

Author's accepted manuscript (postprint)

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Published in: Health Promotion International

DOI: [10.1093/heapro/daaa063](https://doi.org/10.1093/heapro/daaa063)

Available online: 18 Aug 2020

Citation:

von Heimbürg, D. & Cluley, V. (2020). Advancing complexity informed health promotion: a scoping review to link health promotion and co-creation. Health Promotion International. doi: [10.1093/heapro/daaa063](https://doi.org/10.1093/heapro/daaa063)

This is an Accepted Manuscript of an article published by Oxford University Press in Health Promotion International on 18/08/2020, available online: <https://academic.oup.com/heapro/advance-article-abstract/doi/10.1093/heapro/daaa063/5894064?redirectedFrom=fulltext>

**Advancing complexity informed health promotion: a scoping review to link health promotion and co-creation**

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**Funding:** This work was supported by The Research Council of Norway, Nord University and Levanger Municipality in Norway (Public sector PhD).

**Word count:** 6978 (revised manuscript – main text)

**Ethics Approval:** Not applicable.

**Acknowledgements:** We would like to thank Prof. Asbjørn Røiseland, Prof. Ottar Ness and Prof. Bengt Lindström for valuable comments on the manuscript.

**Issue Section:** Perspectives

## ABSTRACT

A complexity informed approach has recently been proposed as a hopeful revolution for health promotion, requesting appropriate ways of tackling the complexities of health, equity and well-being. In addition, co-creation has gained traction as an approach to tackle complexity. Health promotion and co-creation are established concepts that have long been enacted in practice. Although each concept is premised on similar approaches to value-creation such as participation and collaboration, little has been done to link the two approaches. To advance complexity informed health promotion, this scoping review presents findings from peer reviewed articles, published in English, between 2009 to March 2020. Articles were identified through searches of academic databases. 27 articles met the inclusion criteria, explicitly linking health promotion and co-creation. Included articles were charted by descriptive information and main focus, and advanced by a thematic analysis. Four themes suggest a potential avenue for advancing complexity-informed health promotion: (1) *dealing with complexity*, (2) *value creation*, (3) *the value of the values*, and (4) *benefits and challenges*. While current links between health promotion and co-creation are scarce they are increasing and promising. Based on the findings from the review, propositions to advance complexity-informed health promotion is outlined and discussed. Overall it is argued that co-creation and health promotion are mutually beneficial concepts, providing a framework for participative, collaborative, context-sensitive and knowledge-based practice that reflects the complex nature of health. More research is needed to highlight potential and challenges of integrating co-creation in health promotion, especially related to health equity and sustainable development.

*Keywords:* health promotion, co-creation, sustainability, complexity, scoping review.

## INTRODUCTION

Despite a strong and generally accepted foundation for health promotion (HP) provided by the Ottawa Charter (WHO, 1986), the development of HP has been a rocky journey. HP initiatives have yielded limited success, followed by criticism as a consequence. In an effort to ensure the principles of HP are not lost and to unleash the potential of such an approach to population health, HP has undergone a number of revolutions – the biomedical, the psychological and the social. Success however has been limited, leading some to ask if it is a lost discipline, with potential harmful (unintended) effects, and if the critical mass of HP practice and scholarship is slow to progress (Guggelberger, 2018; Mohammadi, 2019; WHO, 2009). Recently, however, a fourth and hopeful revolution has been proposed by Mohammadi (2019) – the complexity informed revolution. In order to maintain forward momentum that can be directly useful for practice, policy and research, we explore the current links between HP and co-creation, as well as the potential to integrate these approaches to nurture the development of complexity informed HP.

Complexity informed HP uses complexity science to embrace and account for the complexity inherent within health, well-being and equity within a socio-ecological framework of complex adaptive systems. Mohammadi (2019) attributes the failure of previous HP initiatives and revolutions to the adoption of an inflexible approach whereby changes to one part of the system are hoped to create changes to the whole system. This critique and reorientation complement seminal publications in the HP literature highlighting the diverse social determinants of health (SDH), focusing on their connectivity and multiplicity (Commission on Social Determinants of Health, 2008; Marmot and Allen, 2014). In acknowledging the complexities and fluidity of health and well-being, it is hoped that HP initiatives can create the changes that have been hoped for, for so long.

Public health and well-being is intrinsically linked to societal development. As such, outcomes are dependent on a multitude of stakeholders across the whole-of-society and the whole-of-governments at multiple levels (Kickbush and Gleicher, 2012; WHO, 2013). The aim of this article is to address this complexity by linking HP to co-creation in order to explore propositions and recommendations for advancing HP theory, research and practice. To do this, we draw on the findings of a scoping review where literature across the relevant fields pertaining to HP and co-creation was reviewed for instances of commonality and collaboration. Before the scoping review findings are presented and discussed, it is necessary to provide some context to each of the concepts under review in order to ground the arguments made theoretically and conceptually.

### **Health promotion**

HP is often used synonymously with public health – a discourse that can be argued to be predicated on the ideals of biomedicine and neoliberalism – anathemas to HP (Eriksson and Lindström, 2008; Morgan and Ziglio, 2007; Pūras, 2019; Seedhouse, 2004). Health promotion mean different things to different people (Seedhouse, 2004). Thus, it is important for us to outline our stance. HP is formally defined in the Ottawa Charter (OC) for Health Promotion (WHO, 1986, p. 5) as “the process of enabling people to increase control over the determinants of health and thereby improve their health”. The OC definition is underpinned by values of social justice and equity; emphasis is placed on “creating supportive environments” (p. 6) and “strengthening community action” (p. 6) through the advocacy of a settings based and system-wide approach, alongside enabling and mediating for health equity. Further, building on a human rights and people-centred approach, the foundations of HP embedded into the OC, place citizens at the heart of participatory and empowering HP processes. Assets and capabilities for health and well-being alongside collaboration and

partnerships are connected to a systemic and ecological approach to the wider (social) determinants of health (Commission on Social Determinants of Health, 2008; Morgan and Ziglio, 2007; Pūras, 2019; WHO, 1986; 2016).

The OC defined HP is also based on a salutogenic perspective on health that focus on nurturing assets for wellness rather than to focus on determinants for disease, a vital perspective embedded in the OC (Antonovsky, 1996; Eriksson and Lindström, 2008). The salutogenic orientation and the “settings focus” of the OC was further refined at the Shanghai conference in 2016 where the ethos that “health is created in the settings of everyday life” (WHO, 2016) was reinforced and refined to underpin the importance of addressing such settings, and to nurture assets for health and well-being. The Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development (WHO, 2016) was explicitly linked to UNs Sustainable Development Goals which outline:

Healthy lives and increased wellbeing for people at all ages can be only achieved by promoting health through all the SDGs and by engaging the whole of society in the health development process (WHO 2016, p. 2).

This whole-of-society approach relates to SDG goal #17, *Partnership for the goals*, and represents a co-creational approach demanding coordinated action and shared responsibility by all concerned (UN, 2015). The Shanghai Declaration (WHO 2016) confirms that health promotion is still a topical concept and a desired practice. Our use of ‘health promotion’ in this article refers to the principles and values prescribed through the OC and further developed in later WHO declarations. Importantly, we also recognise that health is a complex phenomenon that is multiplicitous in nature.

## **Co-creation**

Like HP, co-creation is also a contested concept that is used differently and means different things depending on context and setting. Co-creation, co-production, co-design and similar terms are often used interchangeably to refer to the same thing, and are used differently across disciplines (Osborne, 2018; Pestoff, 2019; Voorberg *et al.*, 2015). In science and technology studies (STS), for example, co-production refers to the appropriation of scientific terms and findings into everyday language and understanding (Jasanoff, 2004). In public governance and service management, however, co-creation and co-production are used to refer to a co-constructed service experience and the public value of this experience. It is this approach to co-creation that we refer to here.

The concept of co-creation as a model for understanding public value creation emerged largely out of the failure and resistance to the strategies and neoliberal discourse of New Public Management (NPM) in Public Sector Organizations (PSO's) (Osborne *et al.*, 2016; Pestoff, 2019). Co-creation has been defined as “an interactive and dynamic relationship where value is created at the nexus of interaction” (Osborne, 2018, p. 225). Indeed, Torfing *et al.* (2016, p. 8) similarly define co-creation in the public sector as:

A process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences, and ideas that enhance the production of public value in terms of visions, plans, policies, strategies, regulatory frameworks, or services, either through a continuous improvement of outputs or outcomes or through innovative step-changes that transform the understanding of the problem or task at hand and lead to new ways of solving it.

In this form, co-creation is increasingly acknowledged as a necessary approach to address pressing and wicked societal challenges (Osborne, 2018; Ostrom, 1996; Pestoff, 2019; Selloni, 2017). As mentioned, a recent example is the adaption of UN's sustainability goals,

where SDG #17 is aligned with co-creation, acknowledging the need for joint action and partnerships for the goals (UN, 2015; WHO, 2016). Such collaborations enable societies, governments and communities to work together towards mutual goals (Torfing *et al.*, 2016). The theoretical debate addressing co-creation is based on theories of value (AUTHOR, 2020). Indeed, Radnor *et al.* (2014), in line with Osborne *et al.*, (2016), assert that co-creation is part and parcel of public service provision owing to the fact that public service users and providers must engage at some level for the service to exist.

### **Health promotion, co-creation and complexity**

As mentioned, co-creation has recently gained traction as an approach to tackle complexity (Torfing *et al.*, 2016). Complexity informed theories based on complexity science are now gaining in popularity across disciplines (Greenhalgh and Papoutsis, 2019). Complexity science allows things, events, experiences etc., to be seen in terms of complex adaptive systems. A complex adaptive system embraces unpredictability and paradox, allowing for change and inconsistency, and are made up of relational and heterogeneous agential factors that likely will change and adapt over time depending on circumstance (Plsek and Greenhalgh 2001). It is also acknowledged that the complex system that is one thing will exist in a relationship with the complex system of other things and that this will result in change, tension and conflict (Plsek and Greenhalgh 2001). Fundamentally, complexity science moves away from linear, model based approaches and allows the messy uncertainty of things to be accounted for.

Health and well-being is inherently interwoven with social, political, cultural and historical context, where one part of complex and adaptive systems tend to influence others, which call for a need to understand and manage to handle such complexity (WHO, 2019). As outlined, Mohammadi (2019) draws on complexity science to make sense of the complexities associated with health, as determinants for health and well-being tend to influence through



networked, multileveled and multiple paths. Important to the argument made here is the fact that both the concepts/practices of HP and co-creation are premised on both a like moral ethos, whereby values of empowerment and participation and asset-based approaches are prioritised. A shared approach to practice is evident, whereby complexity and multiplicity is recognised and catered for. Exploring processes where such values can be created requires a deeper understanding of the connections between co-creation and HP. Thus, a review of relevant literature is needed. To the best of our knowledge, this is the first article to have specifically explored existing links between co-creation and HP to outline the potential to integrate these approaches to public value-creation.

## **METHODOLOGY**

### **Scoping review**

Scoping reviews are suitable when the purpose is to systematically search, map, and identify gaps in the current literature on a topic with the aim of informing practice and policy, and providing direction to future research priorities (Levac *et al.*, 2010). The scoping review conducted was based on Arksey and O'Malley's framework (2005), consisting of the following five steps: (1) *identifying the research question*, (2) *searching for relevant studies*, (3) *selecting studies*, (4) *charting the data*, (5) *collating, summarizing and reporting the results*.

### ***Step 1: identifying the research question***

As outlined, the study aimed to highlight the relationship between HP and co-creation in order to work towards a practical framework for tackling the complexity of socio-ecological determinants of health and well-being. In order to do this, the following research questions were asked:

- Research question 1 (RQ1): What are the current links between co-creation and health promotion in the scientific literature?
- Research question 2 (RQ2): What is the potential use of introducing co-creation to complexity informed health promotion theory, research and practice?

RQ1 relates to the scoping of the literature, while RQ2, advancing this scope, outlines an explorative discussion of introducing co-creation as an approach to the complex processes of health promotion.

### ***Step 2: Identifying relevant studies***

The literature search examined any programme, policy, intervention or service related to HP in combination with co-creation and/or co-production. The search was limited to identify peer-reviewed publications, including reviews, empirical studies and theoretical/conceptual articles combining HP and co-creation/co-production. In order to avoid biases in the collection of published literature on the topics, only contemporary scientific discourses on HP and co-creation through eligible studies were included. Both conceptual and empirical papers were included in order to identify as many potential links between HP and co-creation as possible. Only English-written contributions, published in peer-reviewed journals, were considered to allow replicability of the search. Due to the fact that the co-creation literature is relatively recent, we limited the search for the last ten years (since 2009) and until March 2020. The search strategy was conducted in three phases (initial search in January 2019, updated in May 2019 and March 2020).

To account for terminological overlaps, the following search terms were used: "health promotion" or "public health" or salutogen\* and co-creat\* or cocreat\* or co-product\* or coproduct\*. Search terms were entered into two databases; Pubmed and Scopus. Together, these databases cover a broad range of journals addressing a wide range of social sciences as well as health sciences. Searches were limited to explore title, keywords and abstract of the

articles, as the scope concentrated on exploring articles where the abovementioned concepts were key issues. In addition, we approached recognized researchers in the fields of HP and co-creation to identify additional sources. This did not result in additional articles (Fig. 1).

[insert - Figure 1. Search strategy results - here]

### ***Step: 3 Selecting the studies***

Articles were retrieved for full text review if one or both authors thought it fit the inclusion and exclusion criteria as described above. Full text review was completed by the first author and audited by the second author. In line with the aims of this study, as well as the purpose of scoping studies (Arksay and O'Malley, 2005), we did not assess the quality of the retrieved articles as we investigated the total breadth of available information regardless of study design or quality (Fig. 1).

### ***Step 4: Charting the data***

The data was charted against the following general factors: aspects of HP including, settings, participation, focus, definition, principles, policy, evaluation and outcomes; aspects of co-creation including, definitions, barriers, motivation, reciprocity, reflexivity, trust, skills, and roles; descriptive information such as date of publication, discipline, geographical site, journal, and method; objectives and; outcomes. Data was charted and coded independently by both authors using Nvivo, and then cross-reviewed in a merged file.

## **Thematic analysis**

After charting the data, we applied from Braun and Clarke's (2006) six step approach to thematic analysis to identify shared themes with a view to identifying evidence for the potential contribution co-creation can have on HP practice. This involved: (1) familiarisation with the data, (2) generate initial codes, (3) the identification of themes within, between and across codes, (4) review of the themes, (5) formalisation of the themes; and (6) write up. The

process of analysis was not linear, as we moved between the steps several times to make sense of the data. We approached the analysing process with a social constructionist stance (McNamee, 2010), acknowledging analytic practice as a process of co-construction (e.g. meaning-making is negotiated in dialogue between us as authors, theory and relevant literature, our experiences as public health workers using co-creation in our practices, in dialogue with other scholars and so on). Data was initially coded independently by both authors, and then jointly reviewed and thematised by both authors. This was to ensure inter-rated reliability (Mays and Pope, 2020). Nvivo 12 was used to support this process.

## **RESULTS**

The results are presented in two sections attending to: (1) scoping the link between health promotion and co-creation (RQ1); and (2) results exploring the potential impact of co-creation in health promotion theory, research and practice (RQ2).

### **Volume, nature, and characteristics of research**

The overall search from 2009 to March 2020 generated 386 potential articles. Once the inclusion and exclusion criteria were applied, however, this number was significantly reduced to 27 articles, which ultimately were included in the review. Only three of the articles were published before the end of 2015, and the rest (n=24) were published subsequently until May 2019. The majority (n=20) of studies were conducted in Europe. The rest represented transnational (n=2), Australia (n=2), North America (n=1), South America (n=1) and Asia (n=1). The articles were mainly published in journals with a public health/HP scope, but with no journals being substantially more frequent than others. Together, 22 different journals were represented in our material. Methodologically, qualitative studies predominated (n=16).

Specifically, various types of case studies (n=7), where some of these also relied on mixed methods. Only one article had a quantitative design.

The descriptions and definitions used to describe co-creation/co-production were diverse, however participation and collaboration amongst key stakeholders, organizations, and levels of governance represented common principles. Target populations varied in age, but the majority of studies were directed to solving specific public health-related problems. Together nine of the articles explicitly addressed “settings” of everyday life (community, social media, housing/neighborhoods, schools, and workplace). Fourteen articles had an explicit lifestyle-oriented focus, and four focused on mental health. The (co-)creation of a knowledge-base and innovation for HP policy and practice was a key issue in seventeen of the articles, whereas nine had policy development and/or implementation of policy as a main focus. Four articles held an explicit aim to reduce inequities in health. The majority of articles addressed HP in a local context, and highlighted localism and contextual factors as key issues (see table 1).

According to the reviewed literature, co-creation could address the need for innovation and collaboration for the achievement of successful HP by constructing new roles, relationships and structures between stakeholders that can respond fluidly to the complexities within HP issues and practice. Answering to RQ1, the current links between HP and co-creation are scarce, but promising. Table 1 summarises this information.

[insert - Table 1. Overview of identified articles - here]

### **Results exploring the potential value of co-creation in health promotion theory, research and practice**

To progress a discussion to answer to RQ2, we conducted a thematic analysis across the included articles. The following four themes were identified: (1) dealing with complexity, (2) value creation, (3) value of the values, and (4) benefits and challenges.

### *Dealing with complexity*

A common argument for a co-creation approach to HP was that a multi-level, multi-actor approach is needed in order to deal with the complexity of factors affecting health, well-being and equity (e.g. Heimborg and Hakkebo, 2017; Morgan *et al.*, 2019). Other frequent rationales were to inform, take action and evaluate HP means and initiatives. A repeated argument in the studies was that linking HP and co-creation serves to tackle the messiness and complexity of knowledge-construction and policy-processes (Martson *et al.*, 2016; Daykin *et al.*, 2017; Heimborg and Hakkebo 2017), to bridge gaps between research, practice and policy (Mansfield 2016; Cairney and Oliver 2017), and to bolster citizen and stakeholder participation in co-creation (Ares *et al.*, 2019; Lassen 2019; Lems *et al.*, 2020). For example, Lassen (2019) describes that policies for healthy and active aging coincide with co-creation, where municipalities become facilitators rather than authorities for promoting active citizenship. Similarly, when discussing the application of a co-created approach to HP in the workplace, Sirola-Karvinen *et al.* (2010) discuss the benefits regarding the complex and relational characteristics of a workplace focusing on the participative nature of co-creation, and highlighting the importance of paying attention to the context and to focus on communities as a whole.

The complexity inherent to the settings of everyday life and the need for a whole-systems approach was also addressed by other studies holding a “settings” focus. For example, in developing a school-based, community-linked physical activity programme for girls, Morgan *et al.* (2019, p. 11) describes that:

Throughout the developmental process, we encountered considerable contextual complexities (e.g. different cultures, school locations, and single-sex staff).

Stakeholder engagement was vital to ensure strategies addressed such complexities and that future implementation would reflect cultural contexts.

Further, in a study using multi-stakeholder participation to co-develop the “Creating Active Schools Framework” (CAS), Daly-Smith *et al.* (2020, p. 10) argue that: “The novelty of the CAS framework resides in formally identifying the multitude of interconnecting components of a whole-school adaptive sub-system; this exposes the complexity required to create systems change”.

Overall, the articles argued for capacity-building as an approach to enhance organizational readiness and skills to support the adoption of a whole-of-government and whole-of-society approach to HP where complexity is accounted for. Across the studies identified, this also included hybrid organizations and networks, with a particular focus on participatory leadership, ownership of the agenda, joint action, reciprocity and joint responsibility and accountability for desired outcomes (see table 1). For example, in their study to explore the implementation of Health Equity in All Policies (HEiAP) Heimburg and Hakkebo (2017, p. 68) found that the adoption of a co-creational approach can result in improvements in system and human capacity, stating:

System capacity is strengthened by governing HEiAP according to national legislation and a holistic governance system at the local level. (...) Human capacity is strengthened through participatory leadership, soft skills and health promotion competences across sectors.

A relational approach to creating trust and “soft skills” within the co-creation process (and mobilize motivations to do so) was also highly valued regarding the complexity of health issues and the range of knowledge needed to ensure successful HP work. For example, Luca *et al.* (2016) found that the interaction between different stakeholders that is fundamental to co-creation results in the added benefit of knowledge creation and skill sharing resulting in a holistic approach to action, and Haar *et al.* (2014) stress the importance of face-to-face meetings between stakeholders to sustain the level of commitment in collaborative processes.

Navigating power-dynamics, clashes between stakeholder motivations, and tension between logics and approaches were all mentioned as barriers for dealing with complexity through a co-creational approach. Mansfield (2016) clearly outlines that power dynamics should be taken into account when implementing co-creation. In their study Martson *et al.* (2016) show the shift in power relations that comes with a co-creation approach redistributes typical power relations and performative roles. The importance of tailoring co-creation processes to the local context and stakeholders social worlds, where sense-making processes and capacity-building to tackle complexity takes local contextual factors into account, was highly stressed throughout the included articles (e.g. Daly-Smith *et al.*, 2020; Daykin *et al.*, 2017; Lems *et al.*, 2020).

### ***Value creation***

As outlined in the introduction, co-creation in public services aims to create public value experiences. A variety of value claims were made throughout the studies regarding the application of a co-creational approach. The ‘values’ described tended to be similar and focused on both individual and public value. The value of the projects outlined was largely related to the objectives of the studies (see table 1). However, four identifiable perceptions of value were identified based on the application of a co-creation.

First, health, well-being and equity, in a variety of conceptualizations, was a central *public value* thought to result from the co-created HP initiatives. Here, supporting healthy lifestyles, nurturing social conditions and creating capabilities and empowerment for health and well-being were central issues (e.g. Leask *et al.* 2019b; Morgan *et al.*, 2019; Lems *et al.*, 2020). For example, Marston *et al.* (2016, p. 377) argue that “For individuals to develop as agents of change and for participatory processes to work well, individuals and groups need the capabilities to achieve the health goals they value”, and further advocating that when people can develop their own skills, individuals may voluntarily support others.



Second, the “value-creation” reported to be advanced by a co-creational approach often included *knowledge-development* and *social innovation* in HP (especially in terms of community-based approaches, co-construction of knowledge, co-learning, co-implementation and co-evaluation). Leask *et al.*, (2019a), for example highlights upskilling as a benefit of co-created HP work, stating “up-skilling can increase the capacity and capability of the co-creators and potentially result in the development of more innovative and meaningful solutions” (p. 7). Knowledge sharing, as part of the co-creation process, was also found to have the added benefit of facilitating trust and ownership, allowing the work to generate individual value experiences. Stakeholders’ reflection on their co-creation helps to build trust and space for differences as well as a shared practice-based knowledge. When discussing their study to explore the local delivery of a national HP project Haar *et al.* (2014) claim that ‘stakeholders’ reflection on their co-creation helps to build trust and space for differences as well as a shared practice-based knowledge, concluding that “the idea of co-creation can facilitate a shared knowledge creation that stimulates shared implementation strategies” (p. 229). Similarly, when discussing the benefits of co-creation, Freebairn *et al.* (2016) argue that, ‘the co-production’ aspect of the participatory approach was highly valued and essential to understand the modelling process. Understanding through participation increased trust in the model and its outputs as a decision-support tool.

Thirdly, *better and more efficient policies, interventions and services* was frequently outlined to be a central population level value emergent from the adoption of a co-creational approach. Such as Leask *et al.* (2019a) suggests that adopting a co-creational approach can result in efficiency savings at a government level. Similarly, Lems *et al.* (2020) points to the importance of system-oriented, contextualized and co-created knowledge, suggesting that social determinants could be camouflaged if lifestyles are addressed as medical deficiencies: “Although the girls attributed an unhealthy lifestyle to themselves, it appeared that poverty,

family problems and an unsafe and unhealthy (social and physical) environment hinder healthy living” (p. 12). Lems *et al.* (2020) argue that not taking this complexity into account could lead to ineffective policies and interventions.

Finally, we found that a *democratic value*, related to public engagement, social capital and trust was, to some extent, present in some of the studies. For example, Marston *et al.* (2016 p. 377) argue that “A supportive policy environment that identifies social accountability mechanisms will legitimize and support participatory processes at all levels”, and further concluding that:

For transformative action on women’s, children’s and adolescents’ health, participatory approaches are essential, at all levels: district, national, regional and global. Without these, we face the risk of stalled progress and persisting inequities in health (p. 380).

Democratic value was also linked to informing political processes through co-creation. For example, Cheetham *et al.* (2018, p. 68) links co-creation to democratic value through embedded research, arguing that “The ERer witnessed first-hand how research can be subject to the political pushes, pulls and pressures of local democratic accountability with its competing agendas”, showing the necessity of strengthening trust and relationships in ‘conversational spaces’ to impact democratic processes and political agendas. Co-creation was additionally linked to democratic empowerment of HP target groups. For example, in a co-creation project including adolescent girls in planning HP initiatives, Lems *et al.* (2019, p. 11) state “The products empowered the girls; it made them proud (increased self-esteem) and acted as a starting point for discussion with policy-makers”, suggesting that participating in co-creation processes could empower citizens to participate in further policy-making.

### ***The value of the values***

This theme is inextricably linked to the value creation theme presented above and concerns the values that underpin the co-creation process. A co-creational approach to the HP work outlined in the studies was justified on the grounds of a like moral ethos. This was largely predicated on values of participation and collaboration, and building resources in people, between people, in communities and wider systems (e.g. Daly-Smith *et al.*, 2020; Heimburg and Hakkebo, 2017; Lassen, 2019; Marston *et al.*, 2016; Sirola-Karvinen *et al.*, 2010). The adoption of co-creation was outlined across the studies to include a focus on capacity to facilitate the promotion of issues such as empowerment, capabilities, inclusivity and transparency in order to reflect and accommodate for complexity inherent within HP (see table 1).

Additionally, co-creation was thought to aid the negotiation of complex power dynamics through a flattening of hierarchies and a redistribution of power (as seen in theme 1). This is consistent with the values of HP, whereby bottom up, participative approaches are favoured. When discussing the role of academics in co-produced projects Leask *et al.* (2019a, p. 13) goes as far to say “academic researchers who do not fully accept or implement the governance associated with co-creation may endanger the veracity and effectiveness of the process”. However, as shown in table 1, only a few studies explicitly addressed the values of social justice and equity to underpin co-creational processes of public value creation.

### ***Benefits and challenges***

Overall, the application of a co-creational approach to HP problems and practice was thought to be beneficial across all of the studies identified. The benefits of combining HP and co-creation approaches are seen throughout the presentation of the previous three themes.

Application of a co-creational approach was thought to be an effective and efficient way of accounting for the complexity that is inherent within HP work. For example, Verloigne *et al.* (2017, p. 862), states: “using a co-creational approach as a participatory technique in which

the target group is actively involved in the development and implementation of actual intervention strategies for a specific setting is a promising approach to increase engagement of the target group”. Such statements of support were widespread throughout the articles reviewed.

While generally co-creation was reported to yield positive outcomes, some studies did report limitations and possible challenges. For example, Daykin *et al.* (2017, p. 123) state that, “Effective co-production can be undermined by structural and cultural barriers as well as unequal stakeholder relationships”. Other challenges included the time-consuming nature of the process of coordinating all involved and unrealistic resourcing (Daykin *et al.*, 2017; Freebairn *et al.*, 2017), unequal engagement between participants (Freebairn *et al.*, 2018), as well as deviation from and changing objectives between stakeholders (Daykin *et al.*, 2017; van den Heerik *et al.*, 2017; Vallentin-Holbech *et al.*, 2020). Ultimately, these barriers and challenges can be linked to the complexity of health and the multitude of stakeholders involved.

## DISCUSSION

Here we seek to progress complexity-informed HP by linking HP to co-creation. Returning to the research questions, our review suggests that current links between HP and co-creation are scarce but promising. The review findings show that HP and co-creation are mutually beneficial concepts (theoretically and practically). Linking the two could serve to advance complexity informed HP practice and research. We further this claim by discussing three pertinent issues informed by the scoping review: (1) legitimizing co-creation in complexity-informed HP, (2) propositions for further development of complexity-informed HP, and (3) recommendations and closing comments.

### **Legitimizing co-creation in complexity-informed health promotion**

As outlined by Mohammadi (2019) in her recent editorial, and also demonstrated by UN Special Rapporteur Pūras (2019), traditional approaches to HP have proven to be inadequate in responding to the complex nature of health and well-being. Often considered a ‘complex’ or a ‘wicked’ problem, public health and health inequities are multifactorial and changeable. They are highly dependent on social determinants and political, historical and cultural realities. Health in all policies is therefore a legitimate aim and a socio-ecological systemic approach to multi-sector collaboration, at all levels of government and society is required (Kickbush and Gleicher, 2012; Naaldenberg *et al.*, 2009; Pūras, 2019; WHO, 2013; 2016; 2019). This is not a novel suggestion, however, it has been a challenging suggestion.

As outlined in the introduction, the limited impact of previous approaches calls for new ways to tackle HP challenges in an increasingly complex world. This implies that a “settings-approach” to health is not enough, we also need to consider the wider, socio-ecological context of such settings, as well as the integration and coordination between them (Bloch *et al.*, 2014; Naaldenberg *et al.*, 2009). Surprisingly, however, only a few articles in our review explicitly linked a co-creation approach to core values of HP such as social justice and human rights. The SDG agenda, and references to SDG #17 was also surprisingly absent. Building on the foundations of the OC and the SDG’s, we incorporate these crucial public values into our further propositions and recommendations.

### **Propositions for further development of complexity-informed health promotion**

Supported by this review, we suggest three propositions to inform further development of HP: (1) A shared moral ethos and theoretical grounding renders co-creation an appropriate approach for complexity informed HP practice; (2) The adoption of a complexity informed approach to the co-creation of HP will allow the complexities of both health, public services

and societal development to be accounted for and negotiated, enabling a better chance of success; and (3) Research concerning complexity informed HP and co-creation should be based on appropriate research methodologies in order to ensure that the complexities of health, well-being and equity are addressed.

Proposition one concerns shared ideology and theoretical orientation. Although it is a debated issue, HP is an ideological approach (Eriksson and Lindström, 2008; Seedhouse, 2004). It is people-centred, participatory, empowerment-based, social justice-oriented, and strongly linked to human rights (Lindström and Eriksson, 2006; Marmot *et al.*, 2012; Pūras, 2019). Although the literature on co-creation is not as ideologically explicit as HP, this body of literature could to some extent, also be described as ideological, based on premises of participation and empowerment (Selloni, 2017; Voorberg *et al.*, 2015). Co-creation is rapidly gaining momentum as an approach to create public value and tackle complexities inherent to such processes, and is now linked to global sustainable development (Ferlie *et al.*, 2019; Pestoff, 2019; Torfing *et al.*, 2016). HP and co-creation, moreover, are predicated on a like moral ethos. In addition to this, they are both participative approaches, and tightly connected to democratic processes (Ferlie *et al.*, 2019; Marmot and Allen, 2014; WHO, 2013, 2019).

Theoretically, both HP and co-creation approaches are heavily influenced by asset-based approaches and capacity building (Morgan and Ziglio, 2007; Torfing *et al.*, 2016; WHO, 2013). Combined with complexity-informed HP, such approaches could empower communities and societies to enforce joint action towards shared, desired goals for the common good. This could prevent the problematic focus on addressing (individual) risk and enforcing more expert-dependency, threatening a sustainable development of human welfare. In this way, mistakes of previous interventions focused on piecemeal change, as highlighted by Mohammadi (2019), could be avoided. Co-creation facilitates the recognition of capabilities in and between people and nurtures conditions for success. It is intuitive,

moreover, that co-creation could offer theoretical and empirical support to the practical application of complexity informed HP. Taking action on the social determinants of health are often intensely political (Hanefeld *et al.*, 2019; Marmot and Allen, 2014). A co-creational approach also facilitates democratic innovations in line with Kickbush and Gleicher's (2012) collaborative imperative within an inclusive, deliberative democratic approach (Ferlie *et al.*, 2019; Torfing *et al.*, 2016; Smith, 2009). It is proposed, moreover, that a shared moral ethos renders co-creation an appropriate approach for complexity informed HP practice, and to nurture further development of health and equity in all policies in line with recommendations from WHO (2019).

This proposition, however, comes with a solid warning. Only a few articles eligible for this scoping review explicitly addressed equity and social justice. Participation should not be viewed as a value in itself, rather participation should be carefully addressed in terms of representation. In some instances, research on co-creation has shown a social divide in participation (Jakobsen and Andersen, 2013; Pestoff, 2019; Selloni, 2017). Disadvantaged citizens may be constrained from participating in co-creation by a lack of knowledge, and by a lack of conditions creating accessibility and capabilities for participation, thus silencing their needs, presence and voice (Jakobsen and Andersen, 2013; Smith, 2009; Young, 2000). Added to this the dominant conceptualisation of co-creation is predicated on the implicit assumption that all service users are rational actors (AUTHOR). Without a critical appreciation of this, using co-creation as a virtue in itself (Voorberg *et al.*, 2015) could (unintentionally) increase health inequity via the exclusion of certain voices. There is a need to explore the potential harmful effects of co-creation on health equity and social justice in further empirical and theoretical work. We suggest that future research should address this concern.

Our second proposition concerns the enablement of the first proposition. Co-creation is a relational and heterogeneous process that results in a public value experience (Osborne, 2018). Our results show that the practical combination of HP and co-creation is a positive union that brings numerous and multi-level (individual and population wide) benefits. As Mohammadi (2019) articulates, health is a complex issue that is experienced at both individual and societal levels. HP is also a complex undertaking that must accommodate the multiplicitous and changeable factors associated with the health issue being tackled, but also the fluid and relational nature of citizens, public services and other stakeholders involved.

In much the same way as Mohammadi (2019) critiques previous HP initiatives, AUTHOR (2019; 2020) have critiqued the conceptualisation of co-creation. Indeed, they propose a reconceptualization of co-creation based on assemblage theory (Deleuze and Guattari, 1987) in order to manage, account for, and embrace the complexities of co-creation processes, where multiplicity, communality, and inclusion are the focus. Here, co-creation is defined in these terms; as a relational, fluid and changing process that involves a range of factors and will be different for different people depending on their own circumstances.

As suggested by several of the articles included in our review, bridging the know-do gap within HP practice and policy requires much more than linear translation of knowledge (e.g. Cairney and Oliver, 2017; Dickerson *et al.*, 2019; van den Driessen Mareeuw *et al.*, 2015). According to van den Driessen Mareeuw *et al.* (2015), an innovation system perspective is crucial. This needs to include broader stakeholder involvement as well as the creation of social, economic, discursive and contextual conditions for achieving innovation and institutional change. Based on these recent works, we propose: the adoption of a complexity informed approach to the co-creation of HP work will allow the complexities of both health, public services and societal development to be accounted for and negotiated. Critical to this



argument is that such an approach could induce knowledge- co-creation and much needed innovation, enabling a better chance of success.

Our final proposition concerns the philosophy of science and methodology. Another criticism of previous HP research and practice is that it is generally a-theoretical and a-philosophical (Lindström and Eriksson, 2008; Seedhouse, 2004). Our review supports this critique. Only one of the included articles (Haar *et al.*, 2014) was explicit about their ontological and epistemological stance, and very few studies advanced the theoretical underpinnings of HP. This is also often the case for literature addressing co-creation (Voorberg *et al.*, 2015). Owing to this lack, we propose that future academic work combining complexity informed HP and co-creational approaches is underpinned by a clear and appropriate philosophical approach to research. Mohammadi's (2019) suggestions of complexity science and AUTHOR (2019; 2020) application of Deleuze and Guattari's (1987) logic of assemblage in order to make sense of the value co-creation process provide workable foundations for further development. We encourage further discussions on ontological and epistemological groundings of HP.

Methodologically, case studies dominated the articles included in our review. The same pattern was also found in a major, systematic literature review on co-creation and co-production with citizens in public innovation, where the literature was dominated by (single) case studies (Voorberg *et al.*, 2015). Although such articles represent vital contributions to the development of HP, we suggest that co-creation should be explored as an approach to HP in a more pluralistic manner in terms of the methodologies applied. This would allow the complexities inherent within such work to be explored further. For this reason, we propose that research concerning complexity informed HP and co-creation should be based on appropriate research methodologies in order to ensure that the complexities of health, well-being and equity are addressed. Especially, and in accordance to co-creational principles of

participation, collaboration, empowerment and context-sensitivity, we support Lems *et al.* (2020) request for more action research-oriented studies in further developments of linking co-creation to HP (e.g. Gergen, 2014; Hersted, Ness, and Frimann, 2019).

### **Limitations**

Although the databases used in our search cover a very wide range of relevant journals, this could act as a weakness as relevant journals could miss out from the search. Further, a potential limitation could be a “publication bias”, favouring positive results of applying a co-creation approach to HP. Our scoping review have only examined peer-reviewed articles in scientific journals. As co-creation is rapidly gaining interest, it might be that the analysis could be better informed by also including grey literature, practice narratives and policy documents. The exclusion of non-English language articles could also be a weakness. Future research should address these concerns, at the present study only represent a scope of the scientific literature to create a starting-point for further progress.

### **RECOMMENDATIONS AND CLOSING COMMENTS**

Thirty years ago, the Ottawa Charter defined HP and described key principles for actions linked to health as a human right, empowerment of people and communities and working through partnerships. According to Kickbush and Gleicher (2012), collaboration is the new imperative for health and well-being. This is made explicit by SDG #17, where collaboration is key for sustainable development. Still, the question remains: how can we approach this request? We conclude that the practice and theory of co-creation provides HP with a well needed, credible platform for value creation, dealing with the complexities inherit to health and well-being for all as societal goals.

Based on this review, and the propositions outlined above, the co-creation approach gives a promising outset to further development of ‘complexity-informed’ HP. We suggest that co-creation can support the success of complexity-informed HP initiatives by providing a framework for participative, collaborative, context-sensitive and knowledge-based practice that reflects the complex nature of health. Future HP research and practice development should progress the linking of these two approaches. It is crucial that the implementation of complexity informed HP is underpinned by a shared philosophical approach, whereby complexity can be both accounted for and embraced. An ecologically oriented whole systems approach that recognises complexity and importantly the fluid and changeable nature of this complexity is needed (Marston, 2016; WHO, 2013; 2016; 2019).

Supported by the ethos of the OC and later seminal WHO declarations, we suggest that complexity-informed HP should be framed through addressing human rights and the SDG’s, and develop actions, research and theory to support integration of SDG #17 into complexity-informed HP. In combining HP and co-creation as two complementary approaches HP initiatives can reverse the current trend of failure and that success is achievable at both individual and societal levels. Aligning the two approaches to public value creation could ultimately progress people to increase control over the determinants of health and thereby improve their health as the OC prescribed in 1986. We hope that our propositions spark debate, inspire change, and stimulates further innovation and experimentation to push the HP agenda forward.

## REFERENCES

- Antonovsky, A. (1996) The salutogenic model as a theory to guide health promotion. *Health Promotion International*, **11**, 11–18.
- Ares, G., Machín, L., Vidal, L., Aschemann-Witzel, J., Otterbring, T., Curutchet, M. R., Giménez, A. and Bove, I. (2020). How Can We Motivate People to Use Nutritional Warnings in Decision Making? Citizen Co-Created Insights for the Development of Communication Campaigns. *Health Education & Behavior*, **47**, 321–331.
- Arksey H. and O'Malley, L. (2005) Scoping studies: Towards a Methodological Framework. *International Journal of Social Research Methodology*, **8**, 19-32.
- Bloch, P., Toft, U., and Reinbach,, H. C. (2014) Revitalizing the setting approach – supersettings for sustainable impact in community health promotion. *International Journal of Behavioral Nutrition and Physical Activity*, **11**, September 14, 2014: 10.1186/s12966-014-0118-8.
- Braun, V., and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, **3**, 77-101.
- Cairney, P. and Oliver, K. (2017) Evidence-based policymaking is not like evidence-based medicine, so how far should you go to bridge the divide between evidence and policy? *Health Research Policy and Systems*, **15**, April 26, 2017: [10.1186/s12961-017-0192-x](https://doi.org/10.1186/s12961-017-0192-x)
- Cheetham, M., Wiseman, A., Khazaeli, B., Gibson, E., Gray, P., Van der Graaf, P., and Rushmer, R. (2018) Embedded research: A promising way to create evidence-informed impact in public health? *Journal of Public Health*, **40**, 64– 70.
- Cheng, Q., Shum, A.K.Y., Ip, F.W.L., Wong, H.K., Yip, W.K.K., Kam, A.H.L. and Yip, P.S.F. (2019) Co-Creation and Impacts of a Suicide Prevention Video. *Crisis*. May 8, 2019: 201910.1027/0227-5910/a000593

AUTHOR (2019)

AUTHOR (2020)

Commission on Social Determinants of Health (2008) *Closing the Gap in a Generation – Health Equity Through Action on the Social Determinants of Health*. World Health Organization, Geneva, Switzerland.

Daly-Smith, A., Quarmby, T., Archbold, V.S.J., Corrigan, N., Wilson, D., Resaland, G. K. et al. (2020) Using a multi-stakeholder experience-based design process to co-develop the Creating Active Schools Framework. *International Journal of Behavioural Nutrition and Physical Activity* **17**, February 7, 2020: 10.1186/s12966-020-0917-z

Daykin, N., Gray, K., McCree, M. and Willis, J. (2017) Creative and credible evaluation for arts, health and well-being: Opportunities and challenges of co-production. *Arts & Health: An International Journal for Research, Policy and Practice*, **9**, 123–138.

Deleuze, G. and Guattari, F. (1987) *A thousand plateaus*. Continuum, London.

Dickerson, J., Bird, P. K., Mceachan, R. R. C., Pickett, K. E., Waiblinger, D., Uphoff, E., et al. (2016) Born in Bradford's better start: an experimental birth cohort study to evaluate the impact of early life interventions. *BMC Public Health*, **16**, August 4, 2016: 10.1186/s12889-016-3318-0.

Eriksson, M., Lindström, B. (2008) A salutogenic interpretation of the Ottawa Charter. *Health Promotion International*, **23**, 190-199.

Ferlie, E., Pegan, A., Pluchinotta, I., Shaw, K. (2019) *Co-Production and Co-Governance: Strategic Management, Public Value and Co-Creation in the Renewal of Public Agencies across Europe*. Deliverable 1.1: Literature Review for the H2020 project COGOV. Retrieved from: <http://cogov.eu/wp-content/uploads/2019/10/COGOV-Deliverable-1.1-DRAFT.pdf> (last accessed 20 October 2019).

Freebairn L., Rychetnik L., Atkinson J., Kelly P., McDonnell G., and Roberts N. et al.

- (2017) Knowledge mobilisation for policy development: implementing systems approaches through participatory dynamic simulation modelling. *Health Research Policy and Systems*, **15**, October 2, 2017: 10.1186/s12961-017-0245-1.
- Freebairn L., Atkinson, J. A., Kelly, P. M., McDonnell, G. and Rychetnik, L. (2018) Decision makers' experience of participatory dynamic simulation modelling: Methods for public health policy. *BMC Medical Informatics and Decision Making*, **18**, December 12, 2018: 10.1186/s12911-018-0707-6
- Gergen, K. J. (2014) From mirroring to world-making: Research as future-forming. *The Journal of Social Behaviour*, **45**, 287-310.
- Greenhalgh, T. and Papoutsi, C. (2018) Studying complexity in health services research: desperately seeking an overdue paradigm shift. *BMC Medicine*, **16**, June 20, 2018: 10.1186/s12916-018-1089-4
- Gugglberger, L. (2018) Can health promotion also do harm? *Health Promotion International*, **33**, 557–560.
- Haar, M. T., Aarts, N., and Verhoeven, P. (2014) Finding common ground in implementation: Towards a theory of gradual commonality. *Health Promotion International*, **29**, 2014-260.
- Hanefeld, J., Reeves, A., Brown, C. and Östlin, P. (2019). Achieving health equity: democracy matters. *Lancet*, **394**, 1600-1601.
- Heimburg D. v. and Hakkebo B. (2017) Health and equity in all policies in local government: processes and outcomes in two Norwegian municipalities. *Scandinavian Journal of Public Health*, **45**, 68-76.
- Hersted, L., Ness, O. and Frimann, S. (eds.) (2019) *Action Research in a Relational Perspective: Dialogue, reflexivity, power and ethics*. Routledge, New York.
- Jakobsen, M., and Andersen, S. C. (2013) Coproduction and Equity in Public Service

- Delivery. *Public Administration Review*, **73**, 704-713.
- Jasanoff, S. (ed) (2004). *States of knowledge: the co-production of science and the social order*. Routledge, New York.
- Kickbush, I. and Gleicher, D. (2012) *Governance for health in the 21st century*. WHO, Copenhagen. Retrieved from:  
<http://www.euro.who.int/en/publications/abstracts/governance-for-health-in-the-21st-century> (last accessed 18 October 2019).
- Lassen, A. J. (2019) Agencements of Reanimation. Facilitating an Active Old Age through Danish Co-Creation Initiatives *Anthropology & Aging*, **40**, 23-36.
- Leask, C. F., Sandlund, M., Skelton, D. A. et al. (2019a) Framework, principles and recommendations for utilising participatory methodologies in the co-creation and evaluation of public health interventions. *Research Involvement and Engagement*, **5**, January 09, 2019:10.1186/s40900-018-0136-9
- Leask, C. F., Colledge, N., Laventure, R. M. E., McCann, D. A. and Skelton, D. A. (2019b) Co-Creating Recommendations to Redesign and Promote Strength and Balance Service Provision. *International Journal of Environmental Research and Public Health*, **16**, August 30, 2019:10.3390/ijerph16173169
- Lems, E., Hilverda, F., Sarti, A., van der Voort, L., Kegel, A., Pittens, C., Broerse, J. and Dedding, C. (2020) 'McDonald's Is Good for My Social Life'. Developing Health Promotion Together with Adolescent Girls from Disadvantaged Neighbourhoods in Amsterdam. *Children & Society*, **34**, 204-219.
- Levac, D., Colquhoun, H., O'Brien, K. K. (2010) Scoping studies: advancing the Methodology. *Implementation Science*, **5**, September 20, 2010:10.1186/1748-5908-5-69
- Lindström, B., Eriksson, M. (2006) Contextualizing Salutogenesis and Antonovsky in public

- health development. *Health Promotion International*, **21**, 238-244.
- Mansfield, L. (2016) Resourcefulness, reciprocity and reflexivity: the three Rs of partnership in sport for public health research. *International journal of sport policy and politics*, **8**, 713–729.
- Marmot , M. , Allen , J. , Bell , R. , Bloomer , E. , and Goldblatt, P. (2012) WHO European review of social determinants of health and the health divide. *Lancet*, **380**, 1011 – 1029.
- Marmot M. and Allen J. (2014) Social determinants of health equity. *American Journal of Public Health*, **104**, 517–519.
- Marston, C., Hinton, R., Kean, S., Baral, S., Ahuja, A., Costello, A., et al. (2016) Community participation for transformative action on women's, children's and adolescents' health. *Bulletin of World Health Organization*, **94**, 376-382.
- Mays, N. and Pope, C. (2020) Quality in Qualitative Research. In C. Pope and N. Mays (Eds.), *Qualitative Research in Health Care* (4<sup>th</sup> ed.) London: John Wiley and Sons Ltd, 211-233.
- McGeechan, G. J., Woodall, D., Anderson L., Wilson, L; O'Neill, G., Newbury-Birch, D (2016) A Coproduction Community Based Approach to Reducing Smoking Prevalence in a Local Community Setting. *Journal of Environmental and Public Health*, June 6, 2016: [10.1155/2016/5386534](https://doi.org/10.1155/2016/5386534)
- McNamee S. (2010) Research as Social Construction: Transformative Inquiry. *Health and Social Change*, **1**, 9-19.
- Mohammadi, N. K. (2019) One step back toward the future of health promotion: complexity-informed health promotion, *Health Promotion International*, **34**, 635–639.
- Morgan, A. and Ziglio, E. (2007) Revitalising the evidence base for public health: an assets model. *Promotion and Education*, **2**, 17– 22.



- Morgan, K., Van Godwin, J., Darwent, K. and Fildes, A. (2019) Formative research to develop a school-based, community-linked physical activity role model programme for girls: CHOosing Active Role Models to INspire Girls (CHARMING). *BMC Public Health* **19**, April 25, 2019: 10.1186/s12889-019-6741-1
- Naaldenberg, J., Vaandrager, L., Koelen, M., Wagemakers, A.-M., Saan, H., and de Hoog, K. (2009) Elaborating on systems thinking in health promotion practice. *Global Health Promotion*, **16**, 39–47.
- Osborne, S. (2018) From public service-dominant logic to public service logic: are public service organizations capable of co-production and value co-creation? *Public Management Review*, **20**, 225–231.
- Osborne, S., Radnor, Z. J., and Strokosch, K. (2016) Co-production and the co-creation of value in public services: a suitable case for treatment? *Public Management Review*, **18**, 639-653.
- Ostrom, E. (1996) Crossing the Great Divide: Coproduction, synergy, and development. *World Development*, **24**, 1073–87.
- Pestoff, V. (2019) *Co-production and Public Service Management: Citizenship, Governance and Public Management*. Routledge, London.
- Plsek, P.E. and Greenhalgh, T. (2001) The challenge of complexity in health care. *BMJ*, **323**, 625-628.
- Pūras, D. (2019) *Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health*. United Nation Human Rights Council, Forty-first session. A/HRC/41/34. Retrieved from: [https://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/HRC/41/34](https://www.un.org/en/ga/search/view_doc.asp?symbol=A/HRC/41/34). (last accessed 15 September 2019).
- Seedhouse, D. (2004) *Health Promotion, Philosophy, Prejudice and Practice*. Second Edition. Wiley & Sons LTD, Chichester, West-Sussex.

- Selloni, D. (2017) *Co-design for Public Interest Services*. Springer, Milano.
- Sirola-Karvinen, P., Jurvansuu, H., Rautio, M. and Husman, P. (2010) Cocreating a Health-Promoting Workplace. *Journal of Occupational and Environmental Medicine*, **52**, 1269–1272.
- Smith, G. (2009) *Democratic Innovations: Designing Institutions for Citizen participation*. Cambridge University Press, Cambridge.
- Radnor, Z., Osborne, S. P., Kinder, T. and Mutton, J. (2014) Operationalizing co-production in public services delivery: The contribution of service blueprinting. *Public Management Review*, **16**, 402-423.
- Sirola-Karvinen, P., Jurvansuu, H., Rautio, M., Husman, P. (2010) Cocreating a Health-Promoting Workplace. *Journal of Occupational and Environmental Medicine*, **52**, 1269–1272.
- Torring, J., Sørensen, E. and Røiseland, A. (2016) Transforming the Public Sector Into an Arena for Co-Creation: Barriers, drivers, benefits and ways forward. *Administration & Society*, **51**, 1-31.
- United Nations (2015) *Transforming Our World, the 2030 Agenda for Sustainable Development*. General Assembly Resolution, Seventieth session A/RES/70/1.
- Retrieved from:  
[https://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E)  
(last accessed 10 September 2019).
- Vallentin-Holbech, L., Dalgaard Guldager, J., Dietrich, T., Rundle-Thiele, S., Majgaard, G., Lyk, P. and Stock, C. (2020) Co-Creating a Virtual Alcohol Prevention Simulation with Young People. *International Journal of Environmental Research and Public Health*, **17**, February 09, 2020: [10.3390/ijerph17031097](https://doi.org/10.3390/ijerph17031097)
- van den Driessen Mareeuw, F., Vaandrager, L., Klerkx, L., Naaldenberg, J., and Koelen, M.

- (2015) Beyond bridging the know-do gap: a qualitative study of systemic interaction to foster knowledge exchange in the public health sector in The Netherlands. *BMC Public Health*, **15**, 922–922.
- van den Heerik, R. A. M., van Hooijdonk, C. M. J., Burgers, C. and Steen, G. J. (2017) “Smoking Is Sóóó ... Sandals and White Socks”: Co-Creation of a Dutch Anti-Smoking Campaign to Change Social Norms. *Health Communication*, **32**, 621-628.
- Verloigne M., Altenburg, T. M., Chinapaw, M. J. M., Chastin, S., Cardon, G., De Bourdeaudhuij, I. (2017) Using a co-creational approach to develop, implement and evaluate an intervention to promote physical activity in adolescent girls from vocational and technical schools: a case control study. *International Journal of Environmental Research and Public Health*, **14**, 2–17.
- Voorberg, W. H., Bekkers, V. J. J. M., and Tummers, L. G. (2015) A Systematic Review of Co-Creation and Co-Production: Embarking on the social innovation journey. *Public Management Review*, **17**, 1333-1357.
- Væggemose, U., Ankersen, P. V., Aagaard, J. and Burau, V. (2018) Co-production of community mental healthservices: Organising the interplay between public services and civil society in Denmark. *Health and Social Care in the Community*, **26**, 122–130.
- Wolfson, M., Wagoner, K.G., Rhodes, S.D., Egan, K.L., Sparks, M., Ellerbee, D., Song, E.Y., Debinski, B., Terrillion, A. and Vining, J. (2017) Coproduction of research questions and research evidence in public health: the study to prevent teen drinking parties. *BioMed Research International*, June 14, 2017: 10.1155/2017/3639596.
- World Health Organization (1986) *The Ottawa Charter for Health Promotion*. Retrieved

from <http://www.who.int/healthpromotion/conferences/previous/ottawa/en/>. (last accessed 10 September 2019)

World Health Organization (2009) *Nairobi Call to Action for Closing the Implementation Gap in Health Promotion*. World Health Organization, Geneva.

World Health Organization (2013) *Health 2020: a European policy framework and strategy for the 21st century*. WHO Regional Office for Europe, Copenhagen.

World Health Organization (2016) *The Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development*. World Health Organisation, Geneva.

World Health Organization (2019) *Healthy, Prosperous lives for all: the European Health Equity Status Report*. World Health Organization, Copenhagen.

Yap, J., Breedvelt, J. J. F., Goodman, J. and Kousoulis, A. A. (2019) Conducting evaluations with older populations in supported housing. *Working with Older People*, **23**, 1-6.

Young, I. M. (2000) *Inclusion and Democracy*. Oxford University Press, Oxford.

Figure 1. Search strategy results

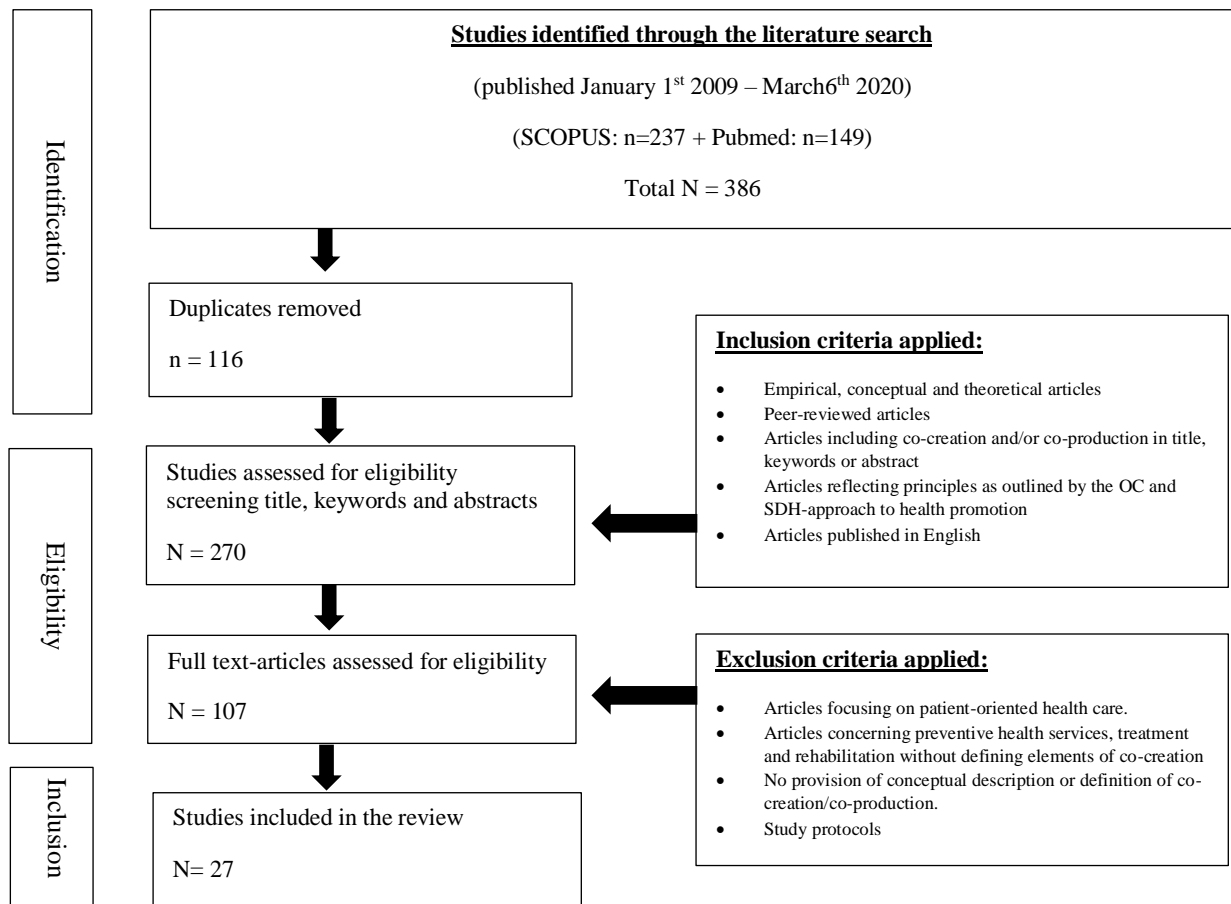


Table 1. Overview of identified articles

Author, year of publication, country	Methodology and main aims	Link between health promotion and co-creation	Main focus and major findings
Sirola-Karvinen <i>et al.</i> (2010) Finland	<ul style="list-style-type: none"> <li>Qualitative, descriptive</li> <li>Aim: to report a co-created method enabling organizations to manage well-being at work</li> </ul>	Workplace health promotion using a co-creation management- tool (TEDI) based on a salutogenic approach.	<b>Setting, mental health</b> Co-creation was premised on participation, commitment, and empowerment. Well-being at work was defined broadly. Authors found that the TEDI cocreation method contributed to overseeing the promotion of health and well-being and achieving productive and sustainable development in the organization.
Haar <i>et al.</i> (2014) Netherlands	<ul style="list-style-type: none"> <li>Mixed methods, grounded theory. Delphi study (100 HP stakeholders at local/regional level).</li> <li>Aim: To better understand the dynamic process of complex collaboration.</li> </ul>	Implementation of a combined lifestyle intervention aimed at promoting exercise and healthy eating. Implementation was based co-creation of local partnerships.	<b>Lifestyle, knowledge-base</b> Co-creation emerged and was collectively adopted as a collaborative strategy between stakeholders in order to tackle complexity. Authors found that co-creation facilitated various approaches to achieving the intervention's ambitions. They conclude that co-creation can facilitate shared knowledge-creation and sharing of implementation strategies.
van den Driessen Mareeuw <i>et al.</i> (2015) Netherlands	<ul style="list-style-type: none"> <li>Qualitative, exploratory (semi-structured interviews with 33 stakeholders from various sectors and levels of governance).</li> <li>Aim: to identify key tensions causing the know-do gap by using a systemic approach</li> </ul>	Co-creation bridging research and practice through a systemic approach, viewing the public health sector as an innovative system.	<b>Knowledge-base</b> Authors found that bridging the know-do gap requires much more than linking research to practice or translating knowledge, thus suggesting an innovation system perspective as crucial (i.e. broader stakeholder involvement, the creation of social, economic, and contextual conditions such as achieving shared visions, building networks, institutional change, removing financial and infrastructural barriers), inducing knowledge co-creation and innovation at multiple system levels.
McGeechan <i>et al.</i> (2016) UK	<ul style="list-style-type: none"> <li>Quantitative, descriptive</li> <li>Aim: to outline baseline results of a co-produced evaluation of an asset-based approach to improving health and well-being through promoting tobacco control</li> </ul>	Co-creation through asset-based community development to reduce smoking prevalence	<b>Lifestyle, setting</b> Co-creation was viewed as a promising approach that may help reduce smoking prevalence.
Mansfield (2016) UK	<ul style="list-style-type: none"> <li>Perspective article</li> </ul>	Co-production of knowledge about sport for public health and well-being.	<b>Knowledge-base, lifestyle</b> Concludes that understanding resourcefulness, reciprocity and reflexivity in partnerships is a way to demythologize the role

	<ul style="list-style-type: none"> <li>Aim: to explore a conceptual framework of the dynamics of research–policy–practice partnerships in sport</li> </ul>		of sport in public health and present theoretically informed analyses about processes of knowledge production, dissemination and use.
Marston <i>et al.</i> (2016) Transnational	<ul style="list-style-type: none"> <li>Perspective article.</li> <li>Aim: To examine the role of community participation in transforming societies towards health and well-being for women, children and adolescents.</li> </ul>	Co-production of health-care, integrated to HP community development.	<b>Knowledge-base, policy, equity</b> Three interdependent areas for action towards greater participation of the public in health were discussed: improving capabilities for individual and group participation; developing and sustaining people-centered health services; and social accountability. Found that participatory approaches are needed in each area to help achieve health and development goals, arguing that this is a question of civil rights and political will.
Daykin <i>et al.</i> (2017) UK	<ul style="list-style-type: none"> <li>Mixed methods (survey, interviews, focus groups)</li> <li>Aim: to report findings from a knowledge exchange project developing online resources to strengthen knowledge and capacity within the arts and health sector.</li> </ul>	Opportunities for arts arising from current health and social care policy agendas through co-production between stakeholders (evaluators, researchers, artists, health professionals, commissioners and funders)	<b>Knowledge-base, policy</b> Authors argue that co-production between stakeholders is needed to strengthen evaluation practice and support the development of the arts and health sector. Effective co-production can be undermined by structural and cultural barriers as well as unequal stakeholder relationships in terms of power relations.
Heimburg and Hakkebo (2017) Norway	<ul style="list-style-type: none"> <li>Qualitative, descriptive. Case study/practice narrative of policy development in two municipalities.</li> <li>Aim: To identify key factors in implementing Health and Equity in All Policies (HEiAP) at the local level</li> </ul>	Implementation of equity in health in all policies. Co-creation in a “whole-of-society- approach” was adopted as a strategy for policy development and implementation.	<b>Knowledge-base, policy, equity</b> Pinpoints the importance of narrating a clear vision, developing joint societal goals, working with asset-based approaches, and ensuring accountability and political commitment in implementing HEiAP. authors highlight the need for strengthening system and human capacity in local governments that resonates with WHO objectives of improving health for all, reduce inequity, and improving leadership and participatory governance for health.
Cairney and Oliver (2017) Transnational	<ul style="list-style-type: none"> <li>Qualitative, exploratory. Identifies insights from secondary data.</li> <li>Aim: to combine empirical and normative elements to identify the ways in which scientists can, do and could influence policy.</li> </ul>	“Evidence-based policy-making”, using policy theory and principles of co-creation between researchers, local public bodies, interest groups and service users.	<b>Knowledge-base, policy</b> Concludes that successful engagement in ‘evidence-based policymaking’ requires pragmatism, combining scientific evidence with governance principles, and persuasion to translate complex evidence into simple stories. Authors recognize the need for reflection and negotiation regarding roles in co-creation, especially on regarding persuasion to make policymakers act and secure a hierarchy of evidence underpinning policy. They conclude that these are value-driven and political, not just ‘evidence-based’ choices.

van den Heerik <i>et al.</i> (2017) Netherlands	<ul style="list-style-type: none"> <li>Mixed methods, corpus-linguistic analysis.</li> <li>Aim: to report relevant theories for the study of co-creation and to describe a case study</li> </ul>	Co-creation of the Dutch “Smoking is so outdated” health campaign using Twitter and Facebook in communication.	<b>Lifestyle, setting</b> Considers co-creation to be a persuasive strategy in health campaigns. Authors found that co-creation enables target audience to become active campaign producers, providing them with an opportunity to disseminate campaign messages from their own perspective. It is warned that a co-creation risks weakening the intended campaign message.
Freebairn <i>et al.</i> (2017) Australia	<ul style="list-style-type: none"> <li>Qualitative, descriptive. Case study of three adapted policies (childhood obesity, alcohol and diabetes in pregnancy).</li> <li>Aim: To describe experiences and compile lessons derived from working with participatory dynamic simulation modelling in policy development</li> </ul>	Public health policy focus. Principles of co-creation used to mobilize knowledge for public health stakeholders through participatory dynamic simulation modelling.	<b>Knowledge-base, policy, lifestyle</b> Found that participatory methods place decision-makers at the center of process and embed deliberative methods and the co-production of knowledge. The simulation models function as health policy and dynamic decision support tools that integrate diverse forms of evidence, including research evidence, expert knowledge and localized contextual information.
Verloigne <i>et al.</i> (2017) Belgium	<ul style="list-style-type: none"> <li>Mixed methods, intervention study in three schools compared to three control schools.</li> <li>Aim: To describe the co-creation process and evaluate experiences, and evaluate the effect of interventions on physical activity, individual, sociocultural and school-based factors.</li> </ul>	Promoting physical activity in adolescence girls through a co-creational process between researchers and the girls.	<b>Lifestyle, setting</b> The girls involved in the study were positive about having a voice in developing an intervention. It was concluded that using a co-creational approach could be feasible in the future. However, as interventions were minimal, effects were limited or undetectable.
Væggemose <i>et al.</i> (2017). Denmark	<ul style="list-style-type: none"> <li>Qualitative, critical case study of two municipalities.</li> <li>Aim: To investigate how provider organizations and their staff navigate the logics of public services and civil society.</li> </ul>	Exploring a Community Family program, aiming to support the social network of mental health users. Co-creation between service-users, professionals and volunteer families.	<b>Mental health, knowledge-base</b> Results confirm staff roles as a key to co-creation. A close interplay between public services and civil society logics was found to be essential for the organization of co-production. Authors found that corresponding objectives, activities and collaborative relations are keys for facilitating the co-productive practice of staff. Authors conclude that co-production can succeed in a mental health setting associated with stigma and in a welfare state dominated by public services.
Wolfson <i>et al.</i> (2017) USA	<ul style="list-style-type: none"> <li>Mixed methods Survey, focus groups.</li> </ul>	Co-creation through a partnership between national membership organization, a coalition advisory board,	<b>Knowledge-base, lifestyle, policy</b> The partnership was effective in terms of identifying a research question with high public health significance, enhancing the intervention, and improving research methods.



	<ul style="list-style-type: none"> <li>Aim: to describe an attempt to hybridize Community-based participatory research (CBPR) and community trials.</li> </ul>	intervention communities, and a research team, collaborating on community strategies to prevent underage drinking parties.	Challenges included community coalition representatives' greater focus on their own communities rather than the production of broader scientific knowledge. Authors argue that co-creation is an appropriate approach to narrow the gap between research, policy, and practice.
Cheetham <i>et al.</i> (2018) UK	<ul style="list-style-type: none"> <li>Qualitative, descriptive organizational case study. Embedded research (ER)</li> <li>Aim: To outline experiences of co-production of research evidence in a local authority setting.</li> </ul>	Co-creation of public health knowledge between researchers and practitioners.	<b>Knowledge-base</b> The embedded researcher acted as a sounding board, knowledge broker, facilitator, capacity builder and catalyst for shared learning, change and improvement. Tackling institutional prerequisites such as organizational culture, norms and awareness of socio-political realities of public health, the authors found that ER enables new co-produced solutions to become possible, pushing the impact of research forward.
Freebairn <i>et al.</i> (2018) Australia	<ul style="list-style-type: none"> <li>Qualitative, descriptive. Semi-structured interviews with participants from three participatory simulation modelling case studies</li> <li>Aim: to report on the experience of end-users who participated in three participatory simulation modelling case studies in policy settings.</li> </ul>	Public health policy development through a co-creational process with the purpose to inform decision making.	<b>Knowledge-base, policy</b> Authors found that the 'co-production' aspect of the participatory approach was highly valued by participants, and essential to building understanding of the modelling process, and thus trust in the model and its outputs as a decision-support tool. The process, however, was found to be resource intensive.
Cheng <i>et al.</i> (2019) Hong Kong	<ul style="list-style-type: none"> <li>Mixed methods, descriptive case study</li> <li>Aim: to investigate the impacts of promoting suicide prevention through social media and evaluate the co-creation process of the project with a popular YouTuber</li> </ul>	Suicide prevention by using principles of co-creation. A short-film was co-produced by a YouTuber and a research team.	<b>Mental health, setting</b> Co-creation of the intervention video demonstrated the distinct but complementary roles of the researchers and the YouTuber. Authors states that a co-creational approach enabled the film to reach a broader youth population, raising awareness among online youth, including "at-risk individuals".
Dickerson <i>et al.</i> (2019) UK	<ul style="list-style-type: none"> <li>Qualitative, descriptive. Case study of evaluations of multiple complex community interventions.</li> <li>Aim: To develop and describe comprehensive strategies and a toolkit to support key stakeholders in evaluating community-based public</li> </ul>	Improving evidence-base for public health interventions. Co-creation through working in partnership with key stakeholders.	<b>Knowledge-base</b> The authors state that co-production between key stakeholders can efficiently improve the evidence-base for public health interventions through integration of research into system-wide practice.

	health interventions delivered in real life settings.		
Leask <i>et al.</i> (2019). UK	<ul style="list-style-type: none"> <li>• Qualitative, descriptive. Case studies targeting different health behaviors</li> <li>• Aim: to identify a key set of principles and recommendations for co-creating public health interventions.</li> </ul>	Improving conditions and policy for healthy lifestyle. Co-creation of public health interventions through planning, delivery and evaluation.	<b>Lifestyle, knowledge-base, policy</b> To deal with the complex variability between individual lifestyles and settings, collaborating with communities and end-users is recommended. Authors show how co-created solutions can be scaled up to a population level. The recommendations aim to help the co-creation of public health interventions by providing a framework and governance to guide the process.
Yap <i>et al.</i> (2019) UK	<ul style="list-style-type: none"> <li>• Mixed-methods (survey, focus groups)</li> <li>• Aim: to reflect on the challenges and learnings of evaluating a public mental health program with older people (Standing Together)</li> </ul>	Co-created evaluation of a public mental health program addressing housing, community and loneliness among seniors.	<b>Mental health, setting</b> Co-production was found to be an overarching theme linking the recommendations covering the role of practitioners, evaluators, setting and methodology. Authors found that most of the challenges encountered can be alleviated with greater focus on co-production during the evaluation design stage.
Ares <i>et al.</i> (2019) Uruguay	<ul style="list-style-type: none"> <li>• Qualitative, descriptive (open ended survey)</li> <li>• Aim: to obtain qualitative, citizen co-created insights for the design of a communication campaign on nutritional warnings</li> </ul>	Marketing oriented co-creation between Uruguayan citizens (recruited from Facebook) and researchers.	<b>Lifestyle, knowledge base</b> Authors found that a communication campaign based on key concepts identified by citizens could contribute to increasing the efficacy of nutritional warnings.
Lassen (2019) Denmark	<ul style="list-style-type: none"> <li>• Qualitative, ethnographic (interviews, field work)</li> <li>• Aim: to explore how municipalities aim to reanimate old age through co-creation initiatives</li> </ul>	Co-creation is explored as a form of governance promoting active citizenship, linked to contemporary healthy and active aging policies	<b>Policy, knowledge base</b> The author describes co-creation as a redistribution of agency in European welfare states, where municipalities become facilitators rather than authorities. Author argues that the aim of co-created initiatives is to engage older citizens, and hence to facilitate an active old age, partly due to increasing health span but also a result of reanimation of older age
Leask <i>et al.</i> (2019) UK	<ul style="list-style-type: none"> <li>• Qualitative, explorative (workshops, fieldwork)</li> <li>• Aim: to co-create recommendations to redesign and promote local leisure services, emphasizing strength and balance activity provision</li> </ul>	Co-creation of recommendations between end-users (pre- and post-retirement citizens) and researchers	<b>Lifestyle, knowledge-base, equity</b> Authors describe benefits of engaging older adults to co-create recommendations for raising awareness about physical activity guidelines for health, and for better leisure service provision to facilitate meeting recommendations made by participants. Authors found that co-creators enjoyed taking part in the process. Co-creators suggested that campaigns could be undertaken at a local level across a variety of settings to widen outreach, and should especially be tailored to

			enhance health literacy amongst those in lower socio-economic groups
Morgan <i>et al.</i> (2019) UK	<ul style="list-style-type: none"> <li>• Qualitative, explorative (interviews, focus groups)</li> <li>• Aim: to gather a variety of stakeholder views to co-produce a school-based, community linked physical activity intervention.</li> </ul>	Co-production of knowledge between preadolescent girls, parents, teachers, researchers and other stakeholders to design intervention	<b>Lifestyle, setting</b> Findings from the research directed the development and implementation of school-based, community-linked intervention. Co-production of knowledge informed the creation of an intervention logic. Authors point to the importance of tailoring the programme to align with local needs, demands and provision.
Vallentin-Holbec <i>et al.</i> (2020) Denmark	<ul style="list-style-type: none"> <li>• Qualitative, participatory (living lab methodology)</li> <li>• Aim: to study young people's involvement in a co-creation process to develop a virtual alcohol prevention simulation tool</li> </ul>	Co-creation guided by the Living Lab methodology between students, HP practitioners, researchers, and film/gaming experts to design and create "VR FestLab"	<b>Lifestyle, setting</b> Co-creation guided by the Living Lab methodology produced added value in terms of empowerment and increased self-efficacy for the students involved, but they reported lack of information on final results. Authors conclude that future Living Labs should plan for communication with participants about further development and implementation processes.
Daly-Smith <i>et al.</i> (2020) UK	<ul style="list-style-type: none"> <li>• Mixed methods</li> <li>• Aim: to co-develop a whole-school physical activity (PA) framework using the double diamond design approach</li> </ul>	Co-creation between a variety of stakeholders (e.g researchers, school staff, sports organizations, public health specialists) to co-design a "Creating Active Schools Framework" (CAS)	<b>Lifestyle, setting</b> Co-creation between practitioners, policy-makers and researchers was found to expose the complexity required to create systems change in a whole-school adaptive system. Authors argue that CAS presents a potential paradigm shift to guide future co-production of PA initiatives 'with' schools, as opposed to traditional approaches of implementing interventions 'on' schools.
Lems <i>et al.</i> (2020) Netherlands	<ul style="list-style-type: none"> <li>• Qualitative, participatory action research (PAR)</li> <li>• Aim: to better understand the complexity of addressing health behavior of adolescent girls with a low socioeconomic position</li> </ul>	Co-creation of health promotion materials on healthy lifestyles, co-creation between adolescent girls and researchers.	<b>Lifestyle, equity</b> The co-creation process was found to generate multiple ideas and tailored health promotion intervention for the participating girls involved. The participating girls openly discussed and learned about lifestyle. Authors argue the co-creation process in itself became a form of health promotion intervention, and suggest that more research is needed to gain insight into the effect of co-creation/PAR as intervention.