



Effective elements of care-physical activity initiatives for adults with a low socioeconomic status: A concept mapping study with health promotion experts

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ABSTRACT

In care-physical activity (care-PA) initiatives, primary care and sports are combined to stimulate PA among adults at risk of lifestyle related diseases. Preliminary results from Dutch care-PA initiatives for adults with a low socioeconomic status (SES) indicate a decrease in participants' body weight and an improved quality of life, however, the elements that make these initiatives successful are yet to be identified. In total, 19 Dutch health promotion experts participated in our concept mapping (CM) of the effective elements of care-PA initiatives for adults with a low SES. The experts identified 111 effective elements of these initiatives, which were grouped into 11 clusters, focusing on: 1) approaching participants within the care-PA initiative, 2) barriers experienced throughout the initiative, 3) long-term implementation, 4) customizing the care-PA initiative to the target population, 5) social support, 6) structure and guidance, 7) the professionals within the care-PA initiative, 8) the accessibility of the care-PA initiative, 9) targeted behaviour and progression, 10) recruitment and administration, and 11) intersectoral collaboration. CM was useful for creating a valuable overview of these effective elements. Our results could be used to improve the development and implementation of future care-PA initiatives for adults with a low SES.

1. Introduction

Regular physical activity (PA) is associated with an increased life expectancy and has been proven to be beneficial for both physical and mental health (Bailey, Hillman, Arent, & Petitpas, 2013; Penedo & Dahn, 2005). For instance, PA reduces the risk of developing several (chronic) illnesses and conditions such as obesity, high blood pressure, and type 2 diabetes, and improves mood, reduces anxiety and depression, and ultimately improves the quality of life and perceived health (Bailey et al., 2013; Penedo & Dahn, 2005). Yet, a large proportion of the population engages in too low levels of PA to profit from these health benefits (World Health Organization, 2018).

Especially people with a low socioeconomic status (SES), which is determined by education, income, and occupation, tend to participate in too little PA. In 2017, roughly half of Dutch adults with a higher level of education did not comply with the Dutch recommended PA guidelines, compared to 65 percent of adults with a lower level of education (RIVM, 2017). Furthermore, people with a low SES tend to have less

knowledge about what a healthy lifestyle entails, and often perceive more barriers in changing one's lifestyle (Chinn, White, Howel, Harland, & Drinkwater, 2006; Lakerveld et al., 2008; Parmenter, Waller, & Wardle, 2000). As such, SES is an important determinant of health inequalities (Bailey et al., 2013; Hildebrandt, Bernaards, & Stubbe, 2013; Mackenbach et al., 2008). Given this, the promotion of PA and a healthy lifestyle is especially relevant for this group.

Lifestyle interventions, such as care-PA initiatives, seem to be a promising strategy for promoting PA and healthy lifestyles (Bukman, 2016; Helmink, van Boekel, van der Sluis, & Kremers, 2011; Schutte, Haveman-Nies, & Preller, 2015). Care-PA initiatives are collaborations between professionals in the primary care sector (e.g., general practitioners, physiotherapists, and dieticians) and professionals in the PA sector (e.g., sports clubs or fitness centres) to encourage or maintain a healthy lifestyle and improve health among individuals who are at risk of a chronic disease, such as diabetes or obesity (Wagemakers, Mulderij, Verkooijen, Groenewoud, & Koelen, 2018). Care-PA initiatives have shown promising results (Helmink et al., 2011; Schutte et al., 2015).

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However, most of these initiatives have not been developed specifically for adults with a low SES and may therefore not be effective in establishing sustainable lifestyle changes among this group (Mulderij, Verkooijen, & Wagemakers, 2019). A tailored approach may be needed for care-PA initiatives to be effective among this group (Helminck et al., 2011). But care-PA initiatives specifically for people with a low SES are scarce and to date, no complete overview of the elements that make them successful, or the effective elements, is available. However, research shows that people with a low SES experience specific barriers that need extra attention in care-PA initiatives, such as lack of financial resources, knowledge, or facilities, or not enjoying exercise (Chinn et al., 2006; Lakerveld et al., 2008; Parmenter et al., 2000). To better fit the development and implementation of care-PA initiatives to the needs of adults with a low SES, we need further insight into the effective elements.

A small number of papers have previously identified the effective elements for lifestyle or PA interventions for a general population (Horodyska et al., 2015; Morgan et al., 2016); for instance, Horodyska et al. (2015) identified the 'good practice characteristics' of diet and PA interventions, developing a checklist that could be used by health promotion scientists to check the presence of these characteristics in interventions. Furthermore, Morgan et al. (2016) described the facilitators of and barriers to being physically active among the general population, which could be translated into effective elements. More recently, Nagelhout, Verhagen, Loos, and de Vries (2018) identified the preconditions for developing lifestyle interventions (not care-PA initiatives) for people with a low SES, such as 'connecting to the perceptions, motivations, desires, and needs of the target population'. In a previous Dutch study, we identified the effective elements of a care-PA initiative in the Netherlands for adults with a low SES (Mulderij, Verkooijen, Koelen, & Wagemakers, 2019), but these results were limited to one specific local care-PA initiative.

In summary, the previous literature has provided some insights into the effective elements of lifestyle interventions, with only one study focusing on a local care-PA initiative for adults with a low SES (Mulderij, Verkooijen, Koelen et al., 2019). Thus, the effective elements of care-PA initiatives for adults with a low SES on a broader scale have not been addressed. To obtain a list of effective elements that could be useful in the development and implementation of care-PA initiatives for adults with a low SES, we aimed to identify the effective elements of care-PA initiatives for adults with a low SES in the Netherlands, based on the experiences of health promotion experts (HPEs).

1.1. Definition and classification of effective elements

The current literature refers to effective elements in several ways, such as active ingredients (Dombrowski et al., 2012; Goodwin, Ostuzzi, Khan, Hotopf, & Moss-Morris, 2016), good practice characteristics (Horodyska et al., 2015), and core components (Blase & Fixsen, 2013). These terms all refer to the parts of an intervention or approach that are essential for its effectivity. Here, we use the definition proposed by Wartna, Vaandrager, Wagemakers, and Koelen (2012), which states that effective elements are "the essential components that make the intervention work. Without these effective elements, the intervention does not work or is less effective".

Effective elements are generally divided into two categories (Wartna et al., 2012): 1) *general effective elements* that improve the effectivity of interventions, regardless of the type of intervention, goal, context, or target population (e.g., using trained professionals), and 2) *specific effective elements* that improve the effectivity of certain interventions with a specific goal, context, or target population, but not of others (e.g., the number of sessions needed for sustained behavioural change in people with a low SES). General effective elements can therefore be seen as the core of the intervention, whereas specific effective elements are more context specific. In the present research, we aimed to make a distinction between general and specific effective elements.

2. Methods

To explore the effective elements of care-PA initiatives for adults with a low SES in the Netherlands, we invited a diverse group of Dutch HPEs with expertise in care-PA initiatives for people with a low SES to begin a dialogue on the effective elements of such initiatives. We used concept mapping (CM) (Kane & Trochim, 2007), since this innovative method reflects the input of the individual HPEs based on their expertise, while still presenting the results in a single overview. The CM process consists of six sequential steps: 1) preparing, 2) brainstorming, 3) sorting, 4) rating, 5) analysing, and 6) discussing and interpreting (Fig. 1).

CM is a group-based approach that integrates qualitative and quantitative research components to conceptualize a topic (Kane & Trochim, 2007): qualitative (step 2) and quantitative (step 4) input of the participants is analysed with quantitative methods, resulting in a cluster map (step 5), which is the input for a discussion in step 6. As such, CM facilitates group-based research, in which the input of all participants is equally reflected in the end result.

2.1. Step 1: preparing

We invited 35 HPEs to participate in the CM steps using purposive sampling (Tongco, 2007), based on their relevant expertise in health promotion. This group of HPEs consisted mainly of professionals (e.g., researchers, project managers) working in research and expertise institutes (e.g., universities and knowledge centres) and national and local public health institutes. These professionals were selected because they have a broad view on care-PA initiatives for people with a low SES, based on diverse expertise and experiences. Practice professionals, such as sports coaches and physiotherapists, were not invited for this study.

The invitation e-mail to HPEs included a detailed description of the study, including our definitions of care PA initiatives and effective elements (see introduction), and examples of care-PA initiatives and effective elements. One week later, we sent a reminder to all HPEs who had not yet responded and asked whether they could suggest one of their colleagues with similar relevant expertise who we could contact if they could not participate themselves. Participants did not have to participate in both brainstorming and sorting/rating, although this was preferred. Eventually, 19 HPEs representing different sectors and organizations participated in one or multiple steps of our CM process (Table 1). Their experience in the public health sector ranged from 1 to 28 years, with a mean of 13 years.

For steps 2–5, we used Concept System Global MAX software (CS Global MAX), a web-based software specifically designed to facilitate CM activities (Kane, 2019). Before the brainstorming step, we developed a focus question, which was the main question that we wanted to answer with the CM process: what do you perceive to be the effective elements of care-PA initiatives in the Netherlands for adults with a low SES?

2.2. Step 2: brainstorming

The HPEs anonymously accessed the CS Global Max software to take part in brainstorming at a time and place convenient to them. We asked them to respond to the focus question with as many effective elements as they thought were important. All the generated elements were visible to the entire group of HPEs to encourage the brainstorming process and to prevent the repetition of elements. HPEs could not remove elements from other HPEs from the list. The HPEs had two weeks to finish the brainstorming step and could re-enter the software as often as they wanted within this time. A total of 17 HPEs completed the brainstorming step.

After those two weeks, two researchers (LM and FW) reviewed the complete brainstormed list of 178 effective elements as preparation for the next step. The goal was to create a manageable list of 125 effective elements, since that is the maximum number of statements allowed to

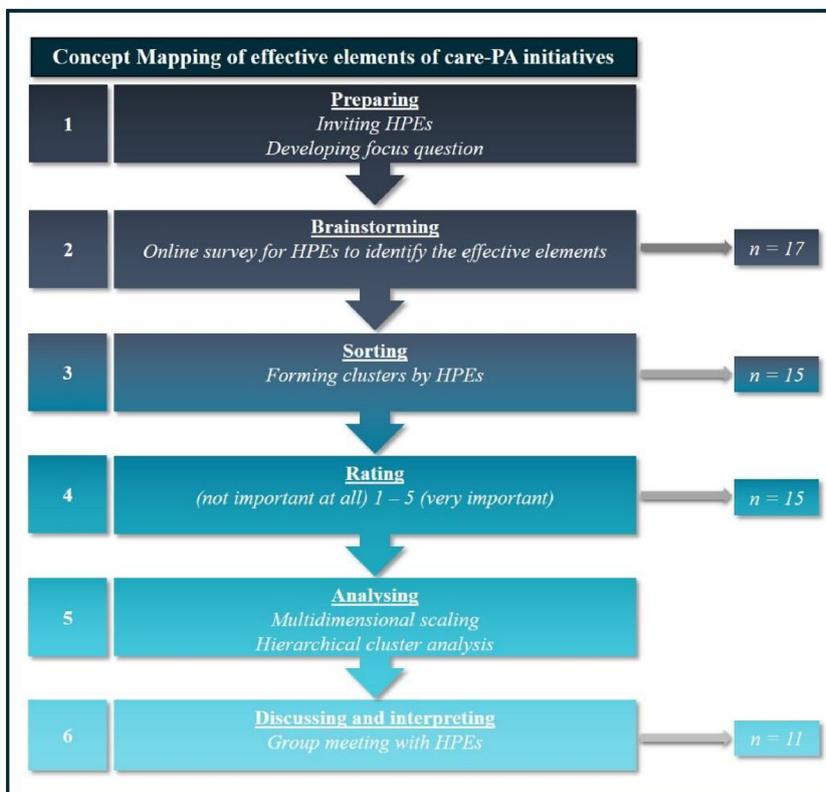


Fig. 1. Flow chart of the CM process used to identify the effective elements of care-PA initiatives for people with a low SES, based on the workflow outlined by Kane and Trochim (2007). For each step, the number of HPEs that generated valid inputs is indicated.

be used in the CS Global MAX software in steps 3 and 4 (Kane, 2019). First, we removed duplicates and combined elements reflecting similar content. Second, we deleted elements that were too vague, such as ‘variation’, since it was unclear what sort of variation was meant. Third, we clarified the language to ensure understanding across all HPEs. Finally, the elements were randomly numbered to reduce bias in the next step.

2.3. Step 3: sorting

Again, the HPEs individually accessed the CS Global Max software, but this time they could not see each other’s inputs. We instructed them to sort the 125 brainstormed effective elements into clusters that made sense to them. The full instructions were to (1) sort all elements, (2)

form more than one cluster, (3) include each element in one cluster only, (4) not form an ‘other’ cluster, and (5) not sort by priority or value. There was no limit to the maximum number of clusters. We also instructed them to assign a name to each cluster. The HPEs had four weeks to complete the sorting. A total of 19 HPEs started the sorting, which was completed by 16 of them. Fifteen HPEs clustered all effective elements according to our instructions, ranging from 6 to 18 clusters (median: 9).

2.4. Step 4: rating

After the sorting, the HPEs had to rate each effective element on its importance using a five-point Likert-like scale (1 = not important at all, 5 = very important). Again, they did this individually and could not see

Table 1
Primary area of expertise of the HPEs that provided valid input, shown separately for each CM step.

	Brainstorming n = 17	Sorting n = 15	Rating n = 15	Group meeting n = 11
Research institute	7	8	8	5
Sports and exercise sector	3	3	3	3
National institute for public health	3	0	1	1
Municipal health services	2	2	2	0
Other	2	2	1	2

each other's ratings. The HPEs had four weeks to complete the rating. A total of 16 HPEs started the rating, of whom nine rated all the effective elements and six rated more than 120 of the 125 elements, which was sufficient for the analysis.

2.5. Step 5: analysing

The analysis was conducted using the CS Global MAX software. First, we used multidimensional scaling to create a point map, in which all effective elements were plotted on a two-dimensional graph that represents the similarity between them (the dots in Fig. 2). The proximity of the elements on the map represents the frequency with which the effective elements were clustered together by the individual HPEs, with closer effective elements being more frequently clustered together, indicating that they are considered to be more similar to each other. The degree to which the point map represents the input data was measured using a stress value (Kane & Trochim, 2007).

Next, we used a hierarchical cluster analysis to create a cluster map (the clusters in Fig. 2) based on the point map. The aim of this analysis was to generate relatively homogenous clusters, based on the distances between the effective elements. Effective elements with a high level of coherence (closer to each other on the point map) are likely to end up in the same cluster (Kane & Trochim, 2007). Three researchers (LM, FW, and AW) evaluated the cluster maps that resulted from the hierarchical cluster analysis, sequentially decreasing the number of clusters included. We started with 19 clusters, which decreased in rounds of the software combining the two most similar clusters. After each round, we discussed whether the merging of the two clusters resulted in a sufficiently homogeneous cluster. We repeated this process until we reached a consensus over the final number of clusters (11). Thus, the researchers decided on the final number of clusters in the cluster map, informed by the merging of two clusters in each round. Since there was a lot of variation among the names that the HPEs had assigned to their clusters, we instead assigned the letters A to K to the clusters.

Finally, the rating information is visualized in the cluster rating map (Fig. 2). This map shows the average importance of each cluster, indicated by the number of layers; for instance, a cluster with the maximum of five layers can be seen as relatively more important than a

cluster with three layers.

2.6. Step 6: discussing and interpreting

To interpret the results, we invited all HPEs who took part in the previous steps (n = 19) for a three-hour group meeting after the analysis, with 11 HPEs ultimately participating. The discussion strengthens the results and ensures that the results are in line with the views of the HPEs. As preparation for the group meeting, we provided them with the point map, the cluster rating map, and the list of effective elements as clustered in the cluster map. During the group meeting, we divided the HPEs into three groups, each facilitated by one of the researchers. The groups evaluated and discussed a subset of the 11 clusters; group 1 reviewed three clusters, group 2 reviewed four clusters, and group 3 reviewed three clusters. One cluster (cluster D, Appendix A) was accidentally not included in the group discussions and was instead reviewed and discussed in the subsequent plenary discussion.

We asked the HPEs to evaluate the effective elements within each cluster. They could make as many remarks as they wanted, such as whether clusters should be merged or divided, or whether elements should be moved to another cluster, or whether elements should be removed. The cluster rating map was used to visualize the arrangement of effective elements. We also asked the groups of HPEs to decide on a name for each of the clusters they evaluated. After these separate discussions, a plenary session was held with all 11 HPEs. We discussed the most notable changes each group of HPEs had suggested and the names that were assigned to the clusters. Furthermore, there was an opportunity for the HPEs to comment on clusters other than the ones they discussed during the subdiscussions. After this plenary discussion, we asked each of the three groups of HPEs to divide the effective elements into elements specific to people with a low SES (i.e., specific effective elements) and elements more generally applicable to every target population (i.e., general effective elements). For this task, group 1 focused on elements 1 – 40, group 2 on elements 41 – 80, and group 3 on elements 81 – 125.

We recorded all discussions and transcribed them verbatim after the group meeting. All suggestions and remarks that the HPEs made were recorded by the researchers in an overview document. We used this

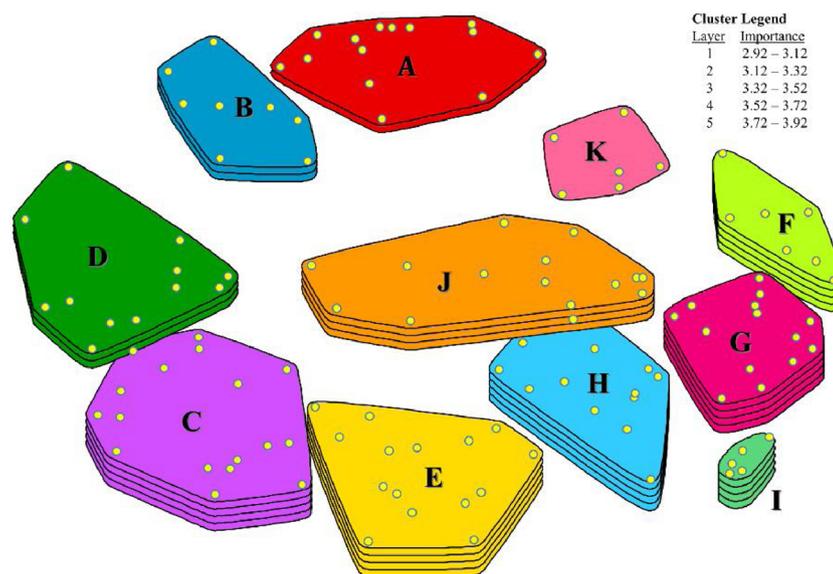


Fig. 2. Cluster rating map based on the clusters and importance ratings made by the HPEs, as developed using CS Global MAX software (Kane, 2019) (Step 5). The dots represent the different effective elements. The number of layers is indicative of the mean cluster importance, based on the importance ratings of the individual effective elements.

information to finalize the concept map. To do this, we discussed and processed the data in three researcher meetings (involving LM, FW, and AW). In these meetings, we decided on the effective elements in each cluster, the reformulation and exclusion of effective elements, and on the final cluster solution, based on the consensus between the three researchers. We excluded elements that met one or more of our exclusion criteria: (1) the element is too vague, (2) the element is unfocused, or (3) the element is covered by (an)other element(s). After making these adaptations, we rewrote the cluster names suggested by the HPEs into guidelines for use in practice (LM and KV). The final cluster importance was calculated, taking the mean of the ratings of all individual effective elements.

3. Results

3.1. Cluster map

The 125 effective elements that were sorted and rated by the HPEs were grouped into an overall cluster map consisting of 11 clusters during the analysis in CS Global MAX performed in step 5 (Fig. 2 and Appendix A). Our stress value was 0.29, indicating a good match between the input data and the processed multidimensional scaling data. The mean cluster importance, on a five-point scale, ranged from 2.92 for cluster K to 3.92 for cluster H, indicating that the most important effective elements are located in cluster H.

3.2. Interpretation

3.2.1. Effective elements

The 125 effective elements and 11 clusters presented in the cluster rating map (Fig. 2) were input for step 6, a group meeting to discuss and interpret these preliminary results. During the group meeting, the HPEs proposed the merging, splitting, or removal of certain elements. Four elements were merged into two new ones because they reflected similar content; for example, 'affordable care-PA initiative' and 'low cost but not free of charge' were merged into a new element ('affordable care-PA initiative, but not free of charge'). Furthermore, two elements were each split into two distinct effective elements; for instance, 'respond to the expectations of the target group and ensure they know what to expect' was split into 'respond to the expectations of the target group' and 'ensure that the target group knows what to expect'. Eventually, 14 elements were removed because they were too vague, covered by (an)other element(s), or unfocused/cluster-transcending. One example was that the HPEs indicated that it was unclear what was meant by 'healthcare professionals participate too', with one HPE querying, "does it mean that the GP also participates in the care-PA initiative, or does it mean that primary care should be involved in its organization?". Furthermore, 'social support' covered the entire cluster on social support, which is why this element was removed. After these changes by HPEs, we ended up with 111 unique effective elements.

3.2.2. Clusters

The HPEs also proposed the merging of clusters that were presented in the cluster rating map (Fig. 2). First, they proposed the merging of clusters A and K. Second, they proposed the merging of clusters C and E and their subsequent division into four new clusters. Finally, the HPEs proposed the merging of clusters G, H, and J, which were also then divided into four new clusters. During the researcher's meetings, we merged some of these newly created clusters because they reflected similar content. Ultimately, the final 111 unique effective elements were clustered into 11 clusters, which the researchers labelled based on the content of the clusters (Table 2). The mean cluster importance ratings changed due to the alterations of the elements and clusters, with the new ratings ranging from 3.18 to 4.28.

As shown in Table 2, cluster 1, 'approach the participants in a positive, stimulating, and encouraging way', consists of eight effective elements

that indicate how the professional should approach the participants of the care-PA initiative, such as 'provide fun, warmth, and togetherness' (element 125). This cluster was rated as most important (4.28). According to the HPEs, cluster 2, 'anticipate the barriers that participants will experience throughout the care-PA initiative' (importance: 3.99), covers elements that take into account the barriers that participants encounter during the care-PA initiative, such as 'barriers such as fear and pain should be taken into account' (element 41). Cluster 3, 'embed the care-PA initiative in existing local structures to ensure long-term implementation' (importance: 3.88), includes elements that stress the importance of long-term viability, such as 'embed the care-PA initiative in the neighbourhood' (element 15). Cluster 4, 'customize the care-PA initiative to the target population' (importance: 3.81), focuses on the ways to ensure the care-PA initiative fits the target population to improve its effectiveness; for instance, 'the care-PA initiative must fit in with the experiences, motives, wishes, and needs of the target population' (element 19). Cluster 5, 'encourage social support within the care-PA initiative' (importance: 3.79), contains nine effective elements related to the support that participants receive from other group members throughout the care-PA initiative; for example, 'use the power of the group' (element 7). Cluster 6, 'offer structure and sufficient guidance throughout the care-PA initiative' (importance: 3.77), comprises elements concerning the design of the care-PA initiative, and guidance in particular; for instance, 'lots of personal guidance and verbal communication' (element 74). Cluster 7, 'use competent and motivated professionals' (importance: 3.75), focuses on the characteristics of the professionals included in the care-PA initiative, including effective elements such as an 'enthusiastic coach' (element 10). Cluster 8, 'make the care-PA initiative accessible for the target population' (importance: 3.67), concerns how easily potential participants can access the care-PA initiative, including the elements of the location, costs, and its compatibility with daily activities. Cluster 9, 'target multiple health behaviours and awareness, and monitor progression' (importance: 3.59), concerns what happens within the care-PA initiative, such as 'confirm and strengthen self-confidence' (element 68). Cluster 10, 'make recruitment and administration easy' (importance: 3.35), is the smallest cluster and contains elements such as 'recruiting using key figures within the community' (element 116). Cluster 11, 'develop intersectoral collaboration with a fixed coordinator', is the largest cluster, comprising 18 effective elements that focus on collaboration within the care-PA initiative, such as 'ensure a good collaboration between primary care, the care-PA initiative, and sports and physical activity options' (element 54). It was rated as the least important (3.18).

3.2.3. Classification of effective elements

In step 6 of the CM process, the HPEs were asked to classify the effective elements as being either general or specific, based on the distinction in Wartna et al. (2012). However, they found it difficult to decide how to classify many of the elements identified in this study. Rather than using only the categories of general and specific elements, the HPEs came up with four categories that form a spectrum from general to specific (Table 2):

- General (G): important for all target populations
- General, but more for low SES (GLS): important for all target populations, but extra important for people with a low SES
- Vulnerable people (VP): important for vulnerable people in general (low SES, disabled, chronic illness, less gifted, etc.)
- Low SES (S): important only for people with a low SES (determined by education, income, and occupation)

According to the HPEs, most effective elements could be classified as being general, although some were of special importance for people with a low SES, such as 'empower participants' self-efficacy'. This is something that could be useful for all participants but is slightly more important for people with a low SES to maintain their results. Furthermore, they indicated that some elements that seemed specific

Table 2

Final clusters identified in the CM process, reflecting the 111 effective elements of care-PA initiatives for adults with a low SES according to Dutch HPEs, ranked by importance. Each effective element was specified as either general (G), general, but more for low SES (GLS), vulnerable people (VP), or low SES (S).

Clusters and their constituent effective elements	Importance*	Classification general/ specific**
1 Approach the participants in a positive, stimulating, and encouraging way	4.28	
125 Provide fun, warmth and togetherness	4.67	G
124 Experience of success: give participants the idea that they are progressing; celebrate small successes	4.53	G
53 Stimulate the target group in a positive way	4.33	G
37 Positive instead of patronizing approach	4.27	G
57 Give honest feedback and sincere compliments	4.27	G
110 Listen carefully to the participants	4.20	G
101 Relationship of trust	4.13	G
60 Emphasize enjoyment and relaxation	3.80	G
2 Anticipate the barriers that participants will experience throughout the care-PA initiative	3.99	
14 Take into account barriers specific to people with a low SES (e.g., debts, language skills, stress, and the characteristics of their social and physical environments)	4.47	S
95 Take into account the limitations of the target population (physically, socially, financially)	4.20	GLS
118 Approach drop-outs and try to keep them involved (including in the case of injuries, etc.)	4.13	G
44 Respond to and protect against potential barriers that people will encounter	3.87	VP
46B Know the problems the participants are dealing with	3.87	S
41 Take into account barriers such as anxiety and pain	3.73	G
102 Take into account (potential) negative previous experiences with physical activity	3.67	G
3 Embed the care-PA initiative in existing local structures to ensure long-term implementation	3.88	
58 Ensure that continuation of the care-PA initiative is guaranteed and that participants can either move on to regular activities after the first (physical activity) program or continue their current activities	4.20	VP
15 Embed the care-PA initiative in the neighbourhood	4.14	G
23 Continuity	4.00	G
64 Embed the care-PA initiative in existing structures	3.87	VP
4 Connect to existing activities	3.60	G
30 No transfer period (for instance, the participant should be able to start in a new physical activity group immediately after their first physical activity program)	3.47	G
4 Customize the care-PA initiative to the target population	3.81	
19 Connect to the perceptions, motives, wishes, and needs of the target group	4.53	S
25 Invest in getting to know the target group: what are the bottlenecks preventing them from being physically active, what are their wishes and needs, etc.	4.47	S
103 Think from the perspective of the participants, not from the perspective of the professional	4.13	G
29 Take into account the daily worries and living situation of the participant	4.07	S
80A Respond to the expectations of the target group	4.07	G
91 Take into account the (other) social norms and (lack of) social support	3.93	GLS
113 Take into account the existing social norms regarding physical activity within the target group	3.93	GLS
46a Take into account and be aware of the participants' social environment	3.87	S
107 Materials must match the health skills and degree of literacy of the target group	3.87	S
108 Focus on the skills needed to participate	3.47	G
89 Materials must be pre-tested among the target group	3.33	G
40 Involve family members	3.00	S
13 Make a distinction between people with limited mobility and people with exercise disabilities; consider referring the second group to a physiotherapist	2.87	G
5 Encourage social support within the care-PA initiative	3.79	
17 Encourage fun and social contacts, allowing contact with fellow patients to develop	4.27	S
7 Use the power of the group	4.07	G
78 Familiar faces	3.93	S
20 Group bonding within the care-PA initiative	3.80	G
49 Social contacts of the target group	3.80	VP
66 Work with groups instead of individuals	3.80	VP
34 Focus on social benefits (involve family members, use small groups)	3.60	G
45 Social purpose as a core element	3.60	G
94 Make use of buddies	3.20	GLS
6 Offer structure and sufficient guidance throughout the care-PA initiative	3.77	
74 Lots of personal guidance and verbal communication	4.27	VP
83 Personal approach	4.13	G
32 The care-PA initiative must focus on small achievable (behavioural) goals	4.07	G
69 Very practical; small steps; short assignments	4.07	VP
80B Ensure the target group knows what to expect	4.07	G
67 The care-PA initiative must focus on concrete activities and less on knowledge transfer	4.00	S
104 Recognizability (for instance, always the same supervisor)	4.00	S
114 Use role models (for reaching and informing participants)	3.93	S
75 Let the target group influence/feel they have an influence on the design of the activities/care-PA initiatives	3.87	G
81 Personal contact	3.87	G
90 Offer the target group (the feeling of) freedom of choice about behaviour, feelings, and thoughts	3.73	G
115 Small-scale	3.60	GLS
12 Informal	3.47	G
28 Intensive guidance	3.13	G
63 Allow the target group to develop and execute the care-PA initiative	3.13	G
11 Implementation by peers	3.00	S
7 Use competent and motivated professionals	3.75	
10 Enthusiastic coach	4.60	G

(continued on next page)

Table 2 (continued)

Clusters and their constituent effective elements		Importance*	Classification general/ specific**
84	Suitable supervisors/coaches who make people feel comfortable and to whom people can relate	4.40	S
56	Adequate supervisors/coaches for exercise activities in the neighbourhood	4.21	G
71	Invest in training for professionals to strengthen their competencies	3.43	G
62	Use professionals only for coaching and to offer advice and conceptual input	3.00	G
36	Local exercise coach (someone like themselves)	2.87	S
8	Make the care-PA initiative accessible for the target population	3.67	
122	Clear and simple language, suitable for people with low levels of literacy	4.27	S
92	Location of the care-PA initiative must be close to the daily lives of the participants	4.07	GLS
127	Affordable care-PA initiative, but not free of charge	4.07	S
33	Very low threshold: it should be possible to start exercising the day the decision is made to do so (for instance, directly after a care-PA session, plan an exercise session with the care-PA group)	4.00	G
72	Familiar location, where participants already come for something else (e.g., school, community centre, general practice)	4.00	VP
120	Do not label the participants as 'people with a low SES'	4.00	S
55	Give the target group the opportunity to combine the care-PA initiative with daily activities, such as work and school	3.87	G
82	Reduce physical thresholds	3.67	VP
39	'Outreaching' towards the target group	3.60	G
70	Take the neighbourhood's safety into account	3.47	G
111	Necessary basic conditions must be in place (e.g., childcare)	3.43	GLS
100	For physical activities, groups should preferably consist of persons of the same age, gender, and physical fitness	2.67	G
126	Small financial compensation for participation, for instance with resources from the municipal fund	2.53	S
9	Target multiple health behaviours and awareness, and monitor progression	3.59	
76	Empower the target group to be able to exhibit/execute desired behaviours outside the care-PA initiative	4.27	VP
68	Confirm and strengthen self-confidence	4.20	G
112	Empower participants' self-efficacy	4.07	GLS
38	Focus on physical activity, not just on sports	3.93	G
21	Personal goals	3.73	G
50	Monitoring of and feedback on results (and progression)	3.73	G
51	Increase awareness of fitness/physical condition	3.53	G
117	Make progress visible using simple tests/measurements	3.50	G
61	Combine with nutritional advice	3.07	G
42	Explain the link for participants between physical activities and the objective: brisk walking → becoming fitter, exercises → becoming stronger, etc.	2.93	S
79	Transfer knowledge about healthy lifestyles in general	2.57	S
10	Make recruitment and administration easy	3.35	
18	Key figures and intermediaries can be used in the recruitment process: word-of-mouth advertising	3.80	S
116	Recruit using key figures within the community	3.73	S
106	Build up personal contact in the recruitment phase	3.47	GLS
105	Make information available on paper	2.40	G
11	Develop intersectoral collaboration with a clear coordinator	3.18	
73	Warm handover from healthcare provider to sports provider	3.93	VP
6	Intersectoral collaboration with the active participation of local stakeholders	3.80	G
65	Collaborate with professionals from the social/welfare domain (neighbourhood teams)	3.80	VP
1	Involve the municipality regarding policies concerning this particular target group	3.73	S
59	Ensure that professionals from the healthcare and physical activity sectors know and understand each other, and know where to find each other	3.67	VP
54	Ensure a good collaboration between primary care, the care-PA initiative, and sports and physical activity options	3.53	VP
123	Use the care sport connector to realize the connection with local sport and physical activity	3.47	GLS
85	Link with well-being/social work	3.27	GLS
27	Have knowledge of the social map	3.20	G
43	Integrated programming, in conjunction with, or as part of, other activities or projects	3.13	VP
48	Have collaboration between the relevant parties at the policy level	3.07	G
88	Combine the care-PA initiative with debt assistance	3.07	S
31	Involvement of the care sport connector/combination officer	3.00	G
16	Referral from the general practitioner as a reliable expert	2.93	S
24	Feedback to healthcare professionals	2.71	G
35	General-practice-based nurse specialist as an intermediary	2.40	G
47	Collaborate with a mental coach	2.33	VP
52	Presence of a case manager	2.27	VP

* Importance ratings show the (mean) importance of the clusters and effective elements, based on the ratings provided by the individual HPEs (1 = not important at all, 5 = very important). For the new elements (126 and 127) developed by merging two other elements, we used the mean rating of the two constituent effective elements.

** Classification: G = general; GLS = general but more for low SES; VP = vulnerable people; S = low SES.

for people with a low SES would also suit vulnerable people in general, such as 'lots of personal guidance and verbal communication' and 'reduce physical thresholds'.

4. Discussion

In this study, Dutch HPEs participated in a CM approach to unravel

the effective elements of care-PA initiatives for adults with a low SES in the Netherlands. After the online brainstorming, clustering, rating, and analysing phase, the final group meeting provided us with detailed insights into what the HPEs perceive to be the effective elements of care-PA initiatives for adults with a low SES. This resulted in the identification of 111 unique effective elements, which were grouped into 11 clusters (Table 2). All clusters had a mean importance score

above 3 however, indicating that none of the clusters were seen as unimportant by the HPEs. The most important cluster was ‘*approach the participants in a positive, stimulating, and encouraging way*’ (4.28 on a five-point scale), while the least important cluster was ‘*develop intersectoral collaboration with a fixed coordinator*’ (3.18 on a five-point scale).

4.1. A comprehensive overview of effective elements

Our study is unique for its overview of effective elements of care-PA initiatives for people with a low SES, since it has been the first to provide such a comprehensive overview. This overview differs from previous studies in both scope and method. For instance, Horodyska et al. (2015) identified the good practice characteristics of diet and physical activity interventions in an umbrella review. Seven of our clusters show some similarities with the list they developed, namely ‘*anticipate the barriers that participants will experience throughout the care-PA initiative*’, ‘*customize the care-PA initiative to the target population*’, ‘*encourage social support within the care-PA initiative*’, ‘*offer structure and sufficient guidance throughout the care-PA initiative*’, ‘*use competent and motivated professionals*’, ‘*make the care-PA initiative accessible for the target population*’, and ‘*target multiple health behaviours and awareness, and monitor progression*’. However, comparing our results to the study of Horodyska et al. (2015) is quite difficult. Their list was described as a checklist that could be used to check whether interventions contain characteristics to make them successful (e.g., ‘*target behaviour well defined, specified, and adjusted to target population*’ (Horodyska et al., 2015, pp. 7)), while our list of effective elements contains more specific elements that could also be used in the development of care-PA initiatives (e.g., ‘*connect to the perceptions, motives, wishes, and needs of the target group*’ (element 19)). Furthermore, our overview adds elements concerning how to approach participants within the care-PA initiative, how to stimulate long-term implementation, how to improve recruitment and administration, and how to develop intersectoral collaboration.

Morgan et al. (2016) investigated participant’s views on the barriers to and facilitators of being physically active in a systematic review. Five of our clusters show similarities with the themes they identified, namely support from professionals, friends, and family; accessibility; the content of the care-PA initiative; and tailoring the care-PA initiative to the needs, abilities, and preferences of participants. Our study differs from the work of Morgan et al. (2016) in that we also identified clusters that focus on embedding the care-PA initiative in existing structures, offering structure and guidance, and developing intersectoral collaboration.

In addition to these reviews, Nagelhout et al. (2018) performed a study that is more similar to our research, but with a focus on the preconditions needed for developing lifestyle interventions for people with a low SES. They used the Delphi method and involved experts in lifestyle change for people with a low SES. Around 30 of our effective elements were very similar to the preconditions they identified, which were mostly grouped in our clusters focused on customizing the care-PA initiative to the target population, offering structure and guidance, and making the care-PA initiative accessible for the target population, such as ‘*take into account the daily worries and living situation of the participant*’ (element 29). Since Nagelhout et al. (2018) focused on the preconditions for developing interventions, their results did not include actual program characteristics, such as ‘*combine with nutritional advice*’ (element 61) in our results.

In our previous CM research (Mulderij, Verkooijen, Koelen et al., 2019), we developed a more practice-based list of effective elements, focusing on one specific care-PA initiative. That research included public health practice professionals, with a more practice-based view than the HPEs in the current research. Therefore, that study included effective elements that were not included in the current research, such as elements regarding specific resources for monitoring participants’ progression, characteristics of the PA facilities, and the type of PA. The

previous research also included two distinct clusters for internal and external collaborations, instead of one cluster for intersectoral collaboration obtained in the current research. On the other hand, the HPEs identified, in line with our recent research, clusters of effective elements that focus on the accessibility of the care-PA initiative for the target population and recruitment. New in the current research compared to our previous research are clusters on the customization of the care-PA initiative to the target population, the anticipation of barriers to participation for people with a low SES, and the embedding of the care-PA initiative in local structures for sustained implementation.

The results of the current and previous studies could be useful in policymaking and in the development and implementation of care-PA initiatives for adults with a low SES, especially if this knowledge is merged into a single list of effective elements. The evaluation of the usability of this list would first be important to ensure its effectiveness.

4.2. Classification of effective elements

HPEs indicated that many of the effective elements could be classified as general elements, since they apply to all populations and not just people with a low SES; for instance, the HPEs themselves said they would appreciate fun, warmth, and togetherness (element 125) in a care-PA initiative, stressing that this element is not specific to people with a low SES. Furthermore, some of the effective elements were considered to be important for all populations, but more for people with a low SES, while other elements were thought to be more important for vulnerable people in general, not specifically for people with a low SES (Table 2). In short, elements specific for people with a low SES often cover a personal approach, such as ‘*take into account the daily worries and living situation of the participant*’ (element 29), while general effective elements are often more practical, such as ‘*connect to existing activities*’ (element 4). As such, these results suggest that it is hard to distinguish effective elements into general or specific, but that they are on a spectrum ranging from general to specific for low SES.

To gain more insight into the categorisation of clusters of effective elements, we used the different existing categorisations of Van Yperen, Veerman, and Van den Berg (2015), Blase and Fixsen (2013), and Wartna et al. (2012). To incorporate all categorisations, we composed one comprehensive framework: the Classification of Effective Elements (CEE) framework (Fig. 3). In line with our findings on general and specific elements, the framework also includes a cluster-transcending spectrum ranging from general to specific. The CEE framework consists of four categories:

- 1 Health promotion context (HPC), which constitutes the context outside the scope of the intervention, such as the interactive processes in which stakeholders are involved and their norms and values
- 2 Intervention context (IC), which contains elements such as the target population, location, and costs of the care-PA initiative
- 3 Intervention structure (IS), which consists of the detailed design elements that shape the care-PA initiatives within its context, such as duration of the care-PA initiative and the number of sessions
- 4 Intervention foundation (IF), which includes concrete descriptions of what is done in the care-PA initiative, including the change strategies used and the theory of the intervention

The interpretation of the clusters in the CEE framework according to these four categorisations turned out to be challenging. Most of the clusters (1, 5, 6, 7, 9, and 10) could subjectively fit into multiple categories, particularly because IF and IS seem to be intertwined. Five clusters (1, 5, 6, 7, and 9) could be classified as both IF and IS. For instance, cluster 9, ‘*target multiple health behaviours and awareness, and monitor progression*’, could be classified as IS, since this cluster includes elements that could be defined as design elements that shape the care-PA initiative, such as ‘*combine with nutritional advice*’ (element 61).

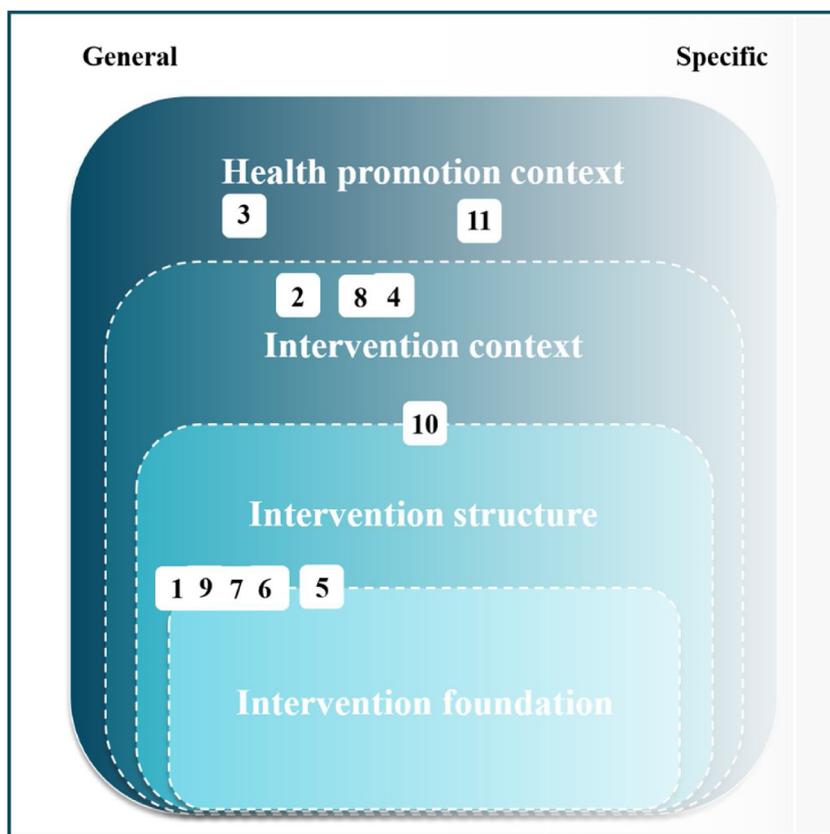


Fig. 3. The classification of the clusters of effective elements of care-PA initiatives for adults with a low SES, as determined using the Classification of Effective Elements (CEE) framework. The clusters are arranged on a spectrum from general to specific for people with a low SES, based on the number of general vs. specific effective elements contained within each cluster.

However, this cluster could also be classified as IF if this example element would be defined as an intervention strategy. In addition, cluster 10 could be classified as both IS and IC, because it contained elements that concern the design of the care-PA initiative, but also elements regarding its adjustment to the target population.

We found that the IC and HPC were more distinct. Three clusters (2, 4, and 8) could be classified as IC, because they focused on adjusting the care-PA initiative to the target population. Two clusters (3 and 11) could be classified as HPC, as they focus on how the care-PA initiative should be embedded in local structures and how different local stakeholders should collaborate. The IC and HPC differ for each municipality, and can explain why a care-PA initiative is not effective in all contexts (Green & Glasgow, 2006). Contexts include external factors within the environment in which the care-PA initiative is carried out, which can influence its implementation and effectivity (Craig et al., 2018); hence, when using the results of our study to develop and implement care-PA initiatives for people with a low SES, it will be important to tailor the care-PA initiative to the HPC and IC and to regularly check the implementation and effectivity of the initiative.

It would be interesting to further investigate the classifications made according to this framework in future research, including a discussion with HPEs. This could also facilitate the further development of the framework, which might make it more suitable as guidance for research on the effective elements of care-PA initiatives.

4.3. Strengths and limitations

As far as we know, our study is the first to identify a comprehensive overview of the effective elements of care-PA initiatives for adults with a low SES. The CM approach, which has not been used by others in previous studies on the effective elements of lifestyle interventions, proved to be useful for achieving this. The HPEs individually accessed the CS Global MAX software at the time and place of their choosing to perform the brainstorming, sorting, and rating steps, which might have

improved the response rate. Additionally, the individual brainstorming sessions ensured that the wording and terminology used by the HPEs remained largely intact. Furthermore, the end result of the software analysis consisted of a single overview of effective elements, in which the input of the individual HPEs was equally reflected. After the software analysis, the group meeting in particular provided us with more detailed insights into the thoughts of the HPEs, which further improved the overview of the effective elements. Despite these strengths, there are also some methodological issues we would like to discuss, namely 1) the purpose of the group meeting, 2) the subdiscussions of the clusters, 3) the alterations made during the group meeting, 4) the interpretation of the effective elements, and 5) the variety of HPEs included in this study.

We used the group meeting to obtain a deeper understanding of the effective elements of care-PA initiatives for adults with a low SES by discussing the results with the HPEs and adapting the effective elements and clusters to match their views. In most other studies using the CM method, this group meeting was less participatory than our group meeting; for instance, other researchers used the group meeting only to allow respondents to decide on the number of clusters and the labelling of the clusters (Tubbing, Harting, & Stronks, 2015; van Bon-Martens et al., 2014). Nevertheless, some studies used an approach similar to our study, in which elements were merged, split, moved, or removed, and clusters were merged and split after the analysis, although this was done by the researchers instead of the respondents (Hidding, Chinapaw, & Altenburg, 2018). This suggests that even though Kane and Trochim (2007) described guidelines for the use of the CM method, these guidelines are interpreted differently by different researchers, especially regarding the group meeting. We believe that our approach of step 6, where HPEs interpreted and discussed the effective elements and clusters of the software analysis (step 5), improved the final results. The final results are completely based on the views of HPEs and are, in our opinion, therefore of better use in practice. Because the HPEs had so much influence after the software analysis, we think that the results

represent the views of the HPEs better compared to the preliminary results.

We held subdiscussions of a selection of the clusters with smaller groups of HPEs, as we did not have time to discuss all clusters with all HPEs. Despite this, we sent the analysis results to the HPEs one week prior to the group meeting. Most HPEs used this information to prepare the group meeting. Therefore, the HPEs were also able to comment on clusters other than those they discussed in the smaller groups. The plenary discussion after these subdiscussions was useful for collecting all the inputs of the HPEs and ensuring that they had all contributed to the end result.

The high number of alterations made to the effective elements and clusters during our group meetings could be explained by the proximity of the different effective elements (Fig. 2); for example, some clusters (J and H, and D and C) show some overlap, indicating that the elements within these clusters are quite similar. Eventually, the alterations resulted in a more representative overview of the effective elements of care-PA initiatives for adults with a low SES, which is why we recommend the inclusion of group meetings in future research using CM.

The clarity of the effective elements is a key factor in the success of CM (Kane & Trochim, 2007). Although we tried to synthesize the input of the HPEs after the brainstorming session, during the group meeting they indicated that some elements were ambiguous or not clear to them, which may have led to different interpretations of some of the effective elements. This could mean that individual HPEs would have sorted and rated the elements differently if they were formulated less ambiguously. Extra attention should therefore be spent on reducing ambiguity in future research, for instance, by checking the interpretations of the elements in the brainstorming list with a (sub)group of CM respondents.

Although our study included HPEs from a broad range of disciplines, no public health practice professionals, such as general practitioners, dieticians, or physiotherapists, participated. In our previous study (Mulderij, Verkooijen, Koelen et al., 2019), public health professionals involved in one particular care-PA initiative were included, providing a more practice-based perspective with focus on the effective elements of that specific initiative. In contrast, our present study focused on a more aggregated level of effective elements. The perspective of the HPEs was from indirect knowledge of the care-PA initiatives for people with a low SES, obtained by working in science for example, and thus they had limited experience with the direct practice of these initiatives. To obtain a broader perspective on the effective elements of care-PA initiatives for adults with a low SES, we therefore recommend the inclusion of both HPEs and public health practice professionals in future research. Furthermore, no participants of care-PA initiatives were included in the CM process. The perspectives of participants with a low SES differ from those of the HPEs, and could be of added value. Although it can be challenging to involve them in research, it is recommended that these participants are included in future studies.

5. Conclusions

The aim of this study was to explore the effective elements of care-PA initiatives for adults with a low SES. In total, 111 unique effective elements were generated and sorted into 11 clusters, which we present as guidelines that could be used in practice. The CM method appeared to be a useful and structured approach for obtaining these results, with the important advantage that the inputs of the individual HPEs are equally represented in the final results. Furthermore, the group meeting contributed to the overview of effective elements representing the views of the HPEs. Future CM research focusing on the effective elements of care-PA initiatives should include both HPEs and public health practice professionals, as well as participants of care-PA initiatives, to provide a more comprehensive overview of the effective elements. Future research should also further investigate the classification of the effective elements according to the CEE framework.

CRedit authorship contribution statement

Lisanne S. Mulderij: Conceptualization, Investigation, Formal analysis, Data curation, Writing - original draft. **Fieke Wolters:** Investigation, Formal analysis, Data curation, Writing - original draft. **Kirsten T. Verkooijen:** Conceptualization, Writing - review & editing. **Maria A. Koelen:** Conceptualization, Writing - review & editing. **Stef Groenewoud:** Conceptualization, Writing - review & editing. **Annemarie Wagemakers:** Conceptualization, Writing - review & editing, Supervision.

Declaration of Competing Interest

None.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.evalproplan.2020.101813>.

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