e.g., focusing on groups with a low social economic status, complex interventions and policy interventions). Third, it can also be considered whether intersectoral policymaking projects should start with a multisectoral character at the national level instead of solely from the ministry of VWS. A recommendation could be collaboration across different ministries. Findings may shed some light on the implementation process of intersectoral approaches, helping politicians or policy makers to determine strategies in health promotion.
2. Regional policymakers, project leaders and implementers all contribute to facilitating the implementation of intervention packages, either by formulating policy plans, to proposing projects or implementing interventions resulting in integrated health promotion packages in practice. Findings from this dissertation indicate the requirement of collaboration related skills such as active networking, building trust, boundary spinning and framing to facilitate intersectoral policymaking but also for the implementation of other types of change strategies by formulating broader policies for project leaders and policymakers. Further, the results stress the importance of creating awareness among all stakeholders regarding the importance of implementing evidence-based interventions to raise the impact of health promotion. Additionally, the role of project leaders is crucial in proposing integrated health promotion pack-

ages. They require sufficient skills and knowledge on selecting these interventions, on adapting these interventions to fit the local implementation context without losing he effectivity of the intervention (contextual fit), and on how to recognize bottlenecks for implementation and developing flexible and tailored implementation strategies to optimize implementation. It is recommended to choose the right project leader with all the skills or consider dividing the leadership position over multiple persons by looking at the skills they possess. All the mentioned skills on collaboration, networking and implementation can be provided or enhanced in a training for project leaders, implementers and/or policymakers.

3. Students (future professionals in health and non-health related sectors)
   The future Health Promotion professional (or persons from any other sector) should be involved in the implementation of intersectoral health policy making. Specific modules could be created as part of an existing curriculum focusing on the specific skills that are required for the 'new' professional entering the field of intersectoral health policymaking from both the health and non-health related sectors. Specific skills that should be included are active networking skills, awareness of what boundaries between sectors mean for public health as well as boundary spinning skills to encourage collaboration across sectors (Holt et al., 2018; Williams, 2002). Additionally, it is also recommended to raise awareness about the use of evidence-based practices in general. Attention could go to the dilemma between standardization (implementing intervention identical to how evidence was generated) and adaptation (adapting the intervention to fit the context).
4. Researchers
   This dissertation provides an example of how generic implementation data of integrated health promotion packages in local intersectoral policymaking on a large scale can be executed, resulting in insight in implementation processes including the collaboration with other sectors, different types of interventions with different intervention characteristics. This research provide also an example of how basic action research can be conducted. Researchers can build further on the first indications of the importance of the contextual fit of interventions for facilitation of implementation of health promoting interventions and work further on the development of an instrument to aid professionals in predicting mismatches based on the function of an intervention. Finally, researchers can use the findings from this dissertation to further explore the roles and competencies needed for intersectoral policymaking and project leadership.

Dissemination of findings

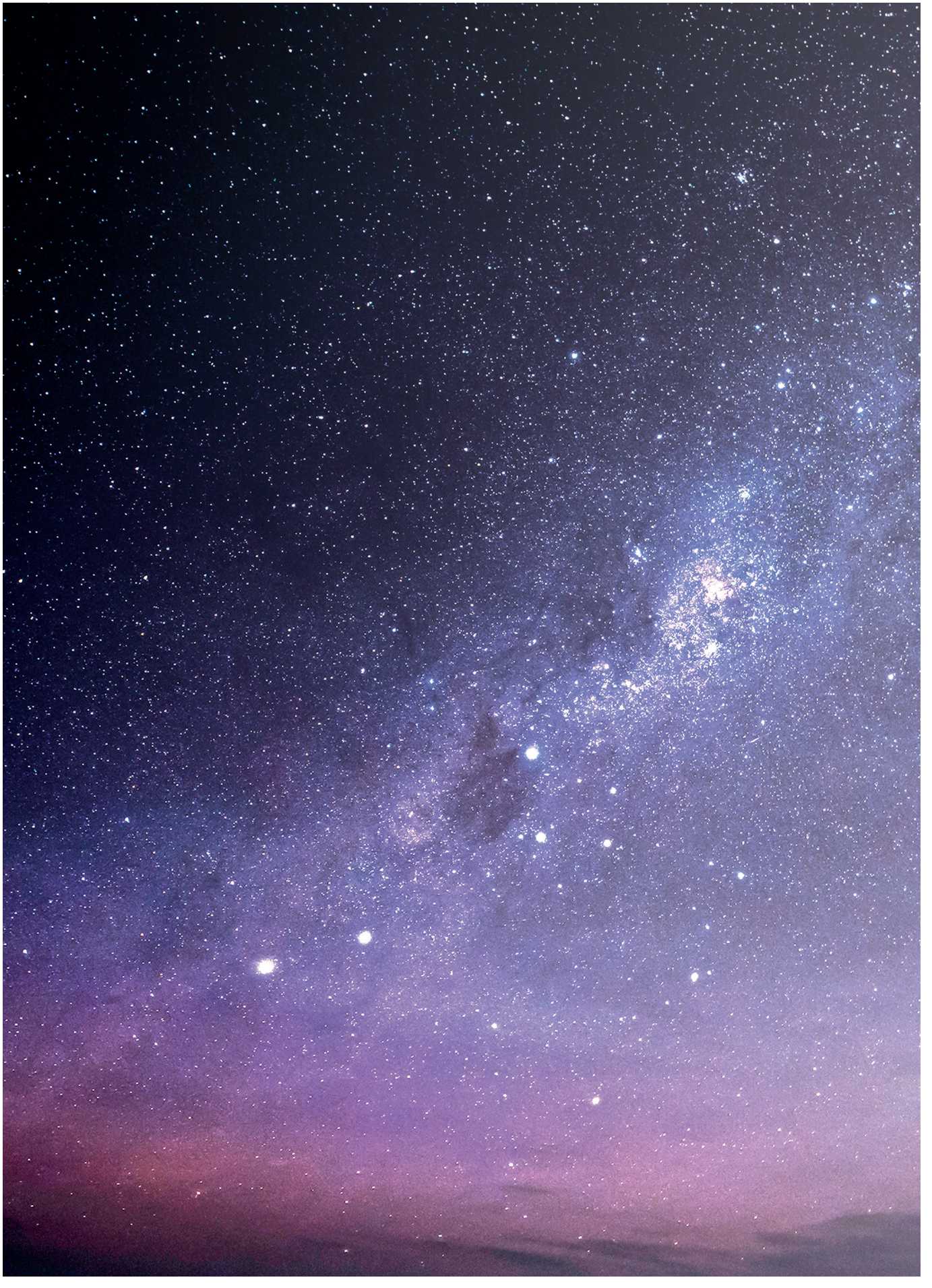
In line with the ZonMw requirement, from this dissertation two studies have been *published Open Access*, and one is *submitted for publication*, which gives the research broader scientific and societal reach. There were also other publications published

based on the bigger research team (Local50) involved with the Gezonde Slagkracht program. Additionally, *yearly reports* were required from ZonMw (program coordinator) to provide insights of current standings regarding the research process. From these yearly reports, input was used to develop the professional support provided to the projects. *Multiple information sessions/ workshops* were organized for the project leaders and their partners to facilitate their projects such as: sessions on how to improve intersectoral policymaking or on how to adopt and implement evidence-based interventions. Different topics were also covered in the monthly newsletter for example on how to continue a project at the end of the Gezonde Slagkracht project or the importance of the evaluation research (https://adoc.pub/verslag-bijeenkomst-inspirerend-onderzoek-op-30-november-201.html).

Diverse workshops were provided at the National Congress of Public Health (NCVGZ) during the project and after handing in the final project report to share knowledge.

Gezonde Slagkracht resulted also in multiple input for new tools for education purposes for example a *digital online tool* for intersectoral health policy. Additionally, the findings of Local50 were mentioned and or used in diverse reports such as a report on better specification of integrated health policy in practice (https://www.beleidsonderzoekonline.nl/tijdschrift/bso/2014/09/Beleidsonderzoek-2014-12/fullscreen) and was also mentioned in an official letter to the Dutch parliament. (https://www.eerstekamer.nl/behandeling/20140122/lijst_van_vragen_en_antwoorden_2/document3/f=/vjgnn4wuxmyp.pdf).

Lastly, the findings of Local50 resulted in a follow up grant research project at ZonMw as part of the VIMP projects, focusing on the efficiency of the local integrated health policy (https://projecten.zonmw.nl/nl/project/de-werkzaamheid-van-lokaal-integraal-beleid-overzicht-van-de-vragen-uit-de-praktijk-de).



References

REFERENCES

Aarts, M.-J., Jeurissen, M. P. J., Van Oers, H. A. M, Schuit, A. J., & Van de Goor, I. A. M. (2011). Multi-Policy sector policy action to create activity-friendly environments for children: A multiple-case study. *Health, 101*(1), 11-19. https://doi.org/10.1016/j.healthpol.2010.09.011

Akkerman, A., & Torenvlied, R. (2013). Public Management and Network Specificity: Effects of colleges' ties with professional organizations on graduates' labour market success and satisfaction. *Public Management Review, 15*(4), 522-540. https://doi.org/10.1080/14719037.2012.677213

Atkinson, S., Medeiros, R. L. R., Oliveira, P. H. L. & De Almeida, R. D. (2000). Going down to the local: incorporating social organisation and political culture into assessments of decentralised health care. *Social Science and Medicine, 51*(4), 619-636. https://doi.org/10.1016/S0277-9536(00)00005-8

Australian Government. (2007) Tackling wicked problems. A public policy perspective. http://www.enablingchange.com.au/wickedproblems.pdf (last accessed 3 November 2019).

Axelsson, R. & Axelsson, S. B. (2006). Integration and collaboration in public health - a conceptual framework. *International Journal of Health Planning and Management, 21*,(1), 75-88. https://doi.org/10.1002/hpm.826

Bartelink, N., Van Assema, P., Jansen, M., Savelberg, H., & Kremers, S. (2023). Health Promotion Intervention Research in Complex Adaptive Systems: The Contextual Action-Oriented Research Approach (CARA). In D. Jourdan, & L. Potvin (Eds.), *Global handbook of Health Promotion Research* (pp. 317-325). Springer Nature Switzerland AG. https://doi.org/10.1007/978-3-031-20401-2_25

Bartholomew, L. K., Parcel, G. S., Kok, G., Gottlieb, N. H., & Fernández, M. E. (2011). *Planning health promotion programs. An intervention mapping approach (3rd ed.)*. San Francisco: Jossey-Bass.

Berman, P. (1981). *Improving schools: Using what we know. Educational change. An implementation paradigm.* Beverly Hills/Londen: Sage.

Bessems, K., van Nassau, F., & Kremers, S. (2022). Implementatie van interventies. In J. Brug, P. van Assema, S. Kremers, & L. Lechner (Eds.), *Gezondheidsvoorlichting en gedragsverandering: Een planmatige aanpak* (10 ed., pp. 189-215). Koninklijke Van Gorcum BV (Royal Van Gorcum BV).

Bloch, P., Toft, U., Reinbach, H. C., Clausen, L. T., Mikkelsen, B. E., Poulsen, K., et al. (2014). Revitalizing the setting approach - supersettings for sustainable impact in community health promotion. *International Journal of Behavioural Nutrition and Physical Activity, 11*(1), 118-132. https://doi.org/10.1186/s12966-014-0118-8

Bolton, K. A., Kremer, P., Gibbs, L., Swinburn, B., Waters, E., & de Silva, A. (2016). Expanding a successful community-based obesity prevention approach into new communities: challenges and achievements. *Obesity Research and Clinical Practice 10* (2), 197-206. https://doi.org/10.1016/j.orcp.2015.05.017

Booher, D. E., & Innes, J. E. (2002). Network Power in Collaborative Planning. *Journal of Planning Education and Research, 21*(3), 221-236. https://doi.org/10.1177/0739456X0202100301

Breton, E. (2016). A sophisticated architecture is indeed necessary for the implementation of Health in All Policies but not enough: comment on understanding the role of public administration in implementing action on the social determinants of health and health inequities. *International Journal of Health Policy and Management, 5*(6), 383-385. https://doi.org/10.15171/ijhpm.2016.28

Breton, E., & De Leeuw, E. (2011). Theories of the policy process in health promotion research: a review. *Health Promotion International, 26*(1), 82-90. https://doi.org/10.1093/heapro/daq051

Brownson, R. C., Fielding, J. E., & Maylahn, C. M. (2009). Evidence-based public health: a fundamental concept for public health practice. *Annual Review of Public Health, 30*, 175-201. https://doi.org/10.1146/annurev.publhealth.031308.100134

Brug, J., Van Dale, D., Lanting, L., Kremers, S., Veenhof, C., Leurs, M., Van Yperen, T., & Kok, G. (2010). Towards evidence-based, quality-controlled health promotion: the Dutch recognition system for health promotion interventions. *Health Education Research, 25*(6), 1100–110. https://doi.org/10.1093/her/cyq046

Bryson, J. M., Crosby, B. C., & Stone, M. M. (2006). The design and implementation of corss-sector collaborations: propositions from the literature. *Public Administration Review, 66*, 44-45. https://doi.org/10.1111/j.1540-6210.2006.00665.x

Cambon, L., & Alla, F. (2021). Understanding the complexity of population health interventions: assessing intervention system theory (ISyT). *Health Research Policy and Systems 19*(1), 1-11. https://doi.org/10.1186/s12961-021-00743-9

Cambon, L., Minary, L., Ridde, V., & Alla, F. (2012). Transferability of interventions in health education: a review. *BMC Public Health, 12*, 1-13. https://doi.org/10.1186/1471-2458-12-497

Carey, G., Crammond, B., & Keast, R. (2014). Creating change in government to address the social determinants of health: how can efforts be improved? *BMC Public Health, 14*(1), 1-11. https://doi.org/10.1186/1471-2458-14-1087

Carlisle, S. (2010). Tackling health inequalities and social exclusion trough partnership and community engagement? A reality check for policy and practice aspirations from a Social Inclusion Partnership in Scotland. *Critical Public Health, 20*(1), 117-127. https://doi.org/10.1080/09581590802277341

CCoRIH. (2014) Uw onderzoek: WMO-plichtig of niet [Your research: Does it fall under the WMO]. https://www.ccmo.nl/onderzoekers/wet-en-regelgeving-voor-medisch-wetenschappelijk-onderzoek/uw-onderzoek-wmo-plichtig-of-niet (last accessed 3 November 2019).

Chambers, D. A., Glasgow, R. E., & Strange, K. C. (2013). The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change. *Implementation Science, 8*(1), 1-11. https://doi.org/10.1186/1748-5908-8-117

Clavier, C., & De Leeuw, E. (2013). *Health promotion and the policy process.* Oxford Scholarship Online.

Clavier, C., Gendron, S., Lamontagne, L., & Potvin, L. (2012). Understanding similarities in the local implementation of a healthy environment programme: insights from policy studies. *Social Science and Medicine, 75*(1), 171-178. https://doi.org/10.1016/j.socscimed.2012.02.044

Corbin, J. H., Jones, J., & Barry, M. M. (2018). What makes intersectoral partnerships for health promotion work? A review of the international literature. *Health Promotion International, 33*(1), 4-26. https://doi.org/10.1093/heapro/daw061

Cronqvist, L. (2011). Tosmana: Tool for Small-N Analysis. Version 1.3.2.0. Trier: University of Trier.

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. *Implementation Science, 4*(1), 1-15. https://doi.org/10.1186/1748-5908-4-50

Darlington, E. J., Violon, N., & Jourdan, D. (2018). Implementation of health promotion programmes in schools: an approach to understand the influence of contextual factors on the process? *BMC Public Health, 18*(1), 1-17. https://doi.org/10.1186/s12889-017-5011-3

Dawes, M., Summerskill, W., Glasziou, P., Cartabellotta, A., Martin, J., Hopayian, K., … & Osborne, J. (2005). Sicily statement on evidence-based practice. *BMC Medical Education, 5*, 1-7. https://doi.org/10.1186/1472-6920-5-1

De Leeuw, E. (2007). Policies for health. The effectiveness of their development, adoption and implementation. In D. V. McQueen & C. M. Jones (Eds.), Global perspectives on health promotion effectiveness (pp. 51-66). New York: Springer. https://doi.org/10.1007/978-0-387-70974-1_5

De Leeuw, E. (2017). Engagement of sectors other than health in integrated health governance, policy and action. *Annual Review of Public Health, 38*, 329-349. https://doi.org/10.1146/annurev-publhealth-031816-044309

De Leeuw, E., Clavier, C., & Breton, E. (2014). Health policy - why research it and how: health political science. *Health Research Policy and Systems, 12,* 1-11. https://doi.org/10.1186/1478-4505-12-55

De Leeuw, E., & Peters, D. (2015). Nine questions to guide development and implementation of Health in All Policies. *Health Promotion International, 30*(4), 987-997. https://doi.org/10.1093/heapro/dau034

De Souza, D. E. (2022). A critical realist approach to systems thinking in evaluation. *Evaluation, 28*(1), 72-90. https://doi.org/10.1177/13563890211064639

Dreisinger, M. L., Boland, E. M., Filler, C. D., Bakker, E. A., Hessel, A. S., & Brownson, R. C. (2012). Contextual factors influencing readiness for dissemination of obesity prevention programs and policies. *Health Education Research*, *27*(2), 292-306. https://doi.org/10.1093/her/cyr063

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: a review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*, 327-350. https://doi.org/10.1007/s10464-008-9165-0

Dusenbury, L., Brannigan, R., Falco, M., & Hansen, W. B. (2003). A review of research on fidelity of implementation: implications for drug abuse prevention in school settings. *Health Education Research*, *18*(2), 237-256. https://doi.org/10.1093/her/18.2.237

Edelenbos, J., Van Buuren, A., & Van Schie, N. (2010). Knowledge synchronisation: interactive knowledge production between experts, bureaucrats and stakeholders. In *Knowledge Democracy: Consequences for Science, Politics and Media* (pp. 153-167): Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-11381-9_12

Edvardsson, K., Ivarsson, A., Garvare, R., Eurenius, E., Lindkvist, M., Mogren, I., … & Nyström, M. E. (2012). Improving child health promotion practices in multiple sectors–outcomes of the Swedish Salut Programme. *BMC Public Health*, *12*(1), 1-13. https://doi.org/10.1186/1471-2458-12-920

Eldredge-Bartholomew L. K. B., Markham, C. M., Ruiter, R. A., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). *Planning health promotion programs: an intervention mapping approach*. John Wiley & Sons.

Evans, R., Murphy, S., & Scourfield, J. (2015). Implementation of a school-based social and emotional learning intervention: understanding diffusion processes within complex systems. *Prevention Science*, *16*, 754-764. https://doi.org/10.1007/s11121-015-0552-0

Faggiano, F., Allara, E., Giannotta, F., Molinar, R., Sumnall, H., Wiers, R., … & Conrod, P. (2014). Europe needs a central, transparent, and evidence-based approval process for behavioural prevention interventions. *PLoS Medicine, 11*(10), e1001740. https://doi.org/10.1371/journal.pmed.1001740

Fisher Jr, E. B. (1995). The results of the COMMIT trial. Community Intervention Trial for Smoking Cessation. *American Journal of Public Health*, *85*(2), 159-160. https://doi.org/10.2105/ajph.85.2.193

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). Implementation research: a synthesis of the literature. University of South Florida, Tampa.

Fleuren, M., Wiefferink, K., & Paulussen, T. (2004). Determinants of innovation within health care organizations: literature review and Delphi study. *International Journal for Quality in Health Care*, *16*(2), 107-123. https://doi.org/10.1093/intqhc/mzh030

Gage, R. W., & Mandell, M. P. (Eds.). (1990). *Strategies for Managing Intergovernmental Policies and Networks*. New York: Praeger.

Gelinck, R., Willemse, G., Vlasveld, A., Rensen, P., Bool, M., Herps, M., … & Viet, L. (2018). Evaluatie erkenning interventies. Kenniscentrum Sport, RIVM-CGL, Nederlandse Jeugdinstituut, Trimbos-Instituut, Vialns, Movisie, Nederlands Centrum Jeugdgezondheid.

Glasgow, R. E., Vogt, T. M., & Boles, S. M. (1999). Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *American Journal of Public Health*, *89*(9), 1322-1327. https://doi.org/10.2105/ajph.89.9.1322

Gottfredson, D. C., & Gottfredson, G. D. (2002). Quality of school-based prevention programs: Results from a national survey. *Journal of Research in Crime and Delinquency*, *39*(1), 3-35. https://doi.org/10.1177/002242780203900101

Goumans, M. J. B. M. (1997). Innovations in a fuzzy domain: Healthy Cities and (health) policy development in the Netherlands and the United Kingdom. Maastricht University, Maastricht. Retrieved from http://pub.maastrichtuniversity.nl/4a2762cd-9fd4-4a8c-9a7d-b4a2d713e30c

Grêaux, K. M., De Vries, N. K., Bessems, K. M. H. H., Harting, J., & Van Assema, P. (2021). Does partnership diversity in intersectoral policymaking matter for health promoting intervention packages' composition? A multiple-case study in the Netherlands. *Health Promotion International*, *36*(3), 616-629. https://doi.org/10.1093/heapro/daaa083

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: systematic review and recommendations. *The Milbank Quarterly*, *82*(4), 581-629. https://doi.org/10.1111/j.0887-378X.2004.00325.x

Guraya, S. Y., & Barr, H. (2018). The effectiveness of interprofessional education in healthcare: A systematic review and meta-analysis. *The Kaohsiung Journal of Medical Sciences*, *34*(3), 160-165. https://doi.org/10.1016/j.kjms.2017.12.009

Hailemariam, M., Bustos, T., Montgomery, B., Barajas, R., Evans, L. B., & Drahota, A. (2019). Evidence-based intervention sustainability strategies: a systematic review. *Implementation Science*, *14*(1), 1-12. https://doi.org/10.1186/s13012-019-0910-6

Harting, J., Peters, D., Grêaux, K., Van Assema, P., Verweij, S., Stronks, K., & Klijn, E. H. (2019). Implementing multiple intervention strategies in Dutch public health-related policy networks. *Health Promotion International*, *34*(2), 193-203. https://doi.org/10.1093/heapro/dax067

Hawe, P. (2015). Lessons from complex interventions to improve health. *Annual Review of Public Health*, *36*, 307-323. https://doi.org/10.1146/annurev-publhealth-031912-114421

Hawe, P., & Ghali, L. (2007). Use of social network analysis to map the social relationships of staff and teachers at school. *Health Education Research*, *23*(1), 62-69. https://doi.org/10.1093/her/cyl162

Hawe, P., Shiell, A., & Riley, T. (2004). Complex interventions: how "out of control" can a randomised controlled trial be?. *BMJ*, *328*(7455), 1561-1563. https://doi.org/10.1136/bmj.328.7455.1561

Hawe, P., Shiell, A., & Riley, T. (2009). Theorising interventions as events in systems. *American Journal of Community Psychology*, *43*, 267-276. https://doi.org/10.1007/s10464-009-9229-9

Hayes, S. L., Mann, M. K., Morgan, F. M., Kelly, M. J., & Weightman, A. L. (2012). Collaboration between local health and local government agencies for health improvement. *Cochrane Database of Systematic Reviews*, (10). https://doi.org/10.1002/14651858.CD007825.pub6

Hendriks, A. M., Jansen, M. W., Gubbels, J. S., De Vries, N. K., Molleman, G., & Kremers, S. P. (2015). Local government officials' views on intersectoral collaboration within their organization–A qualitative exploration. *Health Policy and Technology*, *4*(1), 47-57. https://doi.org/10.1016/j.hlpt.2014.10.013

Holt, D. H., Carey, G., & Rod, M. H. (2018). Time to dismiss the idea of a structural fix within government? An analysis of intersectoral action for health in Danish municipalities. *Scandinavian Journal of Public Health*, *46*(22_suppl), 48-57. https://doi.org/10.1093/eurpub/ckx189.122

Holt, D. H., Frohlich, K. L., Tjørnhøj-Thomsen, T., & Clavier, C. (2017). Intersectoriality in Danish municipalities: corrupting the social determinants of health?. *Health Promotion International*, *32*(5), 881-890. https://doi.org/10.1093/heapro/daw020

Howard, R., & Gunther, S. (2012). Health in All Policies: An EU literature review 2006–2011 and interview with key stakeholders. *Equity Action*.

Hunter, D. J. (2009). Leading for health and wellbeing: the need for a new paradigm. *Journal of Public Health*, *31*(2), 202-204. https://doi.org/10.1093/pubmed/fdp036

Ingram, J. C., Deave, T., Towner, E., Errington, G., Kay, B., & Kendrick, D. (2012). Identifying facilitators and barriers for home injury prevention interventions for pre-school children: a systematic review of the quantitative literature. *Health Education Research*, *27*(2), 258-268. https://doi.org/10.1093/her/cyr066

Jackson, S. F., Perkins, F., Khandor, E., Cordwell, L., Hamann, S., & Buasai, S. (2006). Integrated health promotion strategies: a contribution to tackling current and future health challenges. *Health Promotion International*, *21*(suppl_1), 75-83. https://doi.org/10.1093/heapro/dal054

Jetha, N., Robinson, K., Wilkerson, T., Dubois, N., Turgeon, V., & DesMeules, M. (2008). Supporting knowledge into action: the Canadian best practices initiative for health promotion and chronic disease prevention. *Canadian Journal of Public Health/Revue Canadienne de Sante'e Publique*, I1-I8.

Kelly, M., Morgan, A., Ellis, S., Younger, T., Huntley, J., & Swann, C. (2010). Evidence based public health: A review of the experience of the National Institute of Health and Clinical Excellence (NICE) of developing public health guidance in England. *Social Science and Medicine*, *71*(6), 1056-1062. https://doi.org/10.1016/j.socscimed.2010.06.032

Kickbusch, I. (2010). Health in all policies: the evolution of the concept of horizontal health governance. *Implementing ealth in all policies: Adelaide*, *2010*, 11-24.

Kickbusch, I., & Gleicher, D. E. (2012). *Governance for health in the 21st century* (No. BOOK). WHO Regional Office for Europe.

Kickbusch, I., McCann, W., & Sherbon, T. (2008). Adelaide revisited: from healthy public policy to Health in All Policies. *Health Promotion International*, *23*(1), 1-4. https://doi.org/10.1093/heapro/dan006

Kickert, W. J. M., Klijn, E. H., & Koppenjan, J. F. M. (Eds.). (1997). *Managing complex networks.* London: Sage.

Klijn, E. H., & Koppenjan, J. (2016). *Governance networks in the public sector*. Oxon: Routledge.

Klijn, E. H., Edelenbos, J., & Steijn, B. (2010a). Trust in governance networks: Its impacts on outcomes. *Administration and Society, 42*(2), 193-221. https://doi.org/10.1177/0095399710362716

Klijn, E. H., Steijn, B., & Edelenbos, J. (2010b). The impact of network management on outcomes in governance networks. *Public Administration, 88*(4), 1063-1082. https://doi.org/10.1111/j.1467-9299.2010.01826.x

Koelen, M. A., Vaandrager, L. & Wagemakers, A. (2012). The healthy alliances (HALL) framework: prerequisites for success. *Family Practice, 29*, i132-i138. https://doi.org/10.1093/fampra/cmr088

Kok, M. O., Bal, R., Roelofs, C. D., & Schuit, A. J. (2017). Improving health promotion through central rating of interventions: the need for Responsive Guidance. *Health Research Policy and Systems*, *15*(1), 1-13. https://doi.org/10.1186/s12961-017-0258-9

Koppenjan, J. F. M. & Klijn, E. H. (2004). *Managing uncertainties in networks. A network approach to problem solving and decision making*. Routledge, London.

Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology*, *30*(4), 668-677. https://doi.org/10.1093/ije/30.4.668

Kröger, H., Pakpahan, E., & Hoffmann, R. (2015). What causes health inequality? A systematic review on the relative importance of social causation and health selection. *The European Journal of Public Health*, *25*(6), 951-960. https://doi.org/10.1093/eurpub/ckv111

Lane, C., & Bachman, R. (1998). *Trust within and between organizations: Conceptual issues and empirical applications*. Oxford: Oxford University Press.

Lanting L, Zwikker M, Adrieansens L, Kuiper J, Kok M, van Dale D (2012). Evaluation of the recognition system for interventions. Bilthoven: RIVM (https://www.nji.nl/nl/Download-NJi/Publicatie NJi/Evaluatie_van_het_erkenningstraject_voor_interventies.pdf)

Lehane, E., Leahy-Warren, P., O'Riordan, C., Savage, E., Drennan, J., O'Tuathaigh, C., ... & Hegarty, J. (2018). Evidence-based practice education for healthcare professions: an expert view. *BMJ Evidence-based Medicine*. https://doi.org/10.1136/bmjebm-2018-111019

Leurs, M. T. W. (2008). *A collaborative approach to tailored whole school health promotion. The schoolbeat study.* (ISBN 978-90-808752-4-I) [Doctoral dissertation, Maastricht University]. PrintPartners Ipskamp, Enschede

Lewis, M. W. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review*, *25*(4), 760-776. https://doi.org/10.5465/amr.2000.3707712

Lipp, A., Winters, T., & de Leeuw, E. (2013). Evaluation of partnership working in cities in phase IV of the WHO Healthy Cities Network. *Journal of Urban Health*, *90*, 37-51. https://doi.org/10.1007/s11524-011-9647-5

Lucidarme, J., Scott, K. J., Ure, R., Smith, A., Lindsay, D., Stenmark, B., ... & Borrow, R. (2016). An international invasive meningococcal disease outbreak due to a novel and rapidly expanding serogroup W strain, Scotland and Sweden, July to August 2015. *Eurosurveillance*, *21*(45), 30395. https://doi.org/10.2807/1560-7917.ES.2016.21.45.30395

Mayer-Foulkes, D. A. (2011). A survey of macro damages from non-communicable chronic diseases: another challenge for global governance. *Global Economy Journal, 11*(1), 1850220. https://doi.org/10.2202/1524-5861.1725

McGuire, M., & Agranoff, R. (2011). The limitations of public management networks. *Public Administration, 89*(2), 265-284. https://doi.org/10.1111/j.1467-9299.2011.01917.x

McKibbon, K. A. (1998). Evidence-based practice. *Bulletin of the Medical Library Association*, *86*(3), 396.

McMichael, C., Waters, E., & Volmink, J. (2005). Evidence-based public health: what does it offer developing countries?. *Journal of Public Health*, *27*(2), 215-221. https://doi.org/10.1093/pubmed/fdi024

McQueen, D. V., Wismar, M., Lin, V., Jones, C. M., Davies, M., & World Health Organization. (2012). *Intersectoral governance for health in all policies: structures, actions and experiences*. World Health Organization. Regional Office for Europe.

Meier, K. J., & O'Toole Jr, L. J. (2003). Public management and educational performance: The impact of managerial networking. *Public Administration Review*, *63*(6), 689-699. https://doi.org/10.1111/1540-6210.00332

Michie, S., Maartje, M. Van Stralen, M. M. & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* 6*(*1), 1-12. https://doi.org/10.1186/1748-5908-6-42

Middleton, G., Henderson, H., & Evans, D. (2014). Implementing a community-based obesity prevention programme: experiences of stakeholders in the north east of England. *Health Promotion International*, *29*(2), 201-211. https://doi.org/10.1093/heapro/das072

Milat, A., Lee, K., Conte, K., Grunseit, A., Wolfenden, L., Van Nassau, F., ... & Bauman, A. (2020). Intervention Scalability Assessment Tool: A decision support tool for health policy makers and implementers. *Health Research Policy and Systems*, *18*, 1-17. https://doi.org/10.1186/s12961-019-0494-2

Milward, H. B., & Provan, K. G. (2000). Governing the hollow state. *Journal of public Administration Research and Theory, 10*(2), 359-379. https://doi.org/10.1093/oxfordjournals.jpart.a024273

Minary, L., Alla, F., Cambon, L., Kivits, J., & Potvin, L. (2018). Addressing complexity in population health intervention research: the context/intervention interface. *Journal of Epidemiology and Community Health*, *72*(4), 319-323. http://dx.doi.org/10.1136/jech-2017-209921

Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., ... & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *BMJ, 350*, h1258. https://doi.org/10.1136/bmj.h1258

Moore, G. F., Evans, R. E., Hawkins, J., Littlecott, H., Melendez-Torres, G. J., Bonell, C., & Murphy, S. (2019). From complex social interventions to interventions in complex social systems: future directions and unresolved questions for intervention development and evaluation. *Evaluation*, *25*(1), 23-45. https://doi.org/10.1177/1356389018803219

Moore, G., Campbell, M., Copeland, L., Craig, P., Movsisyan, A., Hoddinott, P., ... & Evans, R. (2021). Adapting interventions to new contexts—the ADAPT guidance. *BMJ*, *374*, n1679. https://doi.org/10.1136/bmj.n1679

Naylor, P. J., Nettlefold, L., Race, D., Hoy, C., Ashe, M. C., Higgins, J. W., & McKay, H. A. (2015). Implementation of school based physical activity interventions: a systematic review. *Preventive Medicine*, *72*, 95-115. https://doi.org/10.1016/j.ypmed.2014.12.034

Ndumbe-Eyoh, S., & Moffatt, H. (2013). Intersectoral action for health equity: a rapid systematic review. *BMC Public Health*, *13*, 1-13. https://doi.org/10.1186/1471-2458-13-1056

Noordink, M., Dijkzeul, A., van Schelven, R. & Pastoor, H. (2013). Evaluatie RIVM – Centrum Gezond Leven. Kwink Groep

Paulussen, T. G. W. (1994). Adoption and implementation of an AIDS education in Dutch secondary schools. Utrecht: Dutch Centre for Health Promotion and Health Education.

Payne, A. A. (2009). Do predictors of the implementation quality of school-based prevention programs differ by program type?. *Prevention Science*, *10*, 151-167. https://doi.org/10.1007/s11121-008-0117-6

Pentz, M. A. (2004). Form follows function: designs for prevention effectiveness and diffusion research. *Prevention Science, 5*, 23-29. https://doi.org/10.1023/B:PREV.0000013978.00943.30

Peters, D. T., Klijn, E. H., Stronks, K., & Harting, J. (2017a). Policy coordination and integration, trust, management and performance in public health-related policy networks: a survey. *International Review of Administrative Sciences*, *83*(1), 200-222.
https://doi.org/10.1177/0020852315585061

Peters, D., Harting, J., Van Oers, H., Schuit, J., De Vries, N., & Stronks, K. (2016). Manifestations of integrated public health policy in Dutch municipalities. *Health Promotion International*, *31*(2), 290-302. https://doi.org/10.1093/heapro/dau104

Peters, D. T., Verweij, S., Grêaux, K., Stronks, K., & Harting, J. (2017b). Conditions for addressing environmental determinants of health behaviour in intersectoral policy networks: A fuzzy set Qualitative Comparative Analysis. *Social Science and Medicine*, *195*, 34-41.41. https://doi.org/10.1016/j.socscimed.2017.08.036

Pfadenhauer, L. M., Gerhardus, A., Mozygemba, K., Lysdahl, K. B., Booth, A., Hofmann, B., ... & Rehfuess, E. (2017). Making sense of complexity in context and implementation: the Context and Implementation of Complex Interventions (CICI) framework. *Implementation Science*, *12*(1), 1-17. https://doi.org/10.1186/s13012-017-0552-5

Pinto, A. D., Molnar, A., O'Campo, P. J., & Bayoumi, A. M. (2015). Economic considerations and health in all policies initiatives: evidence from interviews with key informants in Sweden, Quebec and South Australia. *BMC Public Health, 15*(1), 171-179. https://doi.org/10.1186/s12889-015-1350-0

Poland, B. D., Green, L. W., & Rootman I. (eds.) (2000). *Settings for health promotion: linking theory and practice.* Sage, Thousand Oaks.

Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., ... & Kirchner, J. E. (2015). A refined compilation of implementation strategies: results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science*, *10*(1), 1-14. https://doi.org/10.1186/s13012-015-0209-1

Provan, K. G., Huang, K., & Milward, B. (2009). The evolution of structural embeddedness and organizational social outcomes in a centrally governed health and human service network. *Journal of Public Administration Research and Theory, 19*(4), 873-893. https://doi.org/10.1093/jopart/mun036

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management and effectiveness. *Journal of Public Administration Research and Theory, 18*(2), 229-252. https://doi.org/10.1093/jopart/mum015

Provan, K. G., & Milward, H. B. (2001). Do networks really work? A framework for evaluating public-sector organizational networks. *Public Administration Review, 61*(4), 414-423. https://doi.org/10.1111/0033-3352.00045

Provan, K. G., & Milward, H. B. (1995). A preliminary theory of interorganizational network effectiveness: A comparative study of four community mental health systems. *Administrative Science Quarterly, 40*(1), 1-33. https://doi.org/10.2307/2393698

Ragin, C. C. (2006). Set relations in social research: evaluating their consistency and coverage. *Political Analysis, 14*(3), 291-310.

Ragin, C. C. (2008). *Redesigning social inquiry. Fuzzy sets and beyond.* Chicago: University of Chicago Press.

Ragin, C. C. (2009). *Qualitative comparative analysis using fuzzy sets (fsQCA).* In C. C. Ragin & B. Rihoux (Eds.), Configurational comparative methods: Qualitative Comparative Analysis (QCA) and related techniques. Thousands Oaks: Sage.

Ragin, C. C., & Davey, S. (2014). fs/QCA, Version 2.5. Irvine: University of California.

Rayner, J. & Howlett, M. (2009). Introduction: understanding integrated policy strategies and their evolution. *Policy and Society, 28*(2), 99-109. https://doi.org/10.1016/j.polsoc.2009.05.001

Reeves, S., Pelone, F., Harrison, R., Goldman, J., & Zwarenstein, M. (2017). Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database of Systematic Reviews*, (6). https://doi.org/10.1002/14651858.CD000072.pub3

Rihoux, B., & Ragin, C. C. (2009). Configurational comparative methods: Qualitative Comparative Analysis (QCA) and related techniques. Thousand Oaks: Sage.

Rittel, H. W. & Webber, M. M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4*(2)*, 155-169. https://doi.org/10.1007/BF01405730

RIVM (2018, December 15). Notitie erkenning van interventies (2019-2022). https://www.loketgezondleven.nl/documenten/notitie-erkenning-van-interventies-2019-2022

RIVM (2012). CGL-Monitor erkenning leefstijlinterventies 2012. https://www.evaluatiebureau.nl/sites/default/files/sites/default/files/uploads/o15603_004715-Factsheet-Monitor-Erkenning_0.pdf

Rogers, E. M. (2003). Diffusions of innovations. New York (NY): The Free Press.

Roussos, S. T. and Fawcett, S. B. (2000). A review of collaborative partnerships as a strategy for improving community health. *Annual Review of Public Health, 21*(1), 369-402. https://doi.org/10.1146/annurev.publhealth.21.1.369

Sabatier, P. A. (2007). Theories of the policy process (P. A. Sabatier Ed.). Boulder: Westview Press.

Sako, M. (1998). *Does trust improve business performance?* In C. Lane & R. Bachman (Eds.), Trust within organizations: conceptual issues and empirical applications (pp. 88-117). Oxford: Oxford University Press.

Sallis, J. F., Owen, N. & Fisher, E. B. (2008). *Ecological models of health behavior*. In Glanz, K., Rimer, B. K. and Viswanath, K. (eds.), Health behavior and health education: theory, research, and practice, 4th edition. Jossey-Bass, San Francisco, pp. 465-486.

Saxe, L., Reber, E., Hallfors, D., Kadushin, C., Jones, D., Rindskopf, D., et al. (1997). Think globally, act locally: assessing the impact of community-based substance abuse prevention. *Evaluation and Program Planning*, *20*(3), 357-366. https://doi.org/10.1016/S0149-7189(97)00015-3

Schloemer, T., De Bock, F., & Schroeder-Baeck, P. (2021). Implementation of evidence-based health promotion and disease prevention interventions: theoretical and practical implications of the concept of transferability for decision-making and the transfer process. *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz*, *64*(5), 534-543. https://doi.org/10.1007/s00103-021-03324-x

Schmets, G., Rajan, D., Kadandale, S., (Eds.) (2016). *Strategizing national health in the 21st century: a handbook*. World Health Organization, Geneva.

Schneider, C. Q., & Wagemann, C. (2012). Set-theoretic methods for the social sicences. A guide to Qualitative Comparative Analysis. Cambridge: Cambridge University Press.

Shankardass, K., Solar, O., Murphy, K., Greaves, L. & O'Campo, P. (2012). A scoping review of intersectoral action for health equity involving governments. *International Journal of Public Health, 57*, 25-33. https://doi.org/10.1007/s00038-011-0302-4

Shediac-Rizkallah, M. C., & Bone, L. R. (1998). Planning for the sustainability of community-based health programs: conceptual frameworks and future directions for research, practice and policy. *Health Education Research*, *13*(1), 87-108. https://doi.org/10.1093/her/13.1.87

Shiell, A., Hawe, P., & Gold, L. (2008). Complex interventions or complex systems? Implications for health economic evaluation. *BMJ*, *336*(7656), 1281-1283. https://doi.org/10.1136/bmj.39569.510521.AD

Shoveller, J., Viehbeck, S., Di Ruggiero, E., Greyson, D., Thomson, K., & Knight, R. (2016). A critical examination of representations of context within research on population health interventions. *Critical Public Health*, *26*(5), 487-500. https://doi.org/10.1080/09581596.2015.1117577

Signal, L. N., Walton, M. D., Ni Mhurchu, C., Maddison, R., Bowers, S. G., Carter, K. N., ... & Pearce, J. (2013). Tackling 'wicked'health promotion problems: a New Zealand case study. *Health Promotion International*, *28*(1), 84-94. https://doi.org/10.1093/heapro/das006

Skaaning, S. E. (2011). Assessing the robustness of crisp-set and fuzzy-set QCA results. *Sociological Methods & Research*, *40*(2), 391-408.
https://doi.org/10.1177/0049124111404818

Smedley, B. D., & Syme, S. L. (2000). Promoting health. Intervention strategies from social and behavioral research. Washington: National Academy Press.

Speller, V., Wimbush, E., & Morgan, A. (2005). Evidence-based health promotion practice: how to make it work. *Promotion & Education*, *12*(1_suppl), 15-20. https://doi.org/10.1177/10253823050120010106x

Stith, S., Pruitt, I., Dees, J. E. M. E. G., Fronce, M., Green, N., Som, A., & Linkh, D. (2006). Implementing community-based prevention programming: A review of the literature. *Journal of Primary Prevention*, *27*, 599-617. https://doi.org/10.1007/s10935-006-0062-8

Storm, I., Verweij, A. & Van der Lucht, F. (2011). Integraal gezondheidsbeleid op lokaal niveau. Wat weten we en hoe nu verder? (Local integrated health policy. What do we know and how to proceed?) https://www.rivm.nl/bibliotheek/rapporten/270161004.pdf (last accessed 9 November 2019).

Storm, I., Harting, J., Stronks, K., & Schuit, A. J. (2014). Measuring stages of health in all policies on a local level: the applicability of a maturity model. *Health Policy*, *114*(2-3), 183-191. https://doi.org/10.1016/j.healthpol.2013.05.006

Synnevåg, E. S., Amdam, R., & Fosse, E. (2018). Intersectoral planning for public health: dilemmas and challenges. *International Journal of Health Policy and Management*, *7*(11), 982. https://doi.org/10.15171/ijhpm.2018.59

Swinburn, B., Egger, G., & Raza, F. (1999). Dissecting obesogenic environments: the development and application of a framework for identifying and prioritizing environmental interventions for obesity. *Preventive Medicine*, *29*(6), 563-570. https://doi.org/10.1006/pmed.1999.0585

Tang, K. C., Ehsani, J. P., & McQueen, D. V. (2003). Evidence based health promotion: recollections, reflections, and reconsiderations. *Journal of Epidemiology & Community Health*, *57*(11), 841-843. https://doi.org/10.1136/jech.57.11.841

Tubbing, L., Harting, J., & Stronks, K. (2015). Unravelling the concept of integrated public health policy: Concept mapping with Dutch experts from science, policy, and practice. *Health Policy*, *119*(6), 749-759. https://doi.org/10.1016/j.healthpol.2014.12.020

Valente, T. W., Chou, C. P., & Pentz, M. A. (2007). Community coalitions as a system: effects of network change on adoption of evidence-based substance abuse prevention. *American Journal of Public Health*, *97*(5), 880-886. https://doi.org/10.2105/AJPH.2005.063644

Van der Kleij, R. M. J. J., Coster, N., Verbiest, M., Van Assema, P., Paulussen, T., Reis, R., & Crone, M. (2015). Implementation of intersectoral community approaches targeting childhood obesity: a systematic review. *Obesity Reviews*, *16*(6), 454-472. https://doi.org/10.1111/obr.12273

Van der Kleij, R. M. J. J., Crone, M. R., Reis, R., & Paulussen, T. G. W. M. (2016). Critical stakeholder determinants to the implementation of intersectoral community approaches targeting

childhood obesity. *Health Education Research*, *31*(6), 697-715. https://doi.org/10.1093/her/cyw047

Van de Walle, R., Doorduin, T., Viet, L., Van Dale, D. & Lanting, L. (2014). Kwaliteit en meer – over het gebruik van erkende interventies. RIVM

Varda, D. M., & Retrum, J. H. (2012). An exploratory analysis of network characteristics and quality of interactions among public health collaboratives. *Journal of Public Health Research*, *1*(2), jphr-2012. https://doi.org/10.4081/jphr.2012.e27

Vermeer, A. J. M. (2013). Duurzaamheid van wijkgerichte gezondheidsbevordering: Een praktijkgericht onderzoek naar de factoren die van invloed zijn op duurzaamheid van Zuid-Limburgse wijkgerichte gezondheidsbevordering. [, Maastricht University]. Maastricht University. https://doi.org/10.26481/dis.20130124av

Weiss, D., Lillefjell, M., & Magnus, E. (2016). Facilitators for the development and implementation of health promoting policy and programs–a scoping review at the local community level. *BMC Public Health*, *16*(1), 1-15. https://doi.org/10.1186/s12889-016-2811-9

Whitelaw, S., Baxendale, A., Bryce, C., Machardy, L., Young, I., & Witney, E. (2001). 'Settings' based health promotion: a review. *Health Promotion International*, *16*(4), 339-353. https://doi.org/10.1093/heapro/16.4.339

WHO & ExpandNet, (2010). Nine steps for developing a scaling-up strategy. World Health Organization. https://apps.who.int/iris/handle/10665/44432

WHO, 2014. The case for investing in public health. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/351406/WHO-EURO-2014-2581-42337-58615-eng.pdf?sequence=1

WHO (2018a). Noncommunicable diseases. Factsheet No 355. https://www.who.int/en/news-room/fact-sheets/detail/noncommunicable-diseases (last accessed 3 November 2019).

WHO (2018b). Global status report on alcohol and health 2018. https://www.who.int/publications/i/item/9789241565639

Williams, P. (2002). The competent boundary spanner. *Public administration*, *80*(1), 103-124. https://doi.org/10.1111/1467-9299.00296

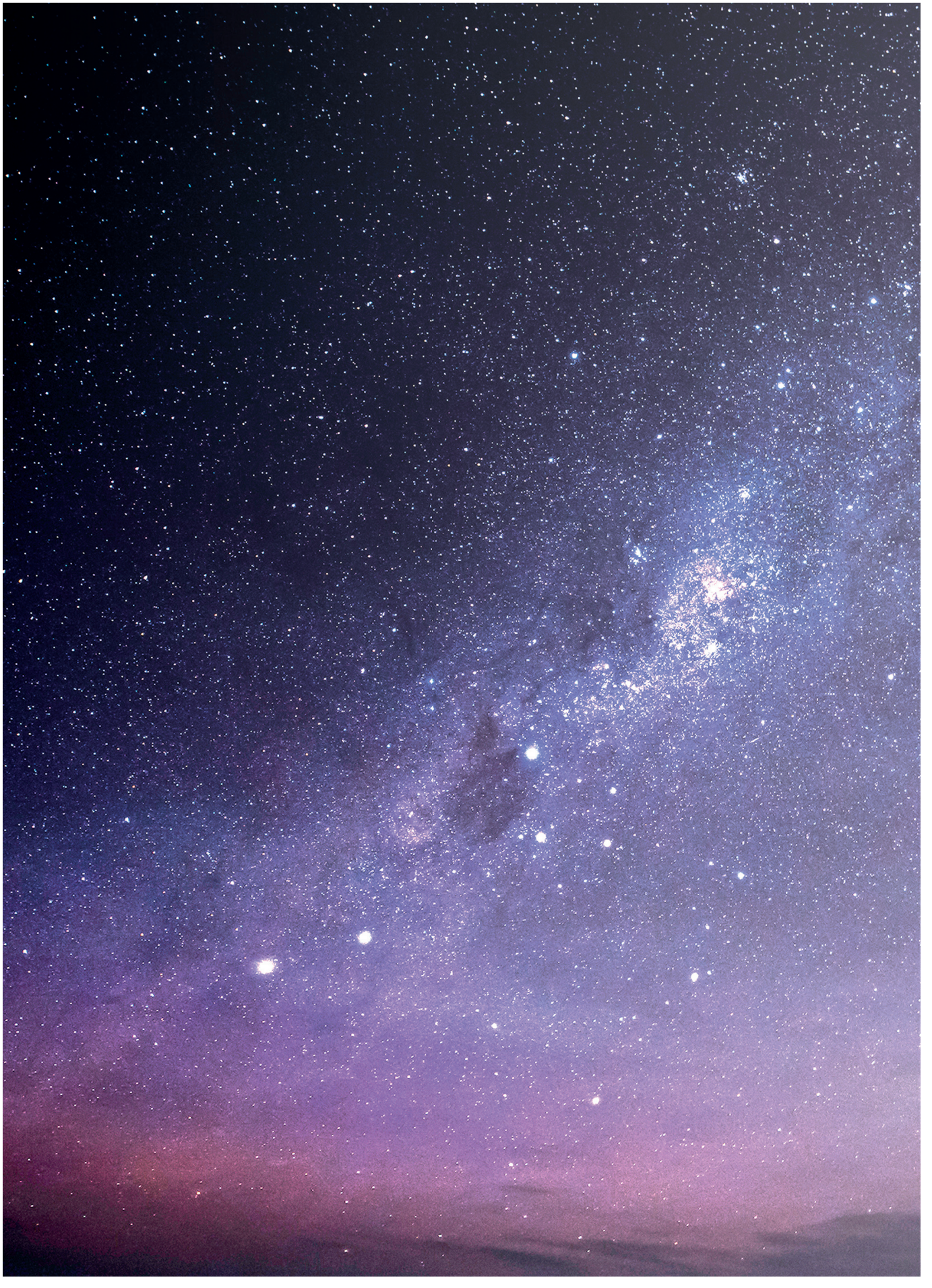
Wiltsey Stirman, S., Baumann, A. A., & Miller, C. J. (2019). The FRAME: an expanded framework for reporting adaptations and modifications to evidence-based interventions. *Implementation Science*, *14*, 1-10. https://doi.org/10.1186/s13012-019-0898-y

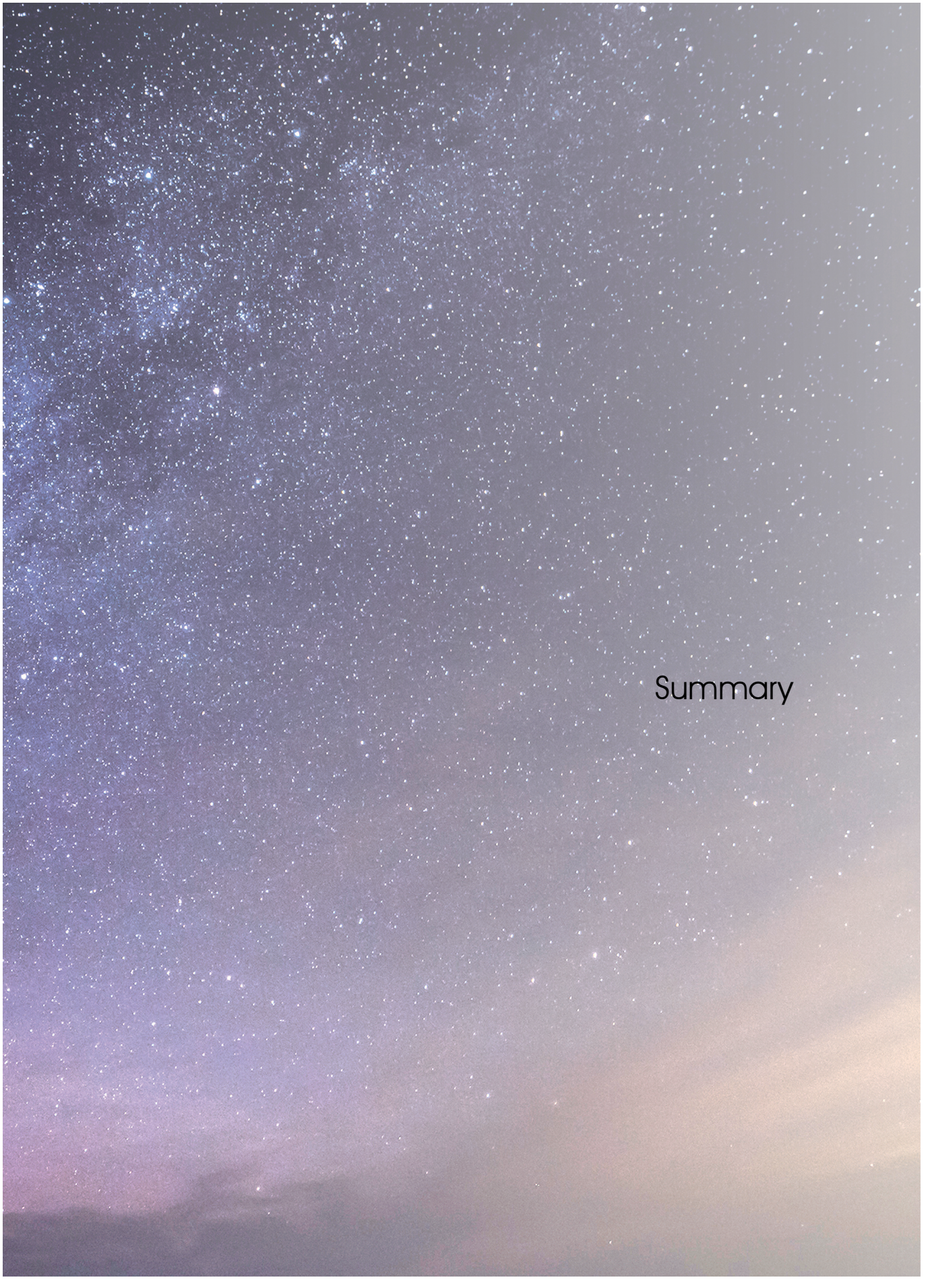
Wolt, K., Driegen, H., Janssens, J., & Sturkenboom M. (2009). Gebruikersonderzoek Loketgezondleven.nl. RIVM

Zakocs, R. C., & Edwards, E. M. (2006). What explains community coalition effectiveness?: A review of the literature. *American journal of preventive medicine*, *30*(4), 351-361. https://doi.org/10.1016/j.amepre.2005.12.004

ZonMw. (2009). Programma Gezonde Slagkracht. Ondersteuningsprogramma voor gemeenten met een integrale aanpak op overgewicht, alcohol, roken en drugs. Retrieved from Den Haag: http://www.zonmw.nl/uploads/tx_vipublicaties/Programmatekst_Gezonde_Slagkracht_1_.pdf

ZonMw (2019) https://publicaties.zonmw.nl/fileadmin/zonmw/documenten/Preventie/20_jaar_preventie/20_jaar_preventie_ZonMw_LR_CH.pdf





Summary

SUMMARY

Problem statement

Globally, countries face major public health problems due to non-communicable diseases. These diseases are mainly caused by unhealthy behaviors such as poor diet, sedentary behavior, and alcohol and drug abuse. Intersectoral health policymaking, addressing various interacting personal and environmental behavioral determinants simultaneously, is considered essential to improve public health. Intersectoral policymaking requires diverse and multi-sector involvement in the policy networks that decide on the implementation of integrated health promotion packages, and in the partnerships that ensure the implementation of these packages. Such packages include complementary methods of change (e.g., education and regulation), situated in various local settings (e.g., schools and public places), and targeting both personal and environmental behavioral determinants. In practice, however, intersectoral policymaking tends to result in small-scale interventions targeting mainly personal determinants rather than broader initiatives addressing structural environmental determinants. Several challenges due to the complexity of involving a variety of partners have been identified, such as selecting the right partners, incorporating leadership, developing a shared mission and building trust among partners. In addition, problems with the implementation, i.e., the actual use of health promotion interventions, have been highlighted as a reason why the interventions included in integrated health promotion packages do not achieve their potential public health impact. Intermediate users do not adopt or implement available evidence-based interventions, use them only on a small scale, or do not implement them as intended by their developers. In the Netherlands, evidence-based practice in health promotion is supported by the Dutch Recognition System (DRS) which includes a health promotion intervention database on the website of the Centre for Healthy Living of the National Institute for Public Health and the Environment. Adoption and implementation of recognized interventions from this database might however be hampered by contextual mismatches, such as the perceived lack of information and support on whether these interventions can be adapted to fit the unique implementation context of the intermediate user. Implementation can be seen as the introduction of an intervention in a specific context with which it should interact in order to perform its "function" in terms of the intended health outcomes. Such an intervention-context interaction may require either adaptation of the intervention, or capacity building in the context. In addition, the presence of this intervention-context interaction could mean that, depending on the nature of the intervention features and the context features, specific key interaction points might arise. The identification of such "bottlenecks for implementation" could create opportunities to predict implementation problems and develop implementation strategies specifically for a type of intervention and context.

Aim, study setting, and conceptual framework

The aim of this dissertation was to contribute to optimizing the implementation of integrated health promotion packages in local intersectoral health policymaking.

All four studies included in this dissertation were conducted in the context of the governmental program Gezonde Slagkracht on intersectoral policymaking in Dutch municipalities. The program offered 34 municipalities or alliances of municipalities (referred to below as projects) the opportunity to experiment with the development and implementation of intersectoral health policy on various health themes by means of financial and professional support. The program required the appointment of a project leader who had a coordinating role in the establishment of local policy and implementation partnerships consisting of partners from the health and non-health sectors, private partners and citizens. Health promotion packages had to include different types of health promotion interventions implemented in different local settings, addressing both personal and environmental behavioral determinants, and preferably from the DRS database.

The studies in this dissertation depart from the Determinants of Implementation model (DIM model), which includes the *implementation stages* of adoption, implementation and continuation of interventions, four categories of *conditions* influencing the implementation process, i.e., characteristics of (co-)implementers, the intervention, the organization of the (co-)implementers, and the socio-political context, the moderating role of *the implementation strategy (* i.e., the actions taken to enhance the adoption, implementation and continuation of interventions), and the notion of '*contextual fit*'.

Included studies

The observational longitudinal multiple-case study in **Chapter 2** examined whether the involvement of more *and* more diverse partners in the implementation partnerships would result in more integrated intervention packages. Questionnaire data were collected among 31 project leaders and 152 intervention implementers in 31 projects. Results indicated that a variety of partners from multiple sectors was involved, during both adoption and implementation of the packages. However, these were primarily partners from the health, welfare and educations sectors. Almost all packages integrated multiple methods of change, but mostly education, facilitation and case finding, in multiple, but mostly health and public settings. They targeted diverse behavioral determinants, but typically personal and social environmental determinants. More partnership diversity, especially during implementation, was associated with more integrated health promotion packages. It was concluded that investment in diversely composed partnerships seems worthwhile for implementing integrated health promotion packages. However,

investments in conditions like framing health issues and network management, are also needed.

The observational cross-sectional multiple-case study in **Chapter 3** examined under which conditions (levels of active networking, active participating and trust) the involvement of more sectors in policy networks would be associated with the implementation of more integrated health promotion packages. Data for a fuzzy-set qualitative comparative analysis were collected from policy networks in 29 projects using questionnaires. A multisectoral policy network was neither a necessary nor a sufficient condition. In multisectoral networks, additionally required was either the active participation of network actors or active networking by the project leader. In policy networks that included few sectors, a high level of trust was needed – in the absence though of any of the other conditions. If the network actors were also actively involved, an extra requirement was active networking by the project leader. It was concluded that the multisectoral composition of policy networks can contribute to the implementation of integrated health promotion packages, but not without additional efforts. Policy networks that include only few sectors are also able to implement integrated packages, under the condition of trust among partners though.

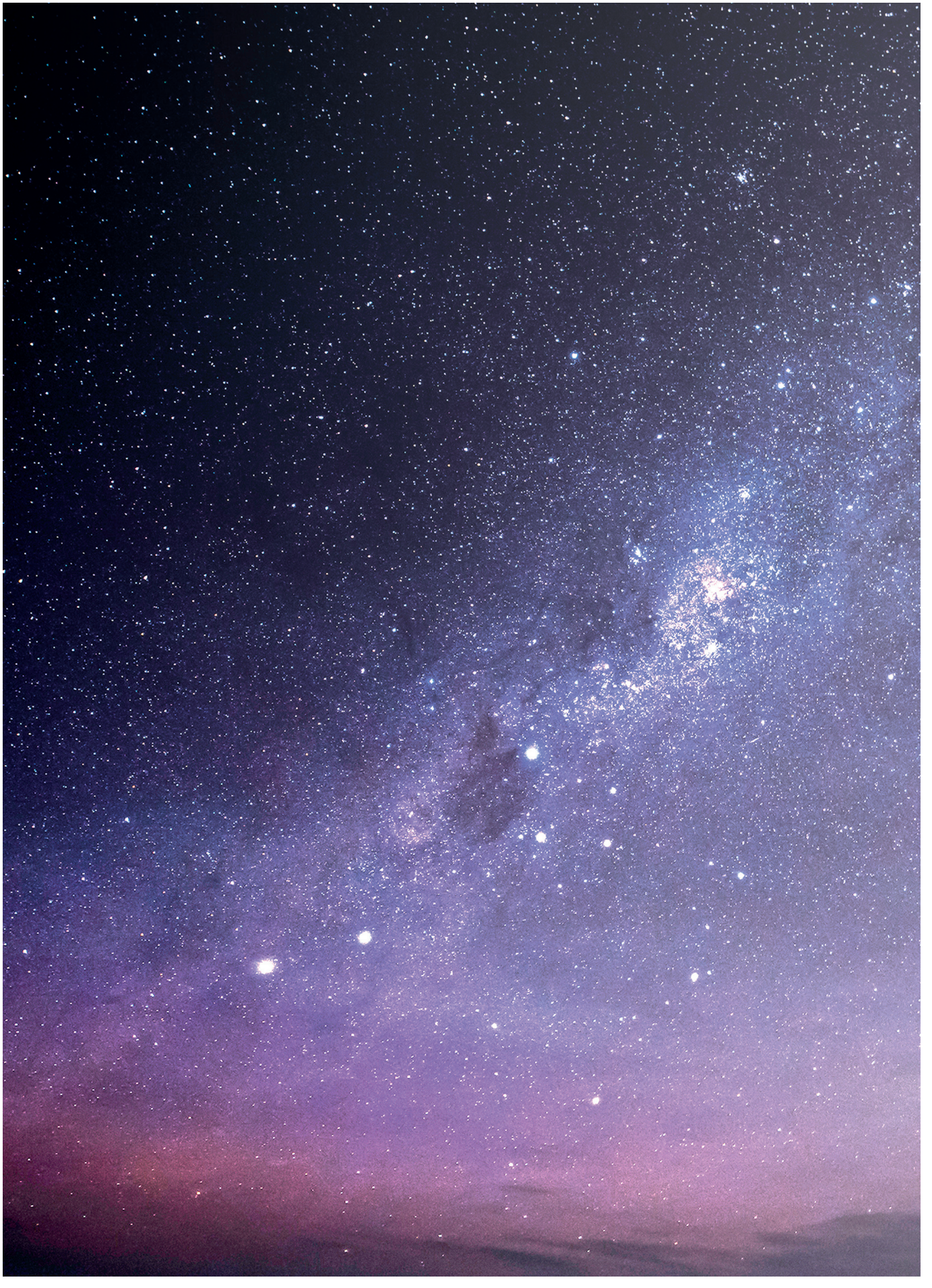
Chapter 4 examined the role of the DRS in supporting and achieving evidence-based practice. In an observational cross-sectional mixed-method study, interview and questionnaire data were collected among 34 project leaders and 158 implementers of interventions. The results indicated that the database of the DRS was not frequently visited by most projects. However, most projects implemented at least one intervention that originated from the database, and about half the projects submitted at least one intervention for inclusion in the database. The number of adopted, implemented and continued DRS interventions, and submitted interventions, were a minority of all interventions. In several projects, the use of the DRS was stimulated by the Gezonde Slagkracht program's required and supported use of the DRS. Factors hindering the use of the DRS related to the perceived low user-friendliness of the database, the limited availability of interventions for certain themes, target groups, and behavioral determinants, the limited availability of adaptable interventions and local capacity for adjustments of DRS interventions to their own implementation context, the time-intensive development and submission process, and a general lack of awareness of the importance of evidence-based practices among project leaders and implementers. It was concluded that the role of the DRS was limited but certainly not negligible in supporting and achieving evidence-based practices.

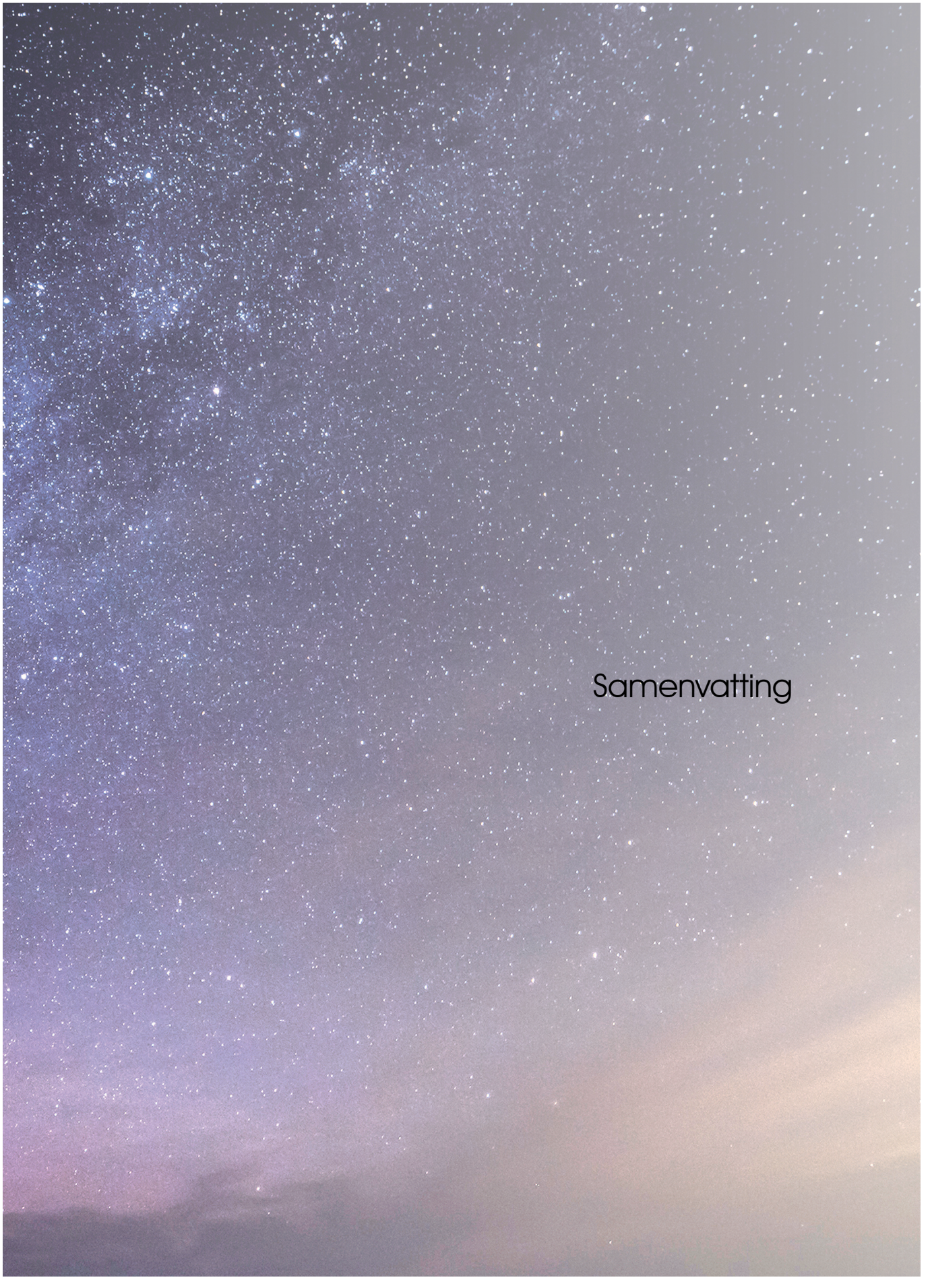
Chapter 5 examined the presence of - and regularities in – intervention-context interactions or 'bottlenecks for implementation' in an observational cross-sectional multiple-

case study. The study assessed whether similar intervention systems i.e., that address the same health theme with an identical change method in a comparable setting, would come across a similar set of bottlenecks for implementation. Bottlenecks were identified by the implementers by rating the presence and importance of conditions for implementation in a range of intervention systems. Questionnaire data about 243 interventions was collected among 120 implementers in 30 projects. Bottlenecks occurred in all categories of conditions, e.g., relating to the implementer, the intervention, and political and administrative support, and often connected with intersectoral policymaking, e.g., relating to the co-implementer and the co-implementer's organization. Both hypotheses were supported: (1) Each intervention system came across a unique set of – a limited number of – conditions hampering implementation; (2) Most bottlenecks were associated with the characteristics of the system in which they occurred, i.e. with its health theme, change method and/or implementation setting. However, bottlenecks also appeared when there was no such association, or did not appear when there was an association. It was concluded that intervention-context interactions in intersectoral health policymaking may lead to both regularities and variations in bottlenecks for implementation.

General discussion

Chapter 6 contains the general discussion of this dissertation and starts with a summary of the main findings, followed by a discussion of methodological considerations regarding, among other things, the real-life context and the observational character of the study. The chapter closes with the conclusions and implications of the research, leading to the final statement that the research has helped to substantiate several directions that the improvement of the implementation of health promotion packages can take, and has generated some new directions that could ultimately raise the impact of health promotion.





Samenvatting

SAMENVATTING

Probleemstelling

Wereldwijd worden landen geconfronteerd met grote volksgezondheidsproblemen als gevolg van niet-overdraagbare ziekten. Deze ziekten worden voornamelijk veroorzaakt door ongezond gedrag zoals slechte voeding, veel zitten en overmatig alcohol- en drugsgebruik. Intersectorale beleidsvorming op gezondheidsgebied, waarbij verschillende op elkaar inwerkende persoonlijke- en omgevingsdeterminanten van gedrag tegelijkertijd worden aangepakt, wordt essentieel geacht om de volksgezondheid te verbeteren. Intersectorale beleidsvorming vereist de betrokkenheid van diverse partners uit meerdere sectoren in beleidsnetwerken die beslissen over integrale gezondheidsbevorderende interventiepakketten, en in partnerschappen die zorgen voor de implementatie van deze interventiepakketten. Dergelijke pakketten omvatten complementaire methoden van verandering (bv. educatie en regelgeving), gesitueerd in verschillende lokale settingen (bv. scholen en openbare ruimten) en gericht op zowel persoonlijke- als omgevingsdeterminanten. In de praktijk leidt intersectorale beleidsvorming echter eerder tot kleinschalige interventies die vooral gericht zijn op persoonlijke determinanten dan tot bredere initiatieven die structurele omgevingsdeterminanten aanpakken. De complexiteit van het betrekken van verschillende partners brengt diverse uitdagingen met zich mee, zoals het selecteren van de juiste partners, het integreren van leiderschap, het ontwikkelen van een gezamenlijke missie en het opbouwen van vertrouwen tussen partners. Daarnaast zijn problemen met de implementatie, ofwel het daadwerkelijke gebruik van gezondheidsbevorderende interventies, naar voren gekomen als reden waarom interventies in integrale pakketten hun potentiële effect op de volksgezondheid niet realiseren. Intermediaire gebruikers adopteren of implementeren beschikbare interventies niet, gebruiken ze slechts op kleine schaal, of implementeren ze niet zoals bedoeld door de ontwikkelaars ervan. Dit is specifiek het geval voor evidence-based interventies. In Nederland wordt evidence-based werken in gezondheidsbevordering ondersteund door het erkenningstraject voor interventies en de database met gezondheidsbevorderende interventies van het Centrum Gezond Leven (CGL) van het Rijksinstituut voor Volksgezondheid en Milieu (RIVM). Adoptie en implementatie van erkende interventies uit deze database kunnen echter worden belemmerd door contextuele mismatches, zoals het gepercipieerde gebrek aan informatie en ondersteuning bij de vraag of deze interventies kunnen worden aangepast aan de unieke implementatiecontext van de intermediaire gebruiker. De implementatie kan worden gezien als de introductie van een interventie in een bepaalde context waarmee deze moet interacteren om zijn 'functie' in termen van de beoogde gezondheidsresultaten te bereiken. Een dergelijke interactie tussen interventie en context kan aanpassing van de interventie of het opbouwen van capaciteiten in de context vereisen. Bovendien kan het bestaan van de interactie tussen interventie

en context betekenen dat er, afhankelijk van de aard van de interventiekenmerken en de contextkenmerken, specifieke knelpunten in deze interactie ontstaan. Het opsporen van dergelijke 'knelpunten voor de implementatie' kan mogelijkheden bieden om implementatieproblemen te voorspellen en implementatiestrategieën te ontwikkelen die specifiek op een bepaald type interventie in een bepaalde context zijn afgestemd.

Doelstelling, onderzoeksetting en conceptueel kader

Het doel van dit proefschrift was om bij te dragen aan het optimaliseren van de implementatie van integrale gezondheidsbevorderingspakketten in lokale intersectorale beleidsvorming op gezondheidsgebied.

Alle vier de studies in dit proefschrift zijn uitgevoerd in het kader van het overheidsprogramma Gezonde Slagkracht voor intersectorale beleidsvorming in Nederlandse gemeenten. Het programma bood 34 gemeenten of samenwerkingsverbanden van gemeenten (hierna projecten genoemd) de mogelijkheid om met financiële en professionele ondersteuning te experimenteren met de ontwikkeling en uitvoering van intersectoraal gezondheidsbeleid op verschillende gezondheidsthema's. Het programma vereiste de aanstelling van een projectleider die een coördinerende rol had bij het opzetten van lokale beleids- en implementatienetwerken bestaande uit partners uit de gezondheidssector en andere sectoren, particuliere partners en burgers. De gezondheidsbevorderingspakketten moesten verschillende soorten interventies omvatten die in verschillende lokale settingen werden uitgevoerd, gericht waren op zowel persoonlijke- als omgevingsdeterminanten, en bij voorkeur afkomstig waren uit de interventiedatabase van het CGL.

De studies in dit proefschrift vertrekken vanuit het Determinanten van Implementatiemodel (DIM-model), dat de *fases* van adoptie, implementatie en voortzetting van interventies omvat, vier categorieën van *condities* die het implementatieproces beïnvloeden (namelijk kenmerken van (mede)implementeerders, de interventie, de organisatie van de (mede)implementeerders, en de sociaal-politieke context), de modererende rol van de *implementatiestrategie (*d.w.z. de acties die worden ondernomen om de adoptie, implementatie en continuering van interventies te bevorderen), en het begrip '*contextuele fit*'.

De studies in dit proefschrift

In de observationele longitudinale multiple-case studie in **hoofdstuk 2** werd onderzocht of het betrekken van meer en meer *diverse* partners bij de implementatie zou leiden tot meer integrale interventiepakketten. Er werden vragenlijstgegevens verzameld bij 31 projectleiders en 152 uitvoerders van interventies in 31 projecten. Uit de resultaten bleek dat een verscheidenheid aan partners uit verschillende sectoren betrokken was, zowel bij de adoptie als bij de implementatie van de pakketten. Dit waren echter

vooral partners uit de gezondheids-, welzijns- en onderwijssector. Bijna alle pakketten omvatten meerdere veranderingsmethoden, maar meestal educatie, facilitering en case finding, in meerdere, maar meestal gezondheids- en publieke settingen. Ze waren gericht op verschillende gedragsdeterminanten, maar meestal op persoonlijke en sociale omgevingsdeterminanten. Meer diversiteit in de partnerschappen, vooral tijdens de implementatie, was geassocieerd met meer integrale pakketten. Geconcludeerd werd dat investeringen in divers samengestelde partnerschappen de moeite waard lijken voor de implementatie van integrale pakketten voor gezondheidsbevordering. Er moet echter ook worden geïnvesteerd in voorwaarden zoals het framen van gezondheidsvraagstukken en netwerkmanagement.

In de observationele cross-sectionele multiple-case studie in **hoofdstuk 3** werd onderzocht onder welke voorwaarden (niveaus van actief netwerken, actieve deelname en vertrouwen) de betrokkenheid van meer sectoren bij beleidsnetwerken zou samengaan met de implementatie van meer integrale interventiepakketten. Data voor een fuzzy-set Qualitative Comparative Analyses (QCA) werden met behulp van vragenlijsten verzameld bij beleidsnetwerken in 29 projecten. Een multisectoraal beleidsnetwerk was noch een noodzakelijke, noch een voldoende voorwaarde. In multisectorale netwerken was bovendien ofwel de actieve deelname van netwerkactoren, ofwel actief netwerken door de projectleider vereist. In beleidsnetwerken die weinig sectoren omvatten, was een hoge mate van vertrouwen nodig - ook al ontbrak een van de andere voorwaarden. Als de netwerkactoren ook actief betrokken waren, was actief netwerken door de projectleider een extra vereiste. Geconcludeerd werd dat de multisectorale samenstelling van beleidsnetwerken kan bijdragen aan de implementatie van integrale interventiepakketten, maar niet zonder extra inspanningen. Beleidsnetwerken die slechts enkele sectoren omvatten zijn ook in staat integrale pakketten te implementeren, echter op voorwaarde dat er sprake is van vertrouwen tussen partners.

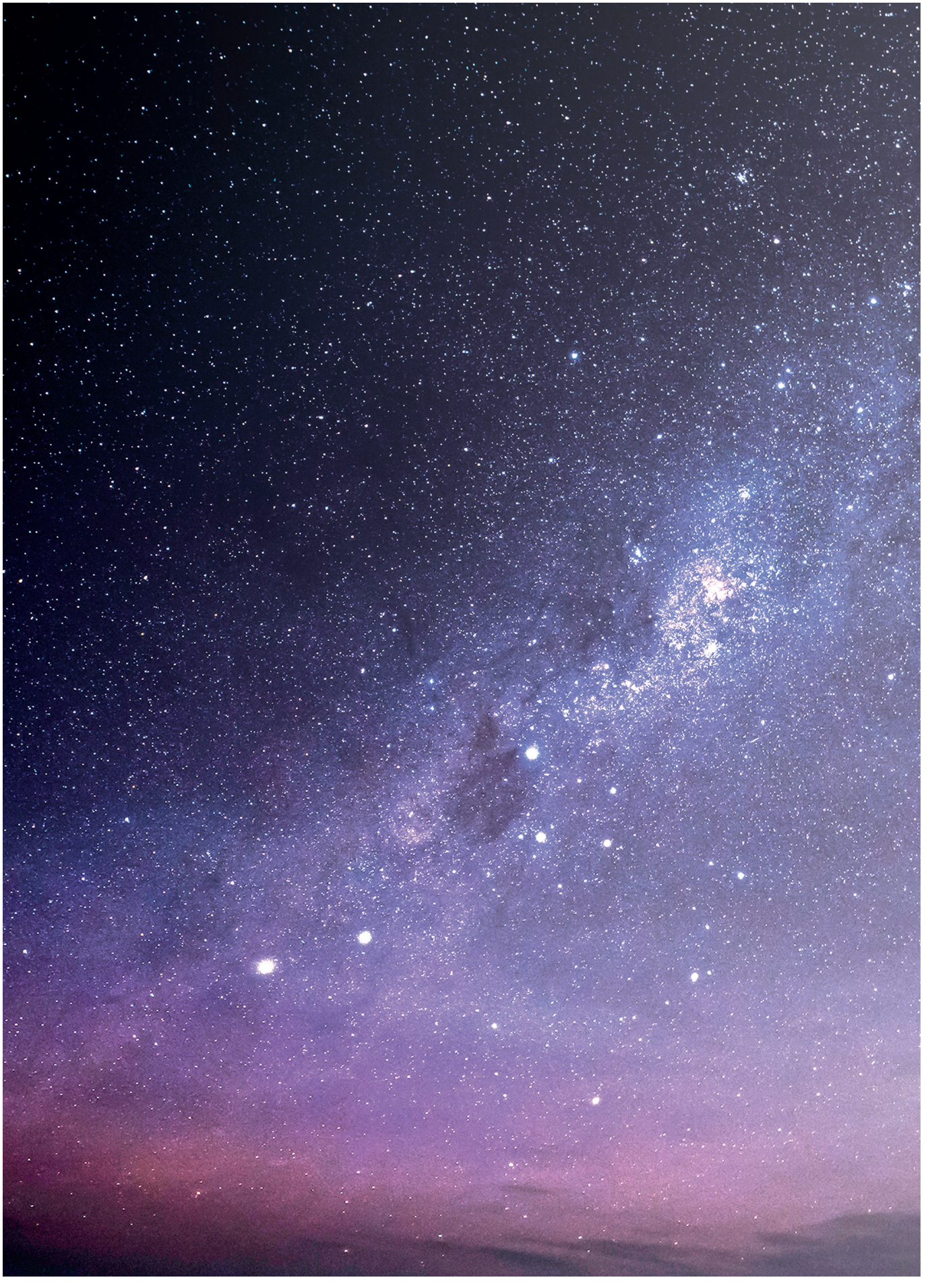
Hoofdstuk 4 onderzocht de rol van het interventie-erkenningstraject bij het ondersteunen en realiseren van evidence-based werken. In een observationeel cross-sectioneel mixed-method onderzoek werden interview- en vragenlijstgegevens verzameld bij 34 projectleiders en 158 uitvoerders van interventies. Uit de resultaten bleek dat de database van het erkenningstraject door de meeste projecten niet vaak werd bezocht. Maar de meeste projecten voerden wel minstens één interventie uit die afkomstig waren uit de database, en ongeveer de helft van de projecten diende ten minste één interventie in voor opname in de database. Het aantal geadopteerde, geïmplementeerde en gecontinueerde erkende interventies en de ingediende interventies vormde echter maar een klein deel van alle interventies. Bij verschillende projecten werd het gebruik van het erkenningstraject gestimuleerd door de verplichtstelling en de ondersteuning vanuit het programma Gezonde Slagkracht. Factoren die het gebruik van de database belemmerden

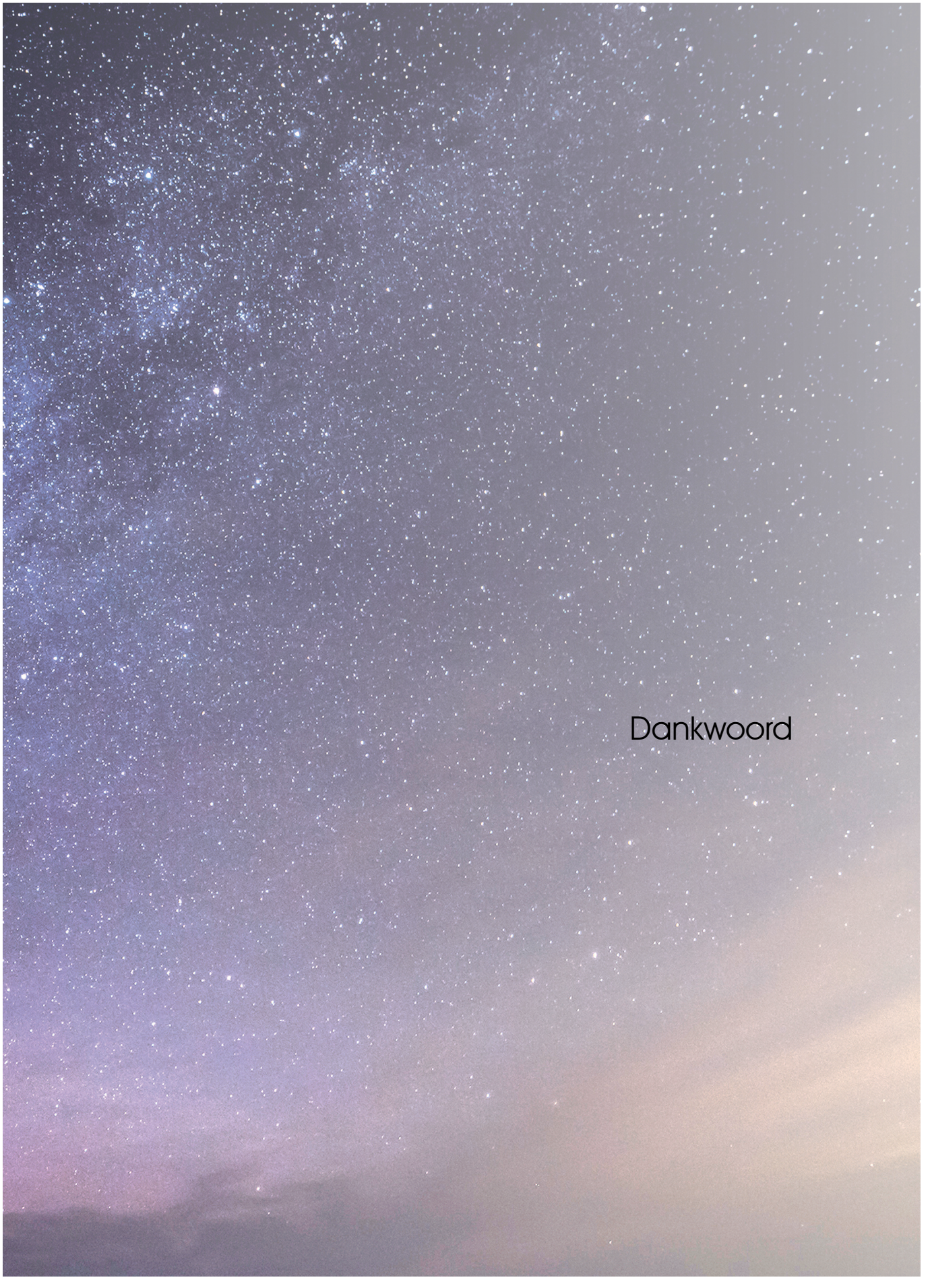
hadden betrekking op de geringe ervaren gebruiksvriendelijkheid van de database, de beperkte beschikbaarheid van interventies voor bepaalde thema's, doelgroepen en gedragsdeterminanten, de beperkte beschikbaarheid van aanpasbare interventies en lokale capaciteit voor aanpassingen van erkende interventies aan de eigen implementatiecontext, het tijdrovende ontwikkelings- en indieningsproces, en een algemeen gebrek aan bewustzijn van het belang van evidence-based werken bij projectleiders en implementeerders. Geconcludeerd werd dat de rol van het erkenningstraject beperkt maar zeker niet verwaarloosbaar is bij het ondersteunen en realiseren van evidence-based werken.

Hoofdstuk 5 onderzocht de aanwezigheid van - en regelmatigheden in - interventie-context interacties of 'knelpunten voor implementatie' in een observationele cross-sectionele multiple-case studie. Het onderzoek ging na of vergelijkbare interventiesystemen, d.w.z. die hetzelfde gezondheidsthema aanpakken met een identieke veranderingsmethode in een vergelijkbare setting, een vergelijkbare reeks knelpunten voor implementatie zouden tegenkomen. De knelpunten werden door de uitvoerders geïdentificeerd door de aanwezigheid en het belang te beoordelen van voorwaarden voor de implementatie in een reeks interventiesystemen. Er werden vragenlijstgegevens over 243 interventies verzameld bij 120 uitvoerders in 30 projecten. Knelpunten kwamen voor in alle categorieën van voorwaarden, bv. met betrekking tot de uitvoerder, de interventie en politieke en administratieve ondersteuning, en hielden vaak verband met intersectorale beleidsvorming, bv. met betrekking tot de mede-uitvoerder en de organisatie van de mede-uitvoerder. Beide hypothesen werden ondersteund: (1) Elk interventiesysteem had te maken met een unieke set van - een beperkt aantal - condities die de implementatie belemmerden; (2) De meeste knelpunten hingen samen met de kenmerken van het systeem waarin ze optraden, d.w.z. met het gezondheidsthema, de veranderingsmethode en/of de implementatiesetting, maar knelpunten kwamen ook voor als een dergelijke associatie ontbrak, of kwamen niet voor als er wel een associatie was. Geconcludeerd werd dat interactie tussen interventie en context bij intersectorale beleidsvorming op gezondheidsgebied kan leiden tot zowel regelmatigheden als variaties in knelpunten voor implementatie.

Algemene discussie

Hoofdstuk 6 bevat de algemene discussie van dit proefschrift en begint met een samenvatting van de belangrijkste bevindingen, gevolgd door methodologische overwegingen met betrekking tot onder andere de real-life context en het observationele karakter van het onderzoek. Het hoofdstuk sluit af met de conclusies en implicaties van het onderzoek, leidend tot de slotverklaring dat het onderzoek heeft bijgedragen aan de onderbouwing van verschillende richtingen voor de verbetering van de implementatie van gezondheidsbevorderende pakketten, en enkele nieuwe richtingen heeft gegenereerd die uiteindelijk de impact van gezondheidsbevordering kunnen vergroten.





Dankwoord

Dankwoord

Een promotie onderzoek doen en een proefschrift schrijven lukt niet in je eentje. Graag wil ik iedereen van harte bedanken die me direct of indirect heeft bijgestaan gedurende het gehele traject. Zonder jullie zou ik deze mijlpaal niet hebben bereikt.

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Janneke, bedankt voor je kritische blik, je bijdrage aan het denkproces, het schrijven, nieuwe inzichten aanleveren en alle adviezen vanaf het begin van de Local50-studie, maar vooral voor je harde werk gedurende de laatste jaren van dit traject. Ik ben je vooral dankbaar voor je intensieve betrokkenheid, je geduld en de tijd die je hebt geïnvesteerd om mij te begeleiden om deze eindstreep te behalen. Zonder jouw was dit proefschrift niet tot stand gekomen.

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tijdens verschillende lunchmomenten en het congres in Thailand hebben dit tot een onvergetelijke een leerzame ervaring gemaakt.

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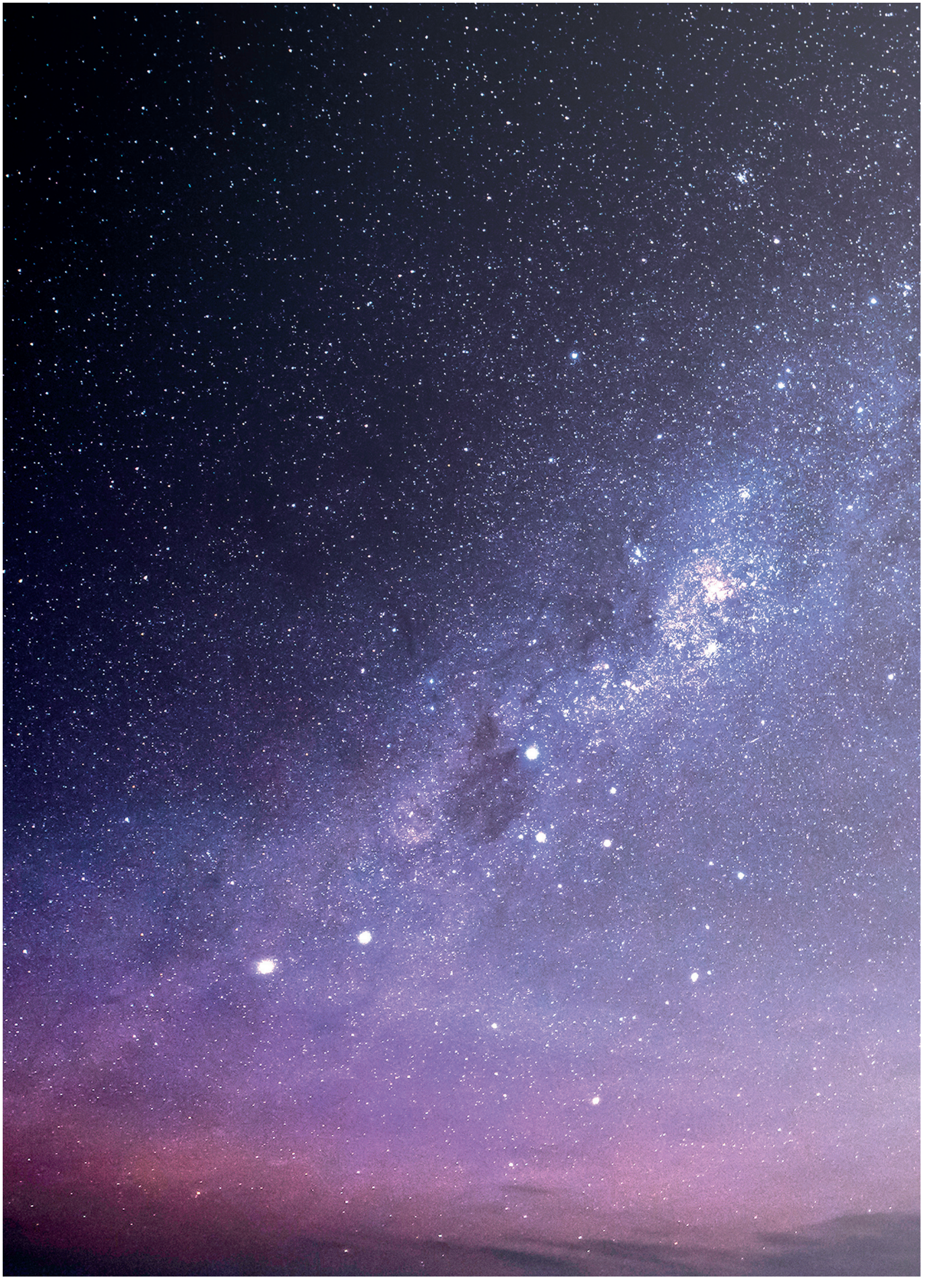
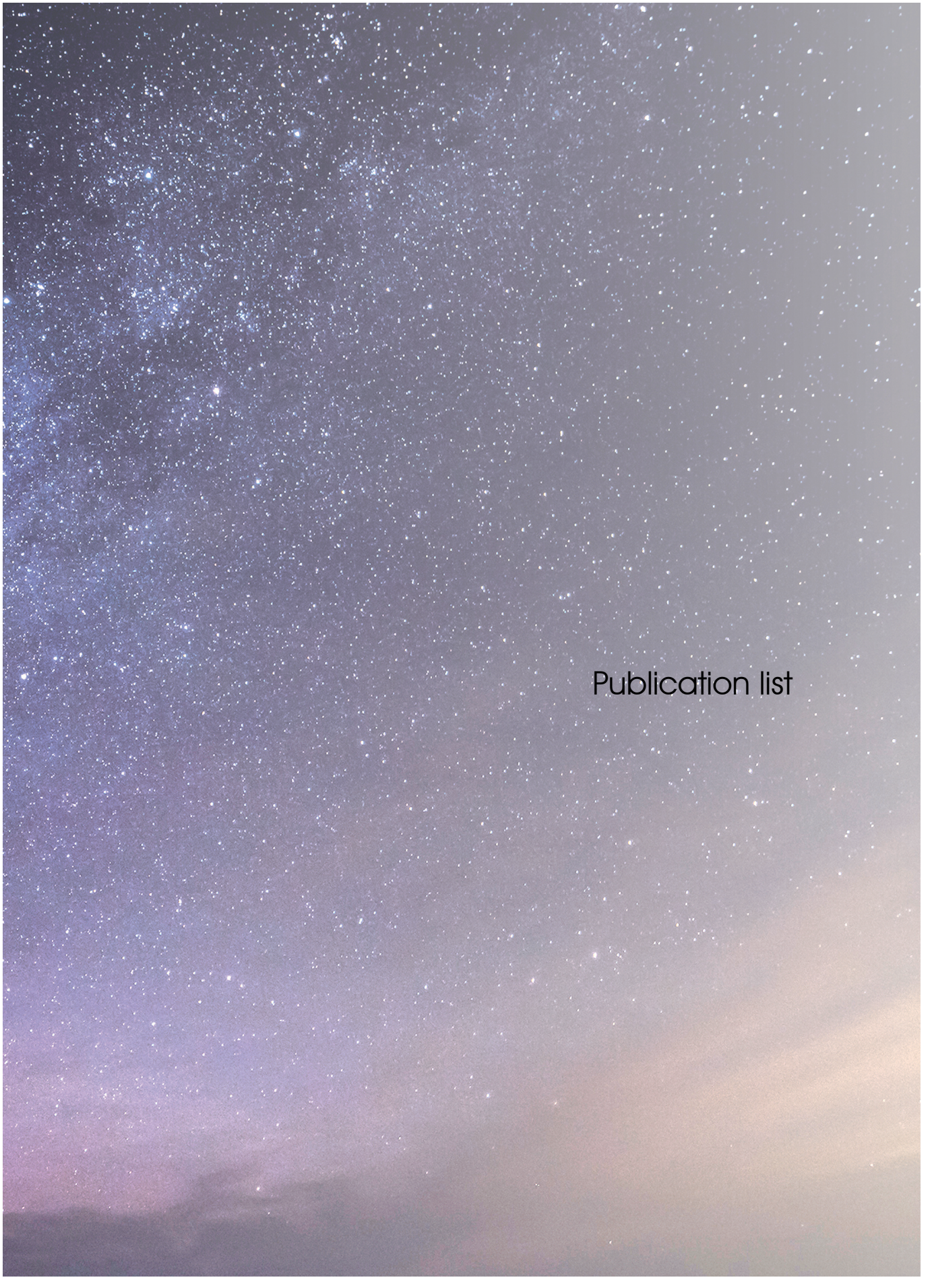




Publication list

PUBLICATION LIST

Grêaux, K. M., De Vries, N. K., Bessems, K. M. H. H., Harting, J., & Van Assema, P. (2020). Does partnership diversity in intersectoral policymaking matter for health promoting intervention packages' composition? A multiple- case study in the Netherlands. *Health Promotion International, 36*(3), 616-629. https://doi.org/10.1093/heapro/daaa083

Grêaux, K. M., Schwiebbe, L., Renders, C. M., Doak, C. M., Visser, R., Kist- van Holte, J., & HiraSing, R. A. (2013). Breastfeeding and food pattern in overweight children in the Caribbean. *Paediatrics and International Child Health, 33*(1),18-22. https://doi.org/10.1179/2046905512Y.0000000048

Harting, J., Peters, D. T. J. M., Grêaux, K. M., van Assema, P. T., Verweij, S., Stronks, K., & Klijn, E. H. (2019). Implementing multiple intervention strategies in Dutch public health-related policy networks. *Health Promotion International, 34*(2), 193-203. https://doi.org/10.1093/heapro/dax067

Peters, D. T. J. M., Verweij, S., Grêaux, K. M., Stronks, K., & Harting, J. (2017). Conditions for addressing environmental determinants of health behaviour in intersectoral policy networks: a fuzzy set qualitative comparative analysis. *Social Science and Medicine,195*, 34-41. https://doi.org/10.1016/j.socscimed.2017.08.036

Peters, D. T. J. M., Raab, J., Grêaux, K. M., Stronks, K., & Harting, J. (2017). Structural integration and performance of inter-sectoral public health-related policy networks: an analysis across policy phases. *Health Policy, 121*(12), 1296-1302. https://doi.org/10.1016/j.healthpol.2017.10.001

REPORTS

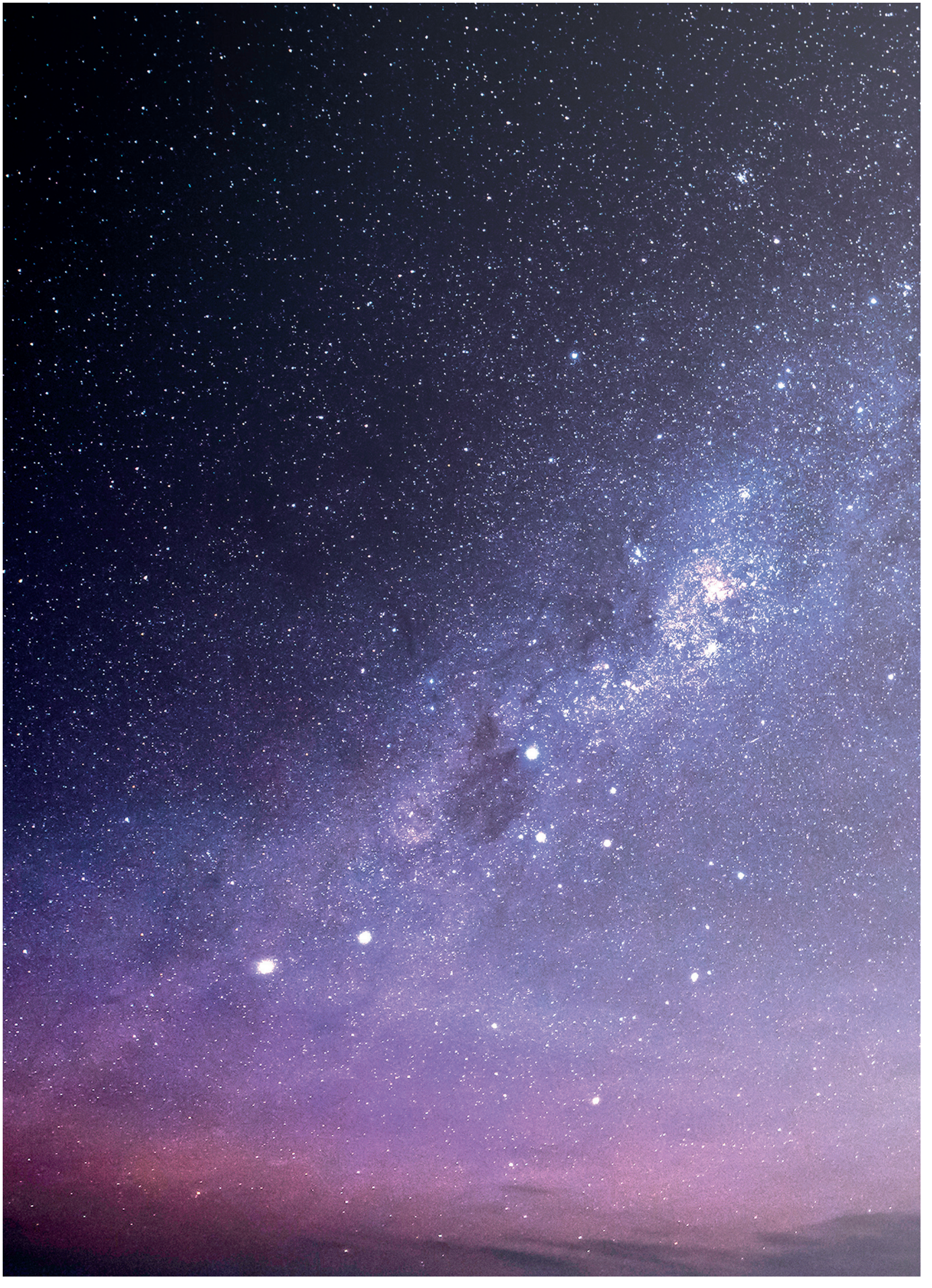
Collard, D., Grêaux, K. M., Van Koperen, M., & Seidell, J. (2010). Inventarisatie van de werkwijzen en prioriteiten binnen de 5 academische werkplaatsen binnen het consortium CIAO. Vrije Universiteit Amsterdam, Faculty of Earth and Life Sciences, Institute of Health Sciences.

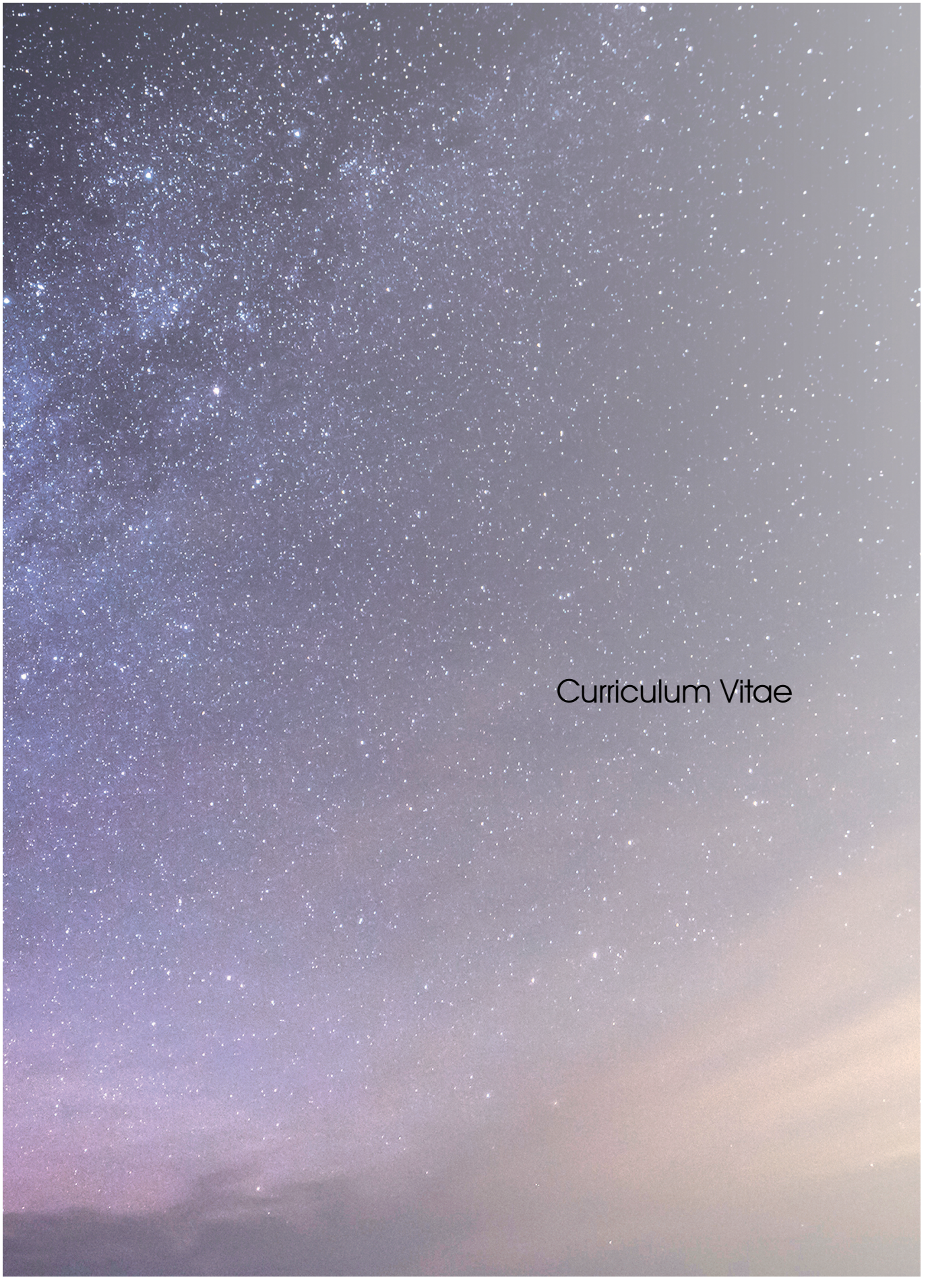
Grêaux, K. M. (2011). SO die BOEPZZTT? Aanbevelingen voor het Amsterdamse overbruggingsplan overgewicht voor kinderen van 4-12 jaar. GGD Amsterdam afdelingen EDG en JGZ.

Heere, B. & Grêaux, K. M. (2017). Sport participation in Aruba 2017: A baseline measure. University of South Carolina and University of Aruba.

Seidell, J., Raat, H., Jansen, M., Molleman, G., Paulussen, T., Collard, D., Grêaux, K. M., Henkemans, O. B., Engels, R., Fransen, G., Van Grieken, A., Van Hooijdonk, C., Jansen, Y., Janssens, J., Van Koperen, M., Koster, M., Kremers, S., Larsen, J., Van Lenthe, F., . . . Wijk, E. (2010). Eindrapportage fase I CIAO – Consortium Integrale Actie tegen Overgewicht.

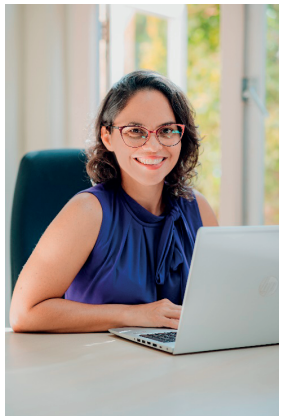
Van Koperen, M., Grêaux, K. M., Visscher, T., & Seidell, J. (2010). Report of the scientific evaluation and dissemination committee research. Vrije Universiteit Amsterdam, Faculty of Earth and Life Sciences, Institute of Health Sciences.





Curriculum Vitae

CURRICULUM VITAE



Kimberly Milukia Grêaux was born on June 1, 1986, in Oranjestad, Aruba. After graduating from high school (Senior General Secondary Education) at the Colegio Arubano in Oranjestad, Aruba in 2004, she studied Pharmaceutical Sciences at Vrije Universiteit Amsterdam, from which she graduated in 2008 (bachelor's degree). Subsequently she studied Health Sciences at Vrije Universiteit Amsterdam, from which she graduated in 2009 (master's degree). In 2009 Kimberly worked as a junior researcher at the Vrije Universiteit, on developing an evaluation framework for an international integrated approach for overweight (EPODE) and the Dutch Consortium Integrated Approach for Overweight. From September – December 2010 Kimberly worked as a junior researcher at the Regional Public Health Services (GGD) of Amsterdam on a process evaluation of the 'Overbrugginsplan' in the Youth Health Care Centers in Amsterdam. In December 2010 she started working as a PhD-student at the Department of Health Promotion at Maastricht University, on a project regarding the implementation of health promotion interventions in the context of integrated health promotion packages in Dutch municipalities participating in the Gezonde Slagkracht program. In January 2016 she started working as an academic lecturer in the Bachelor and Master program at the Faculty of Hospitality Tourism and Management Studies at the University of Aruba.