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Citizens' intentions to participate in governmental co-creation initiatives: Comparing three co-creation configurations

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ABSTRACT

The awareness has grown that citizen participation may contribute to the quality of and support for government policies. This study focuses on citizens' intentions to take part in co-creation processes. Co-creation can be seen as an intensive type of citizen participation, involving active collaboration between government and citizens on specific policy issues. In the context of a Dutch province, we investigated citizens' intentions to participate in co-creation processes and experimentally compared the effects of three co-creation configurations (idea contest, grassroots groups, digital platform) on their intentions. Data were collected using online questionnaires ($N = 354$). Participants first answered general questions about their intentions to participate, and were then randomly assigned to a description of one of the configurations. Citizens' general intention to participate was related to their educational level, interest in provincial politics, perceived value of citizen participation, expected personal gratification, and perceived behavioral control. Of the three co-creation configurations, grassroots groups and digital platforms led to somewhat higher intentions to participate. An analysis of determinants per configuration shows that expected personal gratification played an important role in all three configurations. Perceived behavioral control was an additional determinant for the grassroots groups and digital platform configurations. For digital platforms, trust in sincere intentions was a third determinant.

1. Introduction

Citizen participation in public governance is increasingly important (Bingham, Nabatchi, & O'Leary, 2005; Irvin & Stansbury, 2004). Governmental institutions have become aware of the potential benefits of engaging citizens in policy-making. Even though it is hard to actually demonstrate the effects of citizen participation—each policy-making process, with or without participation, has its own dynamics—the general conviction is that citizen participation leads to better policy decisions and more public support for governmental policies (cf. Karlsson, Holgersson, Söderström, & Hedström, 2012). Better policy decisions may be attributed to a deeper understanding of societal problems, more realistic estimations of the pros and cons of potential policy measures, and the fresh and creative input of outsiders (Haefliger, Monteiro, Foray, & Von Krogh, 2011; Hilgers & Ihl, 2010; Jeppesen & Lakhani, 2010). More public support may partly be the result of better policy decisions, but may also originate from citizens' appreciation of the underlying process, as it underlines that the governmental institution is open and receptive to citizens' needs and

preferences. As such, participation processes may enhance citizens' trust in the public sector, which has been declining in the past decade (Gershtenson & Plane, 2015; Hardin, 2013; Henn & Foard, 2012). Wijnhoven, Ehrenhard, and Kuhn (2015) and Millard (2015) see citizen participation as a manifestation of open governance systems, in which governmental institutions mobilize and utilize resources in society to make societal improvements.

Various forms of citizen participation have emerged. In a study on government portals, Sandoval-Almazan and Gil-Garcia (2012) describe a continuum from “information display” to “opportunities for collaboration,” which reflects ascending levels of participation. At the lowest levels of participation, governmental institutions simply offer information or services to citizens. On higher levels, citizens, respectively, interact, participate, and collaborate with governmental institutions. These levels essentially correspond to the classic “participation ladder” (Arnstein, 1969). Wijnhoven et al. (2015) categorize citizen participation into three main categories: “citizen sourcing” (citizens support daily public administrative tasks, such as informing the road maintenance depot about road problems), “collaborative democracy”

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(citizens provide input for decision-making on general policy issues), and “citizen ideation and innovation” (citizens actively contribute to the identification of societal problems and the development of solutions). Within the latest category, other authors distinguish between top-down (government-led) and bottom-up (citizen-led) participation (Alathur, Ilavarasan, & Gupta, 2016; Porwol, Ojo, & Breslin, 2016; Susha & Grönlund, 2014). We use the term co-creation for situations in which governments and citizens actively collaborate on specific policy issues; this in contrast to the broader term of citizen participation, which may also involve passive involvement (Voorberg, Bekkers, & Tummers, 2015).

Academic research into citizen participation is clearly on the rise. More and more articles are published into various aspects of this phenomenon. However, the literature so far has three limitations. First, relatively much attention has been paid to lower forms of citizen participation, such as giving opinions, signing petitions, or taking part in consultations (e.g., Sandoval-Almazan & Gil-Garcia, 2012; Vicente & Novo, 2014). The literature on co-creation and co-production is relatively scarce. Second, the traditional literature on offline citizen participation (e.g., Bingham et al., 2005; Irvin & Stansbury, 2004; Lowndes, Pratchett, & Stoker, 2001) is not well-connected to the newer literature on e-participation (e.g., Medaglia, 2012; Sæbø, Rose, & Flak, 2008; Sanford & Rose, 2007). It would be interesting to compare the merits and restrictions of online and offline approaches. Third, relatively little attention is paid to citizens' willingness to participate. Most studies focus primarily on political or institutional aspects of citizen participation (e.g., Gulati, Williams, & Yates, 2014; Jho & Song, 2015; Zheng, Schachter, & Holzer, 2014) or on technological challenges and opportunities (e.g., Gagliardi et al., 2017; Hanzl, 2007; Jho & Song, 2015). Medaglia (2012) therefore argued that e-participation research should focus more strongly on citizens' perspectives.

The research reported in this article is an attempt to fill these gaps. In collaboration with the province of Overijssel (the Netherlands), we conducted a study on citizens' intentions to participate in subnational co-creation initiatives. The province had positive experiences with its first trials of co-creation processes, but wanted to gain more insight in the factors affecting citizens' intentions to take part in such initiatives. This can be related to behavioral determinants, but also to the design and evaluation of specific co-creation processes (e.g., Linders, 2012; Nabatchi & Amsler, 2014; Wagner, Vogt, & Kabst, 2016). To shed light on citizens' perspectives on co-creation initiatives, we conducted an online survey, combined with an experimental comparison of three possible co-creation configurations: one online (a digital platform) and two offline (an idea contest and grassroots groups).

Our study aimed to answer two overall research questions. First, we wanted to know which behavioral determinants affect citizens' overall intentions to take part in co-creation processes. Second, we investigated the effects of the three specific configurations of co-creation processes on citizens' intentions to participate.

2. Theoretical framework

Below, we first clarify the concept of co-creation as a high-level form of citizen participation. After that, we discuss earlier studies into citizens' behavioral intentions to engage in participation processes, followed by the Theory of Planned Behavior as a fruitful theoretical perspective for our research. The section ends with the research model we used in our study.

2.1. Co-creation and citizen participation

Co-creation is a widely used but loosely defined term that originates from an innovation and business context. Prahalad and Ramaswamy (2004) define co-creation as “the joint creation of value by the company and the customer; allowing the customer to co-construct the service experience to suit their context” (p. 8). In their review of academic

literature on co-creation in the public sector, Voorberg et al. (2015) place co-creation in the context of social innovation, which is defined as the “creation of long-lasting outcomes that aim to address societal needs by fundamentally changing the relationships, positions and rules between the involved stakeholders, through an open process of participation, exchange and collaboration with relevant stakeholders, including end-users, thereby crossing organizational boundaries and jurisdictions” (p. 1334). In the context of public services, Osborne, Radnor, and Strokosch (2016) use the term co-production, which they define as “the voluntary or involuntary involvement of public service users in any of the design, management, delivery and/or evaluation of public services” (p. 640).

Co-creation can thus be seen as a far-reaching form of citizen participation, on the highest sports of Arnstein's (1969) participation ladder, referring to situations of partnership, delegated power, or even citizen control. Specific cases of co-creation may vary depending on the situation at hand, but include a major role of citizens in at least one of the following activities: (a) identifying problems in need of government measures (“citizen as initiator”), (b) generating or prioritizing ideas or solutions (“citizen as co-designer”), and/or (c) deciding on or shaping the actual execution of government policy (“citizen as co-implementer”) (Voorberg et al., 2015, p. 1339). Co-creation processes may be government-led, but may also result from bottom-up initiatives. In the literature, much attention is paid to co-creation with citizens (like in our study), but it important to keep in mind that other types of stakeholders may also be involved in co-creation processes. Despite the concept's broadness and variety (cf. Osborne et al., 2016), all co-creation processes have in common that they demand considerable time and skills of citizens, and that they provide them with influence and shared responsibility.

2.2. Earlier research: Determinants of citizen participation

The research on determinants of citizens' willingness to take part in co-creation processes is scarce. Therefore we took the broader perspective of looking at determinants of citizen participation in general to inform our research model. The studies described below focus on varying levels of citizen participation (as will be indicated in the descriptions of the specific studies).

Using survey data collected in 2011, Vicente and Novo (2014) tried to explain people's intentions to engage in e-participation in Spain. They focused on lower forms of e-participation (reading and giving opinions, signing petitions), and were primarily interested in the role of background variables such as demographics, habits, and skills (not motives). Not surprisingly, an important predictor appeared to be internet access and use, which was strongly related to demographics: rich and highly educated citizens living in urban areas had significantly more access to the internet than others. In addition, they found that digital skills, online social networking, and socio-political interest were important predictors. They also found that men were more inclined to participate online than women, and that unemployed citizens were relatively more willing to participate. In all, the study demonstrates that it is not realistic to expect the perfect cross-section of society to be engaged in e-participation.

Lowndes et al. (2001) investigated qualitatively (with focus groups and interviews) why people do or do not tend to take part in British local participation initiatives. Reasons to participate included the specific topic of the policy issue at hand (“issues that matter”) and a broadly defined self-interest (e.g., “new skills and knowledge, greater self-respect or stronger community identity”) (p.447–448). Respondents emphasized that participating citizens will most likely not be representative for society, referring to a general “public apathy” and a select group of “natural joiners” who are inclined to participate in all kinds of initiatives. However, respondents believed that personal invitations could make a difference. Reasons to not participate included a negative view on the local authority (based on personal experiences or

hearsay), a lack of awareness of opportunities to participate, negative expectations regarding the willingness of governmental bodies to actually implement suggestions based on citizen participation, and low estimations of their personal chances to really be heard in a participation process. Various configurations for participation processes were discussed, but most of them had both advantages and disadvantages, and it appeared to be hard to univocally favor one configuration above the others. The research did not explicitly include any form of e-participation.

Holgersson and Karlsson (2014) distinguished three possible schools of citizen participation with increasing levels on Arnstein's (1969) participation ladder—user-centered design (citizens' perspectives are leading and the input of citizens is sought), participatory design (government and citizens co-develop solutions for problems), and user innovation (citizens are in the lead in identifying and solving problems). Their research took place in the specific context of Swedish public e-service development. Their qualitative analyses revealed six factors affecting citizens' intentions to participate: their use of public e-services, their satisfaction with public e-services, personal incentives, available time, social commitment, and earlier experiences. Citizens' ability to participate was affected by their knowledge of three domains related to public e-services: public authorities, IT, and systems development. Holgersson and Karlsson summarized their findings concisely by stating that the main reason for not participating is a lack of time, often combined with a lack of interest in public e-services. Taking part at the highest participation level (user innovation) appeared to be problematic due to a general lack of relevant knowledge.

Wijnhoven et al. (2015) report on an online survey focusing on the motivations German citizens have for participating in three types of open government initiatives: citizen sourcing (citizens support daily public administrative tasks, such as informing the road maintenance depot about road problems), collaborative democracy (citizens provide input for decision-making on general policy issues), and citizen ideation and innovation (citizens actively contribute to the identification of societal problems and the development of solutions). They included four clusters of potential determinants: socio-economic characteristics (age, gender, educational level, and employment status), motivational factors (e.g., pro-social behavior, reciprocity, fun, and money), amotivational factors (e.g., efficacy beliefs and beliefs regarding the outcomes of the participation process), and political satisfaction and engagement. The distinction between motivational and amotivational factors is conceptually not very clear. They found that citizens' intentions to participate were higher for the relatively low type of participation (citizen sourcing) than for the other two types. The potential influence of the various determinants was based on an analysis of differences in scores between respondents who would and respondents who would not participate. The results suggest that different determinants play a role for the three types of participation. Expected fun was a relevant factor for all three types. For the two higher levels of citizen participation, expectations of the outcome of the participation process appeared to be important as well. No effects were found for socio-economic characteristics, or political satisfaction and engagement.

Alathur et al. (2016) investigated the determinants of e-participation in India. On the basis of a literature review, they identified potential determinants, which were all included in a questionnaire and used in regression analyses to explain citizens' intentions to participate. In total, twelve potential determinants were used in their research, which can be categorized in four clusters: citizens' self-perceptions (efficacy, values), characteristics of the technology used (inclusiveness, physical environment, technology standards, integrity of tools, and technical support), citizens' perceptions of the participation process and the initiator (expertise, freedom to participate, and openness and ownership), and legal considerations (privacy concerns and legal support). Two types of citizen participation were included in the research: processes initiated by citizens (such as blogs and e-communities) and processes initiated by the government (such as e-consultation and

wikis). The results showed that efficacy and values were significant determinants for both types of participation processes. For citizen initiatives two additional determinants were found: freedom to participate and legal support. For both types of citizen participation, the determinants predicted somewhat more than 30% of the variance. The majority of the determinants included did not significantly contribute to the explanation of citizens' intentions to participate, which illustrates that knowledge about determinants of e-participation is still in its infancy.

Finally, Lee and Kim (2018) investigated citizens' tendency to e-participate in agenda-setting activities in local governance in South Korea. They included three clusters of variables in their research: individual social capital (their trust in the government, the strength of their offline social ties, and their experience as volunteers), e-participation management (perceived fairness of the process, access to information, and perceptions of government responsiveness), and control variables (a wide range of demographic, psychological, and behavioral variables, plus perceived usefulness of citizen participation and intention to use). As the authors expected, trust in government and perceived responsiveness were positively related to e-participation, and the strength of offline social ties had a negative relation. No significant relationships were found for experience as volunteers, perceived fairness, and access to information. Several of the control variables had a significant relation with e-participation, in particular demographics (older and highly educated citizens with a higher income were more willing to participate), and behavioral variables (voting participation). Other significant variables seemed to be very close to the actual dependent variable (intention to use, duration of membership of the e-participation platform, and frequency of visiting it).

In all, the available research provides a scattered image of the determinants of citizen participation in government initiatives. A general tendency is that it may be harder to find people willing to be engaged in higher levels of citizen participation than in lower forms of participation. But it seems hard to draw general conclusions about the determinants of participating, with very different sets of determinants included in the various studies and sometimes inconsistent results. It is also important to realize that the national contexts and time frames differed between the studies. Most importantly, a solid theoretical framework appears to be missing in earlier studies. The predicting variables were limited to demographics and background variables (Vicente & Novo, 2014), emerged from qualitative data (Holgersson & Karlsson, 2014; Lowndes et al., 2001), or were grounded in earlier studies but lacked a clear and unifying theoretical framework (Alathur et al., 2016; Lee & Kim, 2018; Wijnhoven et al., 2015).

2.3. Theory of Planned Behavior

To overcome an important weakness of earlier research, we used Ajzen's (1991) Theory of Planned Behavior (TPB) as the theoretical framework for our study (see Fig. 1). The theory aims at predicting or explaining people's non-routine behaviors. According to the TPB, people's behaviors can be explained by their behavioral intentions, even though it is clear that in real life many things may get in the way of putting intentions into practice. Behavioral intentions, in turn, can be explained by three evaluative variables, which can be connected to underlying beliefs. The first of these variables is the attitude toward the behavior. The attitude can be defined as the evaluative outcome of a weighing of all beliefs about the pros and cons of the behavior. The second variable is the subjective norm, which can be defined as the influence of the social environment regarding the behavior. The subjective norm results from all perceived beliefs, attitudes, and behaviors of people that matter to someone. The third variable is perceived behavioral control, which can be defined as the estimation of one's ability to actually show the behavior. This may involve estimated personal skills as well as circumstances. Perceived behavior control is not only linked to behavioral intentions, but also directly to actual behavior.

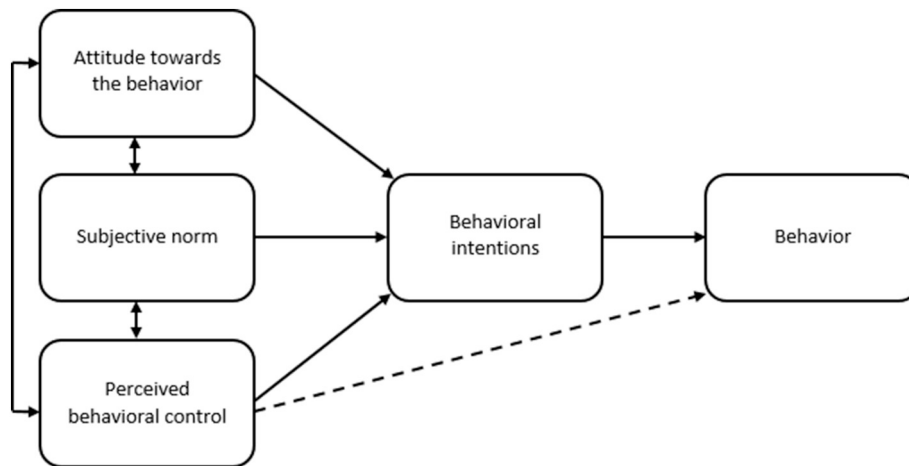


Fig. 1. Theory of Planned Behavior (Ajzen, 1991).

The TPB can be (and has been) used in a wide range of contexts, whenever it is reasonable to assume that people more or less consciously decide about their behavior. Impulsive or habitual behaviors are beyond the scope of the theory. Examples of the successful use of the TPB can be found in studies of health-related behaviors (e.g., Knowlden, Sharma, & Bernard, 2012), marketing and consumption behaviors (e.g., Emanuel, McCully, Gallagher, & Updegraff, 2012), environmental-friendly behaviors (e.g., De Leeuw, Valois, Ajzen, & Schmidt, 2015), and professional behaviors (e.g., Lortie & Castogiovanni, 2015). Meta-analyses show that the TPB is capable of predicting a considerable proportion of the variance in behaviors (20–40%) (Armitage & Conner, 2001; McEachan, Conner, Taylor, & Lawton, 2011).

As it is reasonable to assume that a decision to take part in a co-creation process will be based on a more or less conscious process, the TPB appears to be an appropriate theoretical perspective for our research. After all, it is a salient and single decision about a substantial investment of time, in which habitual behaviors are not likely to occur.

2.4. Research model

To investigate the determinants of citizen participation, we combined the TPB with the results of the earlier studies on determinants of citizen participation. Given the relative novelty of co-creation, we had to leave out actual behavior, and instead focus on behavioral intentions as our dependent variable. Integrating the earlier studies basically meant identifying potentially relevant beliefs that would underlie people's attitude toward the behavior. We particularly focused on variables that had significant relationships with intentions to participate in the previous studies. We went through a process of compiling the earlier research findings and relating them to the TPB constructs in order to develop a manageable set of distinguishable constructs, which would form the basis of our questionnaire.

Several earlier studies identified citizens' engagement with the topic and/or the governmental institution as a potentially important cluster of beliefs (Holgersson & Karlsson, 2014; Lee & Kim, 2018; Lowndes et al., 2001; Vicente & Novo, 2014). We deemed it important to include this type of engagement in our model, particularly because the provincial government level may be less salient to citizens than the local or national level. In our research model we operationalized this into two variables:

- Perceived relevance of the governmental body: The extent to which citizens recognize that the provincial governmental level makes important contributions to society.

- Interest in provincial politics: The extent to which citizens are inclined to actively inform themselves about developments at the provincial level.

Another cluster of beliefs that appeared to be relevant involves the extent to which citizens expect that their participation will make a difference (Lee & Kim, 2018; Lowndes et al., 2001; Wijnhoven et al., 2015). This comprises the usefulness of citizen participation in general as well as the estimation of their own chances to make a significant contribution within the participation process. In our research model we operationalized this into three variables:

- Perceived value of citizen participation: The extent to which citizens believe that citizen participation can make important contributions to the quality of provincial policies.
- Trust in sincere intentions: The extent to which citizens believe that the province is committed to listening to and, where possible, implementing the ideas resulting from the participation process.
- Expected personal influence: The extent to which citizens expect to get the opportunity to bring in their personal views in the participation process.

The last cluster of beliefs involves the personal gains that result from participating (Lowndes et al., 2001; Wijnhoven et al., 2015). We operationalized this into one variable in our research model:

- Expected personal gratification: The extent to which citizens expect that participating will bring them satisfaction and enjoyment.

Fig. 2 visualizes the resulting initial research model. The earlier studies did not incorporate determinants related to the subjective norm. Perceived behavioral control, on the other hand, was included by almost all earlier studies (Alathur et al., 2016; Holgersson & Karlsson, 2014; Lowndes et al., 2001; Vicente & Novo, 2014; Wijnhoven et al., 2015).

3. Method

To answer our research questions, we combined an online survey focusing on the behavioral determinants of citizens' intentions to take part in co-creation processes and an online experiment into the effects of three co-creation configurations on citizens' intentions to participate. The two parts of the research were combined in the same questionnaire: First, participants answered the general questions about their intentions to take part in co-creation; then they were randomly assigned to one of three co-creation configurations, and answered the same questions

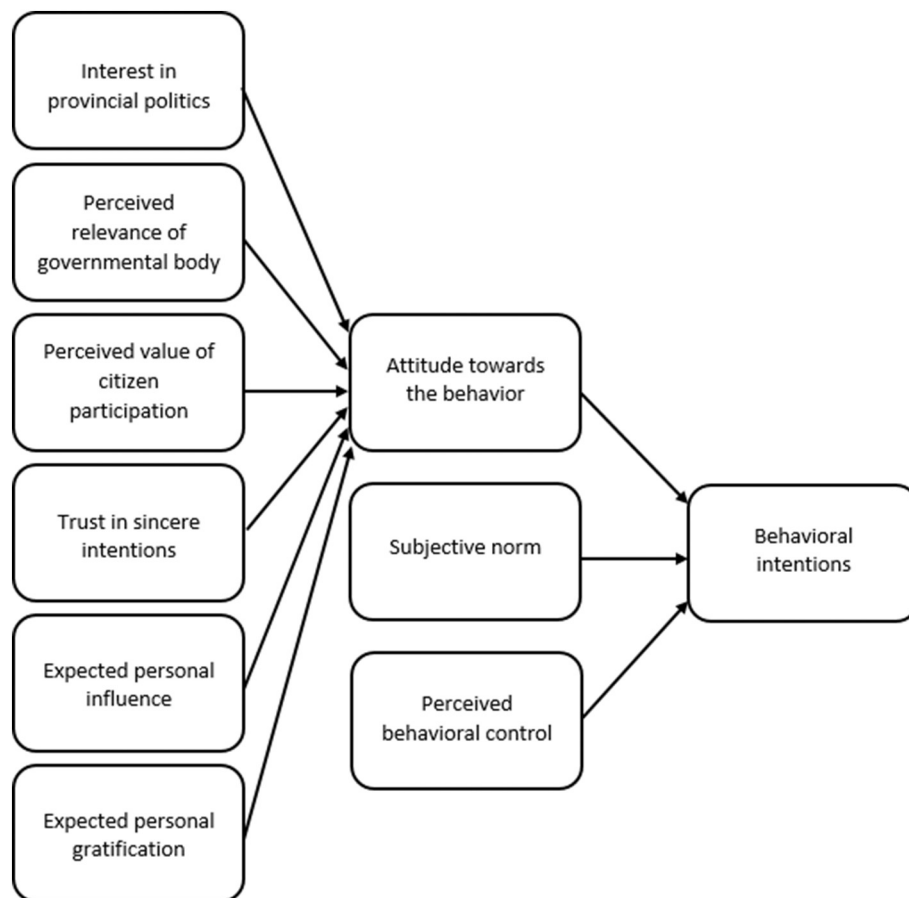


Fig. 2. Initial research model.

about their intentions to participate.

3.1. Research setting

Our research focused on co-creation at the subnational level in the Netherlands, and was conducted in collaboration with the province of Overijssel. The introduction of the questionnaire explicitly defined the notion of co-creation as “a form of participation in which citizens together with the province develop policies from the very beginning of the process.” It made clear that the province generally works on policy topics such as nature, environment, culture, regional economy, public transportation, and infrastructure, and that co-creation initiatives would involve one of these topics. The introduction emphasized that co-creation is more than filling out questionnaires or attending public hearings. Two examples were given: (1) citizens present their ideas for a new road, and a jury selects the best idea and implements it together with the province, and (2) citizens organize meetings in their neighborhoods to propose ideas about public transportation, and implement them together with the province.

3.2. Experimental conditions: Three co-creation configurations

In the experimental part of the study, three configurations of co-creation were used, which were developed in collaboration with the province. Each participant was exposed to one of the three configurations. We used the province's insights and prior experiences with citizen participation as input and co-developed three configurations that were realistic and clearly different from each other. Two of the configurations involved offline co-creation processes (idea contest and grassroots groups); the third was online (digital platform). Below, we give an outline of each of the configurations (see the Appendix for complete

descriptions).

- Idea contest (offline, centralized). The province invites citizens to submit specific ideas in a specified policy area. On a pre-determined day citizens present their ideas to a jury of peers in the provincial government building. The jury, provided with relevant background information by the province, discusses all ideas and selects a winner. The citizen with the winning idea is then invited to implement his or her idea in collaboration with the province.
- Grassroots groups (offline, localized). The province offers money for groups of citizens who have ideas for improving their living environment in a specified policy area. A work group of 5–7 citizens is formed to assess the ideas, organize discussion meetings, gain support, and eventually select one. The meetings are held in community centers or other locations within the province. The work group then implements the selected idea with financial support of the province.
- Digital platform (online). The province creates and maintains an online platform, on which citizens can continuously submit ideas within specified policy areas. Citizens can discuss the submitted ideas using a chat function and can express their support for ideas using a “like” button. Policy makers within the province also use the online platform to discuss the popular ideas with the citizens who submitted them. The province implements the fruitful ideas that emerge from this process.

3.3. Instrument and scale construction

Most of the constructs in the research were measured twice: once for the overall intentions to participate in co-creation, and once for the specific co-creation configuration. Two variables (perceived relevance of governmental body, and interest in provincial politics) were

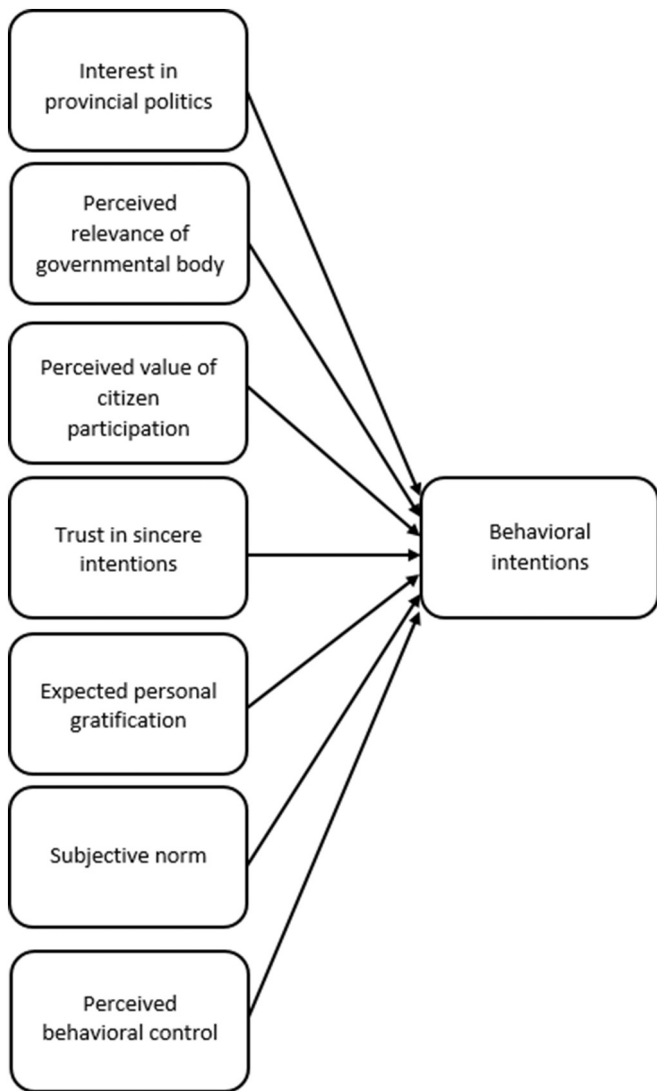


Fig. 3. Revised research model (based on the factor analysis).

measured only once, as we did not assume that these general dispositions would be influenced by a specific co-creation configuration. All variables were formulated in Dutch and answered using five-point Likert scales.

To assess the validity and reliability of the constructs, we conducted a principle-component factor analysis (with varimax rotation) using all items of the first measurement. This led to the deletion of two of the original constructs in the research model: attitude toward the behavior (which could not be distinguished from behavioral intentions), and expected personal influence (which cluttered with perceived value of citizen participation and trust in sincere intentions). Fig. 3 presents the revised research model. The final factor solution consisted of eight factors and explained 74% of the variance. Below, we only describe the eight constructs that we retained for the analysis.

Behavioral intentions was measured with four items. Examples of items are “I think I would like to participate in co-creation” and “I would certainly think about participating in co-creation.” The Cronbach’s alphas for this construct were 0.88 (first measurement, M1) and 0.92 (second measurement, M2).

Perceived relevance of governmental body was measured with four items (one of which was deleted on the basis of the factor analysis). Examples of items are “The province of Overijssel makes important contributions to our society,” and “Besides the local and national governments, it is important that there is also a provincial government”

(Cronbach’s alpha [M1 only] = 0.75).

Interest in provincial politics was measured with three items. Examples of items are “I am interested in provincial politics,” and “I would vote in the provincial elections” (Cronbach’s alpha [M1 only] = 0.76).

Perceived value of citizen participation was measured with three items. Examples of items are “Co-creation leads to better solutions for problems in the province,” and “Co-creation leads to solutions that are acceptable to me” (Cronbach’s alpha = 0.84 [M1] and 0.86 [M2]).

Trust in sincere intentions was measured with four items. Examples of items are “With co-creation, I think the province really wants to use the opinions of citizens,” and “With co-creation, the province takes citizens seriously” (Cronbach’s alpha = 0.92 [M1] and 0.94 [M2]).

Expected personal gratification was measured with four items. Examples of items are “Participating in co-creation seems to be fun to me,” and “Participating in co-creation would give me a satisfied feeling” (Cronbach’s alpha = 0.91 [M1] and 0.93 [M2]).

Subjective norm was measured with three items. Examples of items are “People I socialize with find it important to participate in co-creation,” and “People I socialize with think I should participate in co-creation” (Cronbach’s alpha = 0.69 [M1] and 0.78 [M2]).

Perceived behavioral control was measured with four items (one of which was deleted on the basis of the factor analysis). Examples of items are “I am well-equipped to participate in co-creation,” and “I have the right skills to participate in co-creation” (Cronbach’s alpha = 0.82 [M1] and 0.77 [M2]).

3.4. Procedure

Data were collected using Qualtrics. After an introduction of the concept of co-creation, the questionnaire started with background questions (gender, age, municipality, educational level, work status), followed by the questions about participants’ overall intentions to take part in co-creation initiatives. Before answering these questions, participants were reminded of the characteristics of co-creation, as explained in the introduction. After that, participants were randomly assigned to one of the three conditions, and answered questions about their intentions to participate in the specific co-creation configuration. Participants had to answer all questions on a screen before going to the next screen and were not allowed to browse back.

3.5. Participants

The research was aimed at adult (18+) citizens of the province of Overijssel. To recruit research participants, we used a mixed strategy of online and offline recruitment approaches. Online approaches included social media accounts (Facebook and Twitter) of the province, municipalities within the province, and the researchers. Offline, postcards about the research were sent to a random selection of 5000 households in the province. The offline and online recruitment approaches made similar contributions in terms of participants: 48% participated via social media, 44% via postcards, and 8% in other ways. The contribution of recruitment approaches did not differ significantly between the three experimental conditions ($\chi^2 = 2.191, p = .70$).

In total, 637 people started filling out the questionnaire. Of them, 374 filled out the complete questionnaire. Twenty participants were removed because completing the questionnaire either took them too long (more than an hour) or too short (less than five minutes). As a result, the questionnaires of 354 participants were used in our analyses. Participants were rather evenly distributed over the three conditions (idea contest: $n = 115$; grassroots groups: $n = 121$; digital platform: $n = 118$).

Table 1 gives an overview of the participants’ background characteristics. The male:female ratio was almost in balance and did not differ between the three experimental conditions ($\chi^2 = 1.541, p = .46$). Participants ranged in age between 18 and 94, again with no significant

Table 1
Background characteristics of the participants.

	Idea contest	Grassroots groups	Digital platform	Total
Gender:				
Male	56	63	52	171
Female	59	58	66	183
Mean age (SD)	42.0 (17.6)	43.8 (16.1)	39:5 (16.1)	41.8 (16.6)
Educational level:				
Low	37	39	41	117
High	78	82	77	237
Work status				
Student	24	13	16	53
Employed	65	81	77	223
Unemployed	26	27	25	78

differences between the three conditions ($F(2,351) = 2.079, p = .13$). The participants' educational level was relatively high, but did not differ between the conditions ($\chi^2 = 0.230, p = .89$). Regarding work status a good mixture of students, employed citizens and unemployed citizens was found in each condition ($\chi^2 = 5.494, p = .24$).

In all, we conclude that our sample comprised an interesting cross-section of the citizens of Overijssel, although higher educational levels were over represented. The three experimental conditions consisted of similar groups of citizens.

4. Results

Below, we first discuss the determinants of citizens' general intentions to participate in co-creation. After that, we present the results of the experimental comparison of the three co-creation configurations.

4.1. General determinants of participating in co-creation

Table 2 presents the mean scores and standard deviations of the dependent and independent variables in our research model. We included a comparison of the experimental groups in this table to show that the three groups appeared to be highly similar, not only regarding background characteristics, but also regarding the dependent and independent variables regarding participating in co-creation in general. There were no significant differences between the three conditions.

The results show that the participants, on average, had neutral to moderately positive opinions about participating in co-creation. The only construct with a moderately low score was the subjective norm: Participants did not feel much motivation or pressure from their social environment to take part.

We used a hierarchical regression analysis to investigate to what extent citizens' behavioral intentions can be explained by the various independent variables in our research model. In a first model, we only included participants' background characteristics (gender, age, educational level, and work status) as predictors. We dichotomized work

Table 2
Descriptive results regarding the general intentions to participate in co-creation.

	Idea contest	Grassroots groups	Digital platform	Total
Behavioral intentions	3.4 (0.8)	3.4 (0.8)	3.5 (0.7)	3.4 (0.8)
Interest in provincial politics	3.3 (0.9)	3.3 (0.9)	3.2 (0.8)	3.2 (0.9)
Perceived relevance of governmental body	3.5 (0.7)	3.6 (0.7)	3.5 (0.6)	3.5 (0.7)
Perceived value of citizen participation	3.5 (0.7)	3.5 (0.7)	3.5 (0.6)	3.5 (0.7)
Trust in sincere intentions	3.6 (0.8)	3.6 (0.9)	3.6 (0.8)	3.6 (0.8)
Expected personal gratification	3.2 (0.8)	3.3 (0.9)	3.3 (0.7)	3.3 (0.8)
Subjective norm	2.5 (0.7)	2.6 (0.7)	2.6 (0.7)	2.6 (0.7)
Perceived behavioral control	3.3 (0.7)	3.4 (0.8)	3.3 (0.8)	3.3 (0.8)

Note: Means and standard deviations are reported. Constructs were measured on five-point Likert scales (1 = negative, 5 = positive). No significant differences were found between the three experimental conditions.

Table 3
Results of the regression analysis (dependent variable: behavioral intentions).

	Model 1	Model 2
Gender	-0.07	-0.02
Age	0.09	-0.01
Educational level	0.23****	0.11**
Work status	0.04	-0.02
Interest in provincial politics		0.12**
Perceived relevance of governmental body		0.01
Perceived value of citizen participation		0.23****
Trust in sincere intentions		-0.06
Expected personal gratification		0.43****
Subjective norm		0.05
Perceived behavioral control		0.13*
Adjusted R ²	0.06	0.51
F	6.40****	34.03****
Df	4349	11,342

Note: Scores represent standardized coefficients (Beta); * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

status by distinguishing participants who worked from participants who were either student or jobless. In a second model, we added all independent variables. The results of this analysis can be seen in Table 3.

The first model, based on general background characteristics, only explained 6% of the variance in participants' behavioral intentions. Of the four background variables, only educational level made a significant contribution: Highly educated citizens are more willing to participate than citizens with lower educational levels. Adding the independent variables from our research model leads to a significantly increased percentage of explained variance (51%). Educational level remains a significant predictor in the second model, but is complemented by four of the constructs in our research model: interest in provincial politics, perceived value of citizen participation, expected personal gratification, and perceived behavioral control. Based on this finding, it can be concluded that interest in the political system is an important initial factor. Subsequently, citizens will ask themselves the questions whether they believe in co-creation, whether they feel themselves able to contribute, and whether they expect to get some kind of (intrinsic) personal gain from participating.

Perceived relevance of the governmental body, trust in sincere intentions, and subjective norm did not contribute significantly. Considering the relatively high scores participants gave to the first two constructs (see Table 2), these appear to be less of a critical issue than the other constructs. Participants may generally acknowledge that the province plays a useful role in society, and accept that initiating a co-creation process implies that the province is eager to use the results of such a process. Subjective norm does not seem to play an important role in the decision to participate or not.

4.2. Experimental comparison of the three co-creation configurations

Table 4 compares the mean scores of participants' behavioral

Table 4
Descriptive results regarding the comparison of co-creation configurations.

	Idea contest	Grassroots groups	Digital platform	
Behavioral intentions	3.0 (0.8) ^a	3.3 (0.8) ^b	3.4 (0.9) ^b	F (2,351) = 6.006, p < .001, partial η^2 = 0.03
Perceived value of citizen participation	3.3 (0.7)	3.4 (0.7)	3.2 (0.7)	F (2,351) = 2.089, p = .13
Trust in sincere intentions	3.4 (0.8)	3.5 (0.9)	3.4 (0.8)	F (2,351) = 0.568, p = .57
Expected personal gratification	3.1 (0.8)	3.2 (0.9)	3.2 (0.7)	F (2,351) = 1.184, p = .31
Subjective norm	2.4 (0.7) ^a	2.7 (0.7) ^b	2.6 (0.8)	F (2,351) = 3.629, p < .05, partial η^2 = 0.02
Perceived behavioral control	3.2 (0.8) ^a	3.3 (0.8)	3.4 (0.7) ^b	F (2,351) = 3.684, p < .05, partial η^2 = 0.02

Note: Means and standard deviations are reported. Constructs were measured on five-point Likert scales (1 = negative, 5 = positive). Significant differences (based on Bonferroni post hoc analysis, $p < .05$) are indicated with different letters in superscript.

intentions and the independent variables in the three experimental conditions. We did not include the variables interest in provincial politics and perceived relevance of the governmental body here, as they were only measured once (before participants' exposure to the experimental conditions, see Table 2). To test for significant differences, we used a MANOVA with the three experimental conditions as independent variable. Statistical differences between the conditions were further mapped using Bonferroni post hoc analyses.

The multivariate analysis indicated significant differences between the three conditions on the complete set of dependent variables (Wilks' lambda = 0.913, F (12,692) = 2.670, $p < .005$, partial η^2 = 0.04). It should be noted, however, that the effect sizes of the differences were only small. Three significant differences were found, all indicating a less favorable evaluation of the idea-contest configuration. When it comes to behavioral intentions, as most important variable, both the grassroots groups and the digital platform yielded more favorable results than the idea contest. Regarding subjective norm, we only found a significant difference between the idea contest and the grassroots groups: Participants felt more social encouragement or pressure to participate in grassroots groups than in an idea contest. This seems to reflect the stronger emphasis on community in grassroots groups. Regarding perceived behavioral control, we found a significant difference between the idea contest and the digital platform: Participants felt more confident about having the right skills to participate on a digital platform than to participate in an idea contest. This is an interesting finding, as having the right skills is normally more problematized in contexts of digital interactions than in face-to-face contexts. Given the small effect sizes, it is not justified to draw firm conclusions about the best co-creation configuration, but we see a tendency that the idea contest generates somewhat less positive feelings than the other two options.

Finally, we used three regression analyses to investigate whether the determinants of behavioral intentions differed between the three experimental conditions. For reasons of conciseness, we did not use hierarchical regression analyses, but entered the general background variables and the various constructs of our research model simultaneously. The results are summarized in Table 5. The percentage of explained variance was quite high in all three cases (64–69%). However, some interesting differences in determinants between the three experimental conditions were found. Expected personal gratification proved to be an important predictor for all co-creation configurations. For the idea contest, it was the only significant determinant. In addition, perceived behavioral control played a significant role in grassroots groups and a digital platform. For these configurations, participants not only asked themselves whether the process would be a satisfying experience, but also took their own abilities into consideration. Finally, in the case of a digital platform the two determinants were complemented with trust in sincere intentions: Participants had more positive behavioral intentions when they believed that the governmental body really wanted to use the results of the co-creation process.

Three of the determinants that proved relevant for participants' general behavioral intentions, did not reach significance in the more specific analyses. Educational level was one of them. For one

Table 5
Results of the regression analyses per experimental condition (dependent variable: behavioral intentions).

	Idea contest	Grassroots groups	Digital platform
Gender	−0.05	−0.00	0.03
Age	−0.06	−0.11	0.06
Educational level	0.05	−0.06	0.12
Work status	−0.01	−0.09	−0.03
Interest in provincial politics	0.10	0.08	−0.02
Perceived relevance of governmental body	0.00	−0.05	0.03
Perceived value of citizen participation	0.00	0.08	0.10
Trust in sincere intentions	0.09	0.02	0.26**
Expected personal gratification	0.63****	0.60****	0.28****
Subjective norm	0.13	0.10	−0.04
Perceived behavioral control	0.05	0.19**	0.40****
Adjusted R ²	0.65	0.69	0.64
F	20.30****	25.05****	19.84****
df	11,103	11,109	11,106

Note: Scores represent standardized coefficients (Beta); * $p < .05$, ** $p < .01$, *** $p < .005$, **** $p < .001$.

configuration (the digital platform), however, this determinant approached significance ($p = .06$). The other two determinants are interest in provincial politics and perceived value of citizen participation. We will address this discrepancy in the discussion.

5. Discussion

Below, we first summarize and interpret the main findings of our study. We then address the limitations of our study and propose directions for future research. The section ends with implications and recommendations that follow from our findings.

5.1. Main findings

Our study focused on two research questions. First, we investigated citizens' general behavioral determinants for participating in decentral co-creation processes. Second, we examined to what extent three co-creation configurations would affect their behavioral intentions and the underlying determinants. To answer these questions we used an online questionnaire combined with an online experiment. For both parts of the research we developed a research model based on the TPB (Ajzen, 1991) and further specified on the basis of earlier empirical studies into determinants of citizen participation (Alathur et al., 2016; Holgersson & Karlsson, 2014; Lee & Kim, 2018; Lowndes et al., 2001; Vicente & Novo, 2014; Wijnhoven et al., 2015).

Table 6 provides an overview of the significant determinants, in general and for the three co-creation configurations. Regarding citizens' overall intentions to participate, only one of the demographic variables appeared to matter: educational level. Our study confirms earlier findings by Vicente and Novo (2014) and Lee and Kim (2018) that

Table 6
Overview of the significant determinants of intention to participate.

	General	Idea contest	Grassroots groups	Digital platform
Educational level	x	–	–	–
Interest in provincial politics	x	–	–	–
Perceived value of citizen participation	x	–	–	–
Trust in sincere intentions	–	–	–	x
Expected personal gratification	x	x	x	x
Perceived behavioral control	x	–	x	x

highly educated citizens are more inclined to take part in co-creation processes than citizens with lower levels of education, and thus contradicts Wijnhoven et al.'s (2015) conclusion that demographics do not matter at all. Still, no support was found for effects of gender, age, or work status.

Regarding the constructs included in our research model, the findings are quite straightforward. In general, citizens' intentions to participate in co-creation processes is related to their overall interest in the governmental institution concerned, their views on the usefulness of citizen participation, their estimations of their own abilities to fruitfully participate, and, first and foremost, their expectations regarding personal gratification. This confirms several findings from earlier studies (Alathur et al., 2016; Holgersson & Karlsson, 2014; Lee & Kim, 2018; Lowndes et al., 2001; Vicente & Novo, 2014; Wijnhoven et al., 2015), although none of the earlier studies used all determinants simultaneously.

When looking at the three specific co-creation configurations (idea contest, grassroots groups, and digital platform), no strong preferences were found. The idea contest had less favorable results than the other two configurations, but the effect sizes of the differences were small. This corresponds to the findings of Lowndes et al. (2001), who uncovered various pros and cons of different participation formats, which did not lead to a clear preference for one format over the others.

The added value of our research is that it offers a practically meaningful and comprehensive framework for understanding people's intentions to participate in co-creation. The framework has a well-established theoretical foundation (the TPB), is grounded in earlier research into citizens' intentions to participate and consists of statistically distinguishable constructs (in our factor analysis). Moreover, our results confirm the usefulness of the research model, with percentages of explained variance ranging between 51% (overall intentions) and 64–69% (co-creation configurations). The framework suggests that co-creation initiatives attract relatively many highly educated citizens, and relatively many citizens who already have some interest in the governmental institution. In these respects, the representation of participants will be skewed, compared to the characteristics of all citizens. The framework also suggests that citizens will ask themselves three questions before deciding to participate: is citizen participation any good, will I be able to contribute, and what is in it for me?

Interestingly, the determinants of participation appeared to differ between the three configurations. First, perceived behavioral control only played a role in the grassroots groups and digital platform configurations. The reason why it did not play a significant role in the idea contest configuration is puzzling. It cannot be explained by a ceiling effect: In the idea contest condition, the mean score of perceived behavioral control was even significantly lower than in the digital platform condition (albeit with a very small effect size). Apparently, it somehow played a less salient role in the considerations of the participants. It is worth noting that the role of perceived behavioral control was not limited to the online (digital platform) condition. Literature on online government initiatives pays much attention to the requested digital skills of citizens, and the inequality resulting from differences in such skills (cf. Ebbers, Jansen, & Van Deursen, 2016; Van Deursen & Van Dijk, 2011). Our research confirms the importance of citizens' perceptions of their skills in online co-creation configurations, but also

draws attention to these skill perceptions in offline configurations. The latter is in line with the qualitative study by Holgersson and Karlsson (2014), who also problematized citizens' abilities in offline participation settings.

Second, trust in sincere intentions appeared to be a relevant construct in the digital platform configuration only. Online participation initiatives may suffer from a noncommittal image: It may be relatively easy to gather comments or ideas from citizens, without a real sense of urgency to actually use them. Two connotations may be of influence. Continuously asking for ideas and comments may raise questions about closure (when will the governmental institution actually use them?) and transparency (how do we know what they will do with the ideas and comments?) and doubts about wear over time. After all, an abundance of online fora and discussion groups can be found that started off with great intentions but never really came alive. Furthermore, especially in the case of a platform aimed at continuously gathering input of citizens, the efforts made by the governmental institution (mostly developing an infrastructure and harvesting ideas) may seem smaller to citizens than in other co-creation configurations. In the other co-creation configurations, sincere intentions might be manifested in the seemingly larger investment of the governmental institution.

A remarkable result of our study is that two of the determinants that proved important for the general intentions to participate (interest in provincial politics and perceived value of citizen participation) did not play a role in predicting citizens' intentions to participate in either of the three co-creation configurations. The most plausible explanation seems to be that the detailed and specific information provided about the co-creation configuration made the more fundamental considerations of personal interest in provincial politics and value of citizen participation less salient in the participants' weighing process.

5.2. Limitations and future research

Despite the clear contributions of our research, some limitations must be taken into account. An obvious limitation is that we focused on people's intentions to participate in co-creation initiatives. It is important to realize that behavioral intentions are not the same as actual behavior. There may be many things that get in the way between intentions and behavior. Research shows that large-to-medium changes in behavioral intentions correspond to small-to-medium changes in actual behavior (Webb & Sheeran, 2006). Future research should try to extend the scope to actual behavior.

Second, it must be acknowledged that citizens' intentions to take part in co-creation processes are only one (important) success factor of co-creation, which must be weighed against other relevant factors, such as the participants' experiences during the actual co-creation process and the quality of the outcomes and the process. The ideal co-creation configuration will be one that attracts citizens, gives them a good experience, and leads to high-quality outcomes and a smooth process. Future research evaluating the process and outcomes of specific co-creation processes must shed more light on this.

A third limitation is that our study involved only one case of co-creation. It is imaginable that national contexts make a difference in citizens' intentions to take part in co-creation. Earlier studies involved many national contexts (Spain, the United Kingdom, Sweden, Germany,

India, and South Korea), and, due to differences in the specific participation issues, contexts, and configurations, it is impossible to compare these national contexts regarding citizens' intentions to participate. Our study adds one national context to the list, but comparisons are still hard to make. Cross-national research comparing citizens' intentions to participate in consistently formulated co-creation configurations would be very interesting. It is also imaginable that the governmental level affects people's intentions to participate. It may be assumed that initiatives close to citizens' environment will attract participants more easily. It is hard to estimate how this works for the provincial level, which may be further removed from the citizens than local governments but less salient to citizens than the national government. Research comparing the mechanisms behind citizens' intentions to participate on various governmental levels would be relevant.

A fourth limitation involves the estimation of citizens' intentions to participate in co-creation. Our research is suitable for identifying relevant determinants of intentions to participate and for comparing co-creation configurations, but not for getting a reliable indication of citizens' intentions to participate. Our sample already consisted of self-selected citizens, and it is reasonable to assume that the intention to participate in co-creation processes will be higher among people who are willing to participate in our research than among people who rejected to participate. One could also argue that the demographics of the participants do not fully correspond to those of the population. However, our sample did consist of a wide variety of citizens on all demographics, and pointed out that only educational level appears to matter. Furthermore the distribution of demographics over the three experimental conditions proved to be similar.

A fifth limitation involves our research model. The model we developed and used in our study worked well, but could still be improved. Two of the original constructs (attitude and expected personal influence) had to be deleted on the basis of the factor analysis. It seems worthwhile to explore the possibilities of redefining these constructs and formulating new items for them, to further improve the model and the corresponding research instrument.

Finally, our three co-creation configurations were developed in close collaboration with the province of Overijssel, based on professionals' estimations of what might work in citizen participation. By doing so, we used configurations that make sense in practice, but that may be hard to generalize. In reviewing earlier literature and designing our study we experienced similar problems, trying to interpret and compare earlier descriptions of citizen participation configurations. Future research should therefore focus on systematically distinguishing and describing relevant elements in citizen participation configurations.

5.3. Implications and recommendations

Our research suggests that citizens participating in co-creation processes will most likely not accurately reflect the breadth of characteristics of citizens of a region. In particular, we can expect relatively many participants (1) with higher levels of education and (2) with a clear interest in the governmental institution and its work domains. The first can be seen as an exogenous factor, although it may be worthwhile to explore strategies (both in the design of the co-creation process and in the communication) to lower the thresholds for people with lower levels of education. The second is related to the overall communication strategy of the governmental institution. For a fruitful use of co-creation processes, an overall communication strategy aimed at structurally strengthening the ties between the governmental institution and the citizens may be essential. Ideally, co-creation is not an isolated government initiative to temporarily or incidentally boost the interaction with citizens; it should form part of a larger strategy that places the governmental institution in the middle of society, in terms of relevance and visibility, by informing citizens, listening to them, and interacting with them.

In addition, based on the significant determinants, it seems

recommendable that calls for participation in co-creation processes at least address three issues. First, they should emphasize the importance of co-creation for the quality of life. This may be a statement reflecting the vision of the governmental institution on citizen participation, but may also briefly refer to evidence for the usefulness of co-creation (e.g. from earlier co-creation processes). Second, they should be clear about the skills required and reassure citizens about their abilities (and about the support they can get). Third, they should explicitly address what is in it for the participants, in terms of rewarding experiences, satisfaction, and personal development. One way to do this is by means of testimonials of earlier participants. It also seems important to generate publicity about successful co-creation projects.

In the case of online co-creation initiatives it is recommendable to explicitly address when and how the governmental institution will use the outcomes. An explicit commitment to the results of the co-creation process and transparency of the process, both in the invitations to participate and in the online environment itself, seems to be important to motivate citizens to take part in such initiatives.

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Appendix A. Description of the three co-creation configurations

A.1. Idea contest

Every once in a while, the province brings up a general topic about which you as a citizen may have ideas. You can think of general topics such as nature, environment, culture, regional economy, public transportation, and infrastructure. You can send in your idea to the province. On a pre-determined day you are invited to the provincial government building, together with other citizens who submitted ideas, to present your idea to a jury of citizens. The jury receives relevant background information from the province. The jury then discusses all ideas and selects a winner. The person who gets most jury votes is rewarded an amount of money to implement the idea together with the province.

A.2. Grassroots groups

The province offers money for a group of citizens with good ideas on general topics such as nature, environment, culture, regional economy, public transportation, or infrastructure. Within the group a coordination group of 5 to 7 persons is formed, which evaluates the various ideas within the group, selects the best idea, and organizes meetings to gain support for the idea among group members and representatives of the province. These meetings can be held at local community centers or other locations within the province. The idea that is selected will be implemented by the group, supported by the province.

A.3. Digital platform

The province offers a digital platform on which you can provide your idea about topics such as nature, environment, culture, regional economy, public transportation, and infrastructure at any time. Other people may react to your idea and you can use the chat facility to discuss it with each other. There is also a possibility to press a 'like' button for an idea. As such it becomes clear which ideas are popular among the citizens. Officials responsible for provincial policies use the platform to discuss popular ideas with their inventors. In this way, good ideas from the community emerge, which then can be implemented by the province.

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