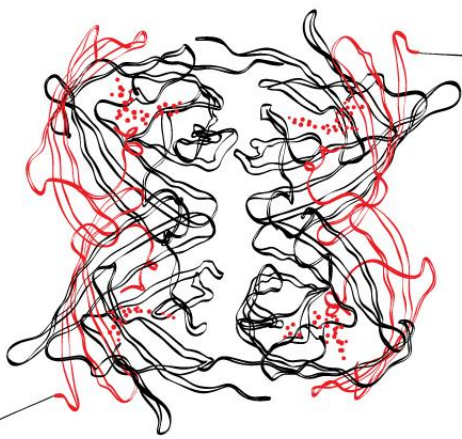
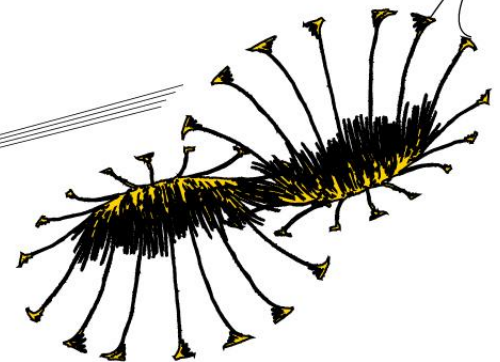




Unleashing the Innovative Potential of Employees

Promoting Opportunity-recognition Behaviors and Psychological Ownership



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ABSTRACT

Organizations wish to strengthen the innovation process from the bottom up by tapping into the innovative potential of employees. The aim of this action research is to examine if and how an intervention can successfully and simultaneously promote opportunity-recognition behaviors and individual and collective psychological ownership. For this research, the intervention is based on Appreciative Inquiry. The intervention was administered to five teams from three organizations. Overall, the results show that opportunity-recognition behaviors and individual and collective psychological ownership were promoted by the intervention. However, the extent to which opportunity-recognition behaviors as well as individual and collective ownership was promoted varied between teams as well as between individual participants. The five types of barriers to and enablers of the invention's success that were identified – characteristics of the participants, the teams, the management, the intervention, and the organization – might explain some of the variation in successfulness of the intervention between teams and individual participants. Although, due to the exploratory nature of this research, the results are preliminary, they are encouraging. Further research into similar and other interventions and factors is needed to better understand how to enable employees to contribute to organizational success by tapping into their innovative potential.

INTRODUCTION

For many organizations innovation is crucial to staying competitive and to surviving long term. More than ever, organizations are aware of the important role all employees play in the innovation process. Innovation is no longer exclusively delegated to a few designated people or departments. Innovation belongs to everyone (Dorenbosch, Van Engen, & Verhagen, 2005). As a result, organizations increasingly call upon employees to contribute to innovation and ask them to take ownership of their role in the innovation process.

One of the goals of organizations is to tap into the innovative potential of employees, strengthening the innovation process from the bottom-up. Therefore, the aim of this research is to investigate if and how an intervention helps employees take ownership of their new thoughts, ideas and actions. The chosen intervention is based on appreciative inquiry (AI), a method rooted in positive organizational scholarship (POS). The intervention comprises three workshops during which employees are invited to think about how to improve and renew products, services or processes.

One way to examine the role of employees from a process perspective is through innovative work behavior (IWB) (Scott & Bruce 1994; Janssen, 2000; De Spiegelaere, Van Gye, & Van Hootegem, 2014). IWB is defined as “all employee behavior aimed at the generation, introduction and/or

application (within a role, group or organization) of ideas, processes, products or procedures, new and intended to benefit the relevant unit of adoption” (De Spiegelare, Van Gye, & Van Hootegem, 2014, p. 144). Based on the five dimensions of IWB by Tuominen and Toivonen (2011), this research focuses on one specific dimension, namely opportunity-recognition behaviors. More specifically, this research examines if and under which conditions an intervention could successfully promote opportunity-recognition behaviors and feelings of ownership for opportunities recognized.

The sense of ownership referred to here is called ‘psychological ownership’. Psychological ownership is relevant for this research because it has significant emotional, attitudinal and behavioral effects on the person experiencing it (Pierce, Kostova, & Dirks, 2001). In addition, the literature provides preliminary evidence that psychological ownership is accompanied by feelings of responsibility which lead to positive organizational behavior (POB); this behavior in turn influences organizational performance and outcomes (Avey, Avolio, Crossley, & Luthans, 2009). Therefore, it is expected that by simultaneously encouraging opportunity-recognition behaviors *and* psychological ownership for these opportunities the outcomes will be better than they would be if merely the opportunity-recognition behaviors were encouraged. Since psychological ownership can arise both on an individual as well as on a collective level (Pierce, Jussila, & Cummings, 2009), both concepts are explained, encouraged and examined in this research. Doing so, this research offers professionals and researcher more insights into how to tap into the innovative potential of employees.

In the theoretical framework, opportunity-recognition behaviors and psychological ownership are defined and elements relevant to the current research are discussed. The subsequent section, the present study, describes why and how the chosen intervention is expected to simultaneously promote opportunity-recognition behaviors *and* individual and collective ownership. Next, in the method section the administered intervention is described in detail, and the data collection and data analysis are discussed. Finally, the results of this exploratory study are presented and the contributions, limitations, recommendations and conclusions of this research are discussed in the concluding section.

THEORETICAL FRAMEWORK

Opportunity-recognition behaviors

Opportunity-recognition behavior is one of five types of IWB (Kleysen & Street, 2001; Tuominen & Toivonen, 2011): opportunity recognition, generativity, championing, formative investigations, and application. This research considers these five types of IWB as five phases of innovative behavior that contribute to the innovation process. Opportunity-recognition behavior is: “paying attention to opportunity sources, looking for and recognizing opportunities to innovate, and gathering

information about them” (Tuominen & Toivonen, 2011, p. 404). Generativity refers to the process of generating information, ideas and solutions for opportunities recognized earlier. The third dimension, formative investigations, involves experimenting with ideas and solutions by further constructing them to test and evaluate possible solutions. Championing reflects the socio-political behaviors necessary for the innovation processes, such as mobilizing, persuading and influencing, and challenging and risk-taking. Finally, the application dimension refers to the actual implementation, the necessary modification, and the incorporation of the innovations into business as usual.

The first step of innovating

Several researchers emphasize the iterative character of the phases of IWB and claim that they rarely occur in isolation of one another (Tuominen & Toivonen, 2011; De Spiegelaere, Van Gye, & Van Hootegem, 2014). One can display any of these behaviors at any given moment, separately but more often combined (Scott & Bruce, 1994). Although it would be worthwhile to further investigate the conditions for promoting all IWB phases, that would be beyond the scope of this study. Therefore the current study focuses specifically on opportunity-recognition behaviors because the innovation process most often starts with recognizing an opportunity (Amabile, 1988; De Jong & Den Hartog, 2010). Evidently, without the ability or willingness to recognize opportunities to improve or renew, the innovation process cannot commence at all.

Promoting opportunity-recognition behaviors: sources of opportunities

Drucker (1985) identified seven opportunity sources of which the following three are of particular interest to this study: 1) investigating the gap between ‘what is’ and ‘what could be’, 2) changes in perception and, 3) new knowledge. These sources are of interest because they can trigger opportunity-recognition behaviors. Therefore, facilitating these opportunity sources during the intervention is expected to pave the way for promoting opportunity-recognition behaviors. How the proposed AI-based intervention facilitates these opportunity sources will be clarified in the present study section.

Ownership for opportunities

For employees’ contributions to the innovation process to become even more significant, employees must feel and express individual and collective psychological ownership for opportunities. This ownership is expected to increase the impact of opportunity-recognition behaviors on the organizational innovation process. The following paragraphs explain the rationale for this by defining the constructs of individual and collective psychological ownership and providing the evidence so far of the impact of these concepts on all sorts of organizational outcomes. Finally, the routes through

which psychological ownership emerges are presented and subsequently they are further discussed in the present study section to justify the intervention design.

Psychological ownership: definition and attributes

Psychological ownership implies that one can feel like the owner of an object even though one is not the legal owner (Pierce, Kostova, & Dirks, 2001, 2003). Psychological ownership is: “that state where an individual feels as though the target of ownership or a piece of that target is ‘theirs’” (Pierce et al., 2003, p. 86). Although other conceptualizations of psychological ownership are employed as well, two main attributes are mentioned in most definitions. First, psychologically experienced ownership is directed toward a specific object or ‘target of ownership’ (Van Dyne & Pierce, 2004; Pierce et al., 2001, 2003). Such a target can be either tangible or intangible (Pierce et al., 2001, 2003), and individual characteristics and context influence the level of importance of a specific target (Van Dyne & Pierce, 2004). Second, psychological ownership is a state in which individuals (or a group) develop(s) possessive feelings of ‘mine-ness’ or ‘our-ness’ (Van Dyne & Pierce, 2004; Pierce, Jussila, & Cummings, 2009; Pierce & Jussila, 2010; Pierce et al., 2001, 2003).

Individual and collective ownership

Apart from psychological ownership as a psychological state experienced by an individual, more recently a collective state of psychological ownership is also acknowledged (Pierce & Jussila, 2010): “collective psychological ownership emerges through interactive dynamics whereby individuals come to a single and shared mind-set as it relates to a sense of ownership for a particular object” (p. 810). Therefore, collective psychological ownership is a socially constructed and held sense “that this target of ownership ... is collectively ours” (p. 810).

Even though encouraging psychological ownership might lead to positive individual behaviors and organizational outcomes (Avey, Avolio, Crossley, & Luthans, 2009), negative consequences might also arise. Examples of possible negative effects of individual feelings of ownership include stress, unwillingness to share (controlling behavior) and the burden of responsibility (Pierce et al., 2009). Collective ownership has the ability to counteract such negative effects of individual ownership. Instead of carrying sole responsibility, collective ownership encourages people to share responsibility which relieves individuals from the burden and stress of sole responsibility and reduces selfish behaviors (Pierce et al., 2009; Pierce & Jussila, 2010).

Impact of psychological ownership

Psychological ownership comprises cognitive as well as affective elements (Pierce et al., 2001, 2003) which prompt affective-driven behaviors (Van Dyne & Pierce, 2004, p. 442), thereby distinguishing itself from other job-related attitudes. The emotional attachment to (parts or elements of) the

organization individuals develop through psychological ownership is more powerful than the mere cognitive evaluation individuals might hold of an organization. Even though encouraging individual ownership might lead to positive individual behavioral and organizational outcomes – through feelings of responsibility that in turn lead to POB (Avey, Avolio, Crossley, & Luthans, 2009) – negative consequences might also arise. Through encouraging both a sense of ‘mine-ness’ (individual ownership) and a sense of ‘our-ness’ (collective ownership) for a specific target, negative effects could be reduced and positive outcomes and impact on the individual, group and organizational level could be even more significant.

Routes to psychological ownership

In their integrative framework, Pierce et al. (2003) discuss the three routes to psychological ownership. It is through the routes of exercising control, gaining knowledge and self-investment that psychological ownership can emerge. First, when people can control the ownership target, over time the target becomes part of the sense of self (Furby, 1978a/1991). Second, the more information people have about the target, the more intimate and familiar they get with the target and through this become psychologically attached to it. Third, through labor or other resources we invest things such as time, effort and money into what we create or produce. In that way we invest something of ourselves in the target which will result in (increased) feelings of ownership. In addition, feeling responsible for a target motivates one to spend time, energy, and care and thus invest oneself. These routes to ownership can be taken by individuals as well as by groups (Pierce & Jussila, 2010).

Pierce et al. (2003) argue that “the three routes to psychological ownership (i.e., control, intimate knowledge, and investment of the self) are distinct, complementary, and additive in nature. Any single route can result in feelings of ownership independent of the others” (p. 95). In addition, the authors specify that feelings of ownership for a certain target will be stronger when they are the result of traveling multiple routes toward psychological ownership. However, regardless of the routes taken to psychological ownership, feelings of psychological ownership might not last forever.

To summarize, building on the evidence above, this research assumes that promoting individual and collective ownership for opportunities while simultaneously promoting opportunity-recognition behaviors by means of an intervention will help organizations to use the innovative potential of employees, and thereby strengthen the organizational innovation process (Figure 1). To accomplish this, the intervention should facilitate the three routes to ownership (control, knowledge and self-investment) and pave the way for opportunity-recognition behaviors by offering three sources of opportunities to tap into (the ‘what is’ and ‘what could be’-gap, change of perception and new knowledge).

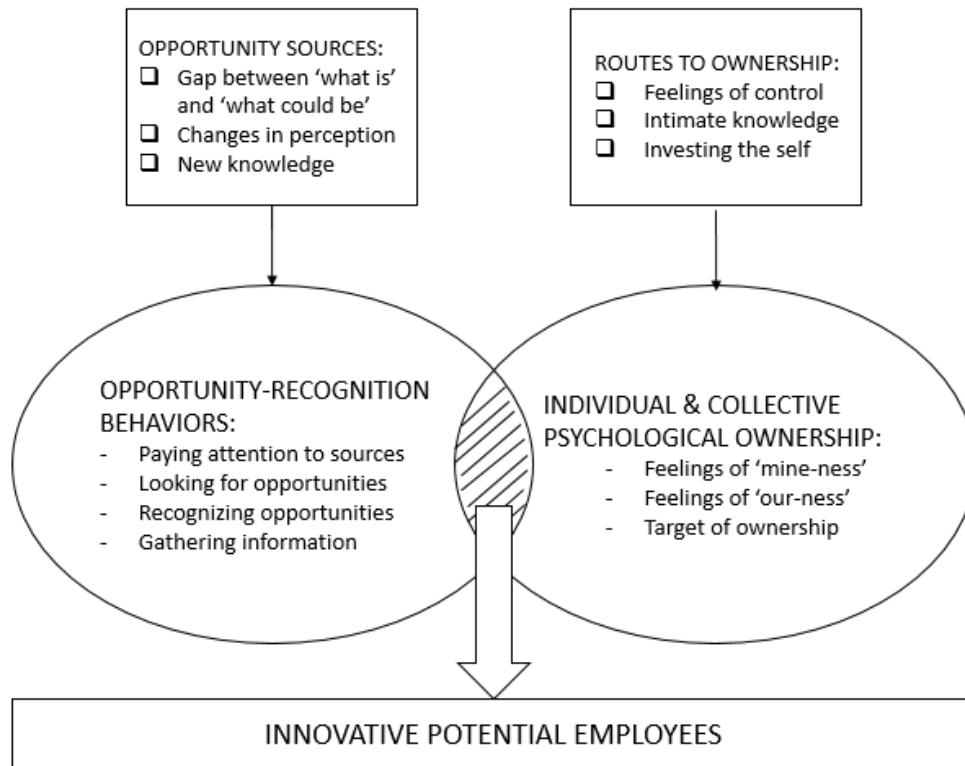


Figure 1. Summary of the current research: rationale and approach

THE PRESENT STUDY

This exploratory study aims to tap into the innovative potential of employees through identifying if and how (under which conditions) an intervention successfully and simultaneously promotes opportunity-recognition behaviors and individual and collective psychological ownership. To identify how an intervention can be successful this research seeks to answer the following two research questions:

- What enablers positively influence the outcomes of an intervention that aims to promote opportunity-recognition behaviors and individual and collective ownership simultaneously?
- What barriers negatively influence the outcomes of an intervention that aims to promote opportunity-recognition behaviors and individual and collective ownership simultaneously?

Through answering these research questions this research adds to the literature on the role of employees in the innovation process and how to encourage them to innovate. The scientific insights gained from this research contribute to theory on IWB but also to knowledge of individual and collective psychological ownership by exploring if feelings of ownership could amplify opportunity-recognition behaviors. Regarding this research's practical contribution, the suggested

employee-focused intervention can be used as a practical tool that enables professionals to tap into the innovative potential of employees and thereby strengthen the innovation process.

To promote opportunity-recognition behaviors and a sense of individual and collective psychological ownership, this research suggests an intervention at the individual and group employee level. The suggested intervention is based on appreciative inquiry (AI) (Cooperrider & Srivastva, 1987). The next paragraph describes why AI is expected to be an appropriate methodology for an intervention that promotes opportunity-recognition behaviors and psychological ownership. It also describes the 4D model of AI that forms the basis of the intervention. The final paragraph explains how an AI-based intervention is expected to simultaneously influence opportunity-recognition behavior and individual and shared psychological ownership.

AI as an intervention

The AI-approach is selected for two main reasons. First, the AI-perspective is “uniquely intended for discovering, understanding, and fostering innovations in social-organizational arrangements and processes” (Cooperrider & Srivastva, 1987, p.152) and thus it is expected to promote opportunity-recognition behaviors. Second, AI fosters feelings of pride, ownership and commitment (Whitney, 2010) through engaging people into working together and investigating ‘what is’ and ‘what could be’. In addition, the social process that lies at the core of AI also facilitates interactive dynamics which can promote a group sense and fosters collective ownership. On a more practical account, AI can be introduced on every level and every scale in organizations which enables the researcher to design and administer a rather small-scale team intervention that can still be effective.

The AI approach is often captured in and explained using the 4D model (Figure 2). The first step is to discover and appreciate ‘what is’ (Discover), followed by an inquiry into ‘what could be’ (Dream) in the desired future. Next, ambitions for the desired future are formulated (Design) which in turn inspires the final step of deciding which actions to take to realize ‘the desired future’ (Destiny). The affirmative topic in the center of the model refers to the topic of the appreciative investigation. It is the topic people wish to change for the better. It can be anything from the way people collaborate to how the sales process is organized, or the strategy of the organization. Whatever the topic is, it should be important to the people who will inquire about it (Cooperrider & Whitney, 2005).

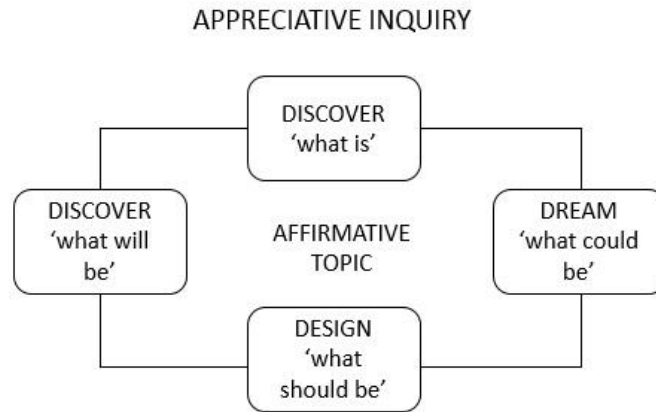


Figure 2. The appreciative inquiry 4D model

AI promoting IWB and ownership

Some specific elements of this model as well as the AI-approach as a whole facilitate the routes to ownership and give rise to the three sources of opportunities (Figure 3). To inspire opportunity-recognition behaviors, AI paves the way for the three opportunity sources to arise (Drucker, 1985). The first source, an investigation of the gap between ‘what is’ and ‘what could be’, is precisely what the first two steps of the model (Discover and Dream) intend to achieve. The second source, change in perception, is facilitated by the notion that AI is a strengths-based approach that offers an alternative, appreciative perspective on the traditional problem-solving paradigm in organizations (Cooperrider & Srivastva, 1987; Finegold, Holland, & Lingham, 2002). The very act of asking an AI-question is believed to influence the perceptions of the person who is asked the questions (Cooperrider & Srivastva, 1987). Last, a successful appreciative ‘inquiry’ will result in gaining new insights and new knowledge, which is the third opportunity source. Especially the discovery-phase enables this process through identifying strengths by gathering and sharing success stories.

AI also facilitates the three routes to psychological ownership: control, knowledge, self-investment. During the completion of the 4D model, appreciative inquirers have control over the content (what and how to inquire) and the result (what to dream of and how to realize the dream). The inquiry itself (discovering) inevitably results in gaining new knowledge. Last, by participating in an AI-intervention one automatically invests his or her time and energy in the intervention but is also invited to invest in realizing the desired future (Design and Destiny).

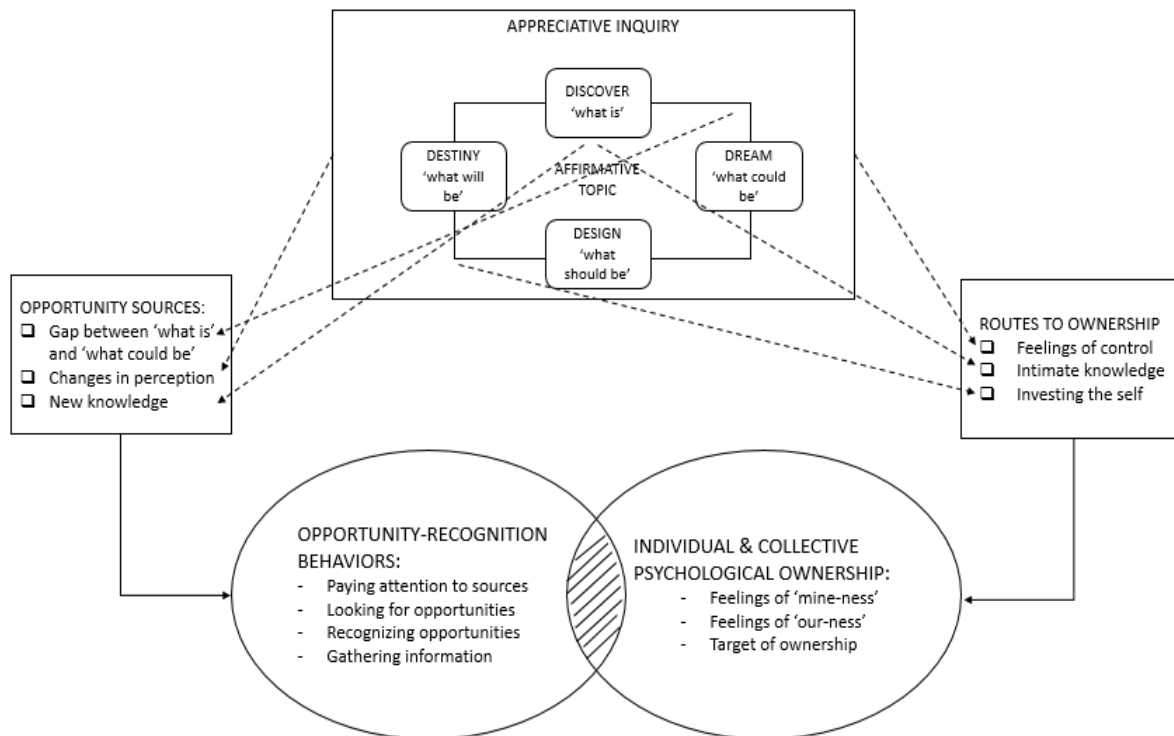


Figure 3. Conceptual framework

The extent to which opportunity sources and routes to ownership are available and used is expected to depend on the conditions under which the intervention is administered. Therefore this research not only investigates *if* an AI-based intervention will indeed promote opportunity-recognition behaviors and individual and shared ownership, but also *how* (under which conditions) the intervention fails or succeeds in doing so. The subsequent method section describes how the intervention was designed and administered and how data were gathered and analyzed in order to answer the research questions.

METHOD

To examine if and how the intervention promoted opportunity-recognition behaviors and individual and psychological ownership, the AI 4D model was used to design an intervention. The intervention comprised three workshops. During workshop 1 and workshop 2 the 4D model was applied and during workshop 3 participants were asked to evaluate the 4D model as a method.

To measure the successfulness of the intervention, the researcher analyzed the extent to which opportunity-recognition behaviors were exhibited and individual and collective psychological ownership was experienced during and after the intervention. Data was gathered and analyzed using Brinkerhoff's (2006) Success Case Method (SCM) and by performing within-case and cross-case analyses. The SCM comprised several steps: designing an impact model, designing and distributing a survey, analyzing the results of the survey, selecting interviewees based on survey results, conduct

and analyze the interviews (Brinkerhoff, 2006). Observations were added to the SCM to improve construct validity. For the final analysis of all data and in addition to the SCM analyses of the surveys and interviews, within-case and cross-case analyses were performed. Through triangulation individual participants could be categorized as low, moderate or high success cases in order to assess *if* the intervention was successful. To identify *how* (under which conditions) the intervention had (not) been successful, data from the interviews and observations was used.

In the following paragraphs the participating organizations and teams, the procedure and the administered intervention will be described in detail. The data-gathering procedure and analysis will be described in the final paragraphs of this section.

Participants

Five teams from three Dutch organizations participated in the workshop program (Table 1). All of the organizations are public institutions. To ensure confidentiality, each team is assigned an alias. The first organization is a municipality and the participating team (team Apple) included eight employees from the same department and their team manager. The second organization is a regional historical institution, from which six employees from different departments (team Banana) participated in the workshop program. Finally, from the third organization, a national first-response agency, three teams from different regions and departments participated (team Cranberry, team Coconut, and team Cherry). Team Cranberry comprised eight participants from two different departments and two different locations in the same region, including the manager of one of those departments. Team Coconut consisted of eight employees from the same department and same location. Team Cherry included seven employees, all from the same department.

Topic choice

An appreciative inquiry always starts with choosing the (affirmative) topic (Figure 2). Therefore, before the intervention started the team managers were asked if they wanted to decide on the topic themselves or if they would let the team members jointly decide on a topic during workshop 1. The researcher did not choose the topic for the intervention because the most important requirement is that those who will conduct the appreciative inquiry (in this case the members of the five teams) feel an urgency to work on and improve things related to the chosen topic (Cooperrider & Whitney, 2005). Therefore, ideally participants would choose the topic themselves because this would ensure the highest level of commitment to the topic and thus to the intervention. However, it is also important that the managers believed the topic is important for the organization to invest in. If management decided on the topic, it was expected that managers would be (even) more inclined to support employees' ideas resulting from the intervention.

By deciding on the topic for the workshops (Table 1), the focus of the participants' search for opportunities to improve or renew and to develop ownership was chosen. The topic could be anything either the manager or the participants themselves believed there was an urgency to improve. For team Banana and Cherry, the team managers decided on the topic beforehand. This also meant that participants knew what the topic of the workshops would be when they signed up for the workshop program. Team Apple, Cranberry and Coconut were invited by their managers to decide themselves what would be the topic of interest during the workshops (Table 1).

In each organization employees received from their manager an invitation to voluntarily participate in the workshop program. For each team a minimum of six and maximum of eight employees could sign up. The times and dates for the workshops were scheduled based on availability and in agreement with managers and the participants (Table 1).

Table 1: Team composition, chosen topics and workshop schedules per team

Subject	Team Apple	Team Banana	Team Cranberry	Team Coconut	Team Cherry
Participating employees	8	6	7	8	7
Participating managers	1	-	1	-	-
Chosen topic	Increase the added value of our team for the organization and local government	Improving collaboration with external parties	Improve the internal collaboration within the team	Improve helpfulness & knowledge sharing between colleagues	Connecting people and work activities better
Chosen by	Participants	Manager	Participants	Participants	Manager
Workshop 1	15-Jul-2015	19-Oct-2015	29-Sep-2015	30-Sep-2015	22-Sep-2015
Workshop 2	11-Sep-2015	26-Oct-2015	8-Oct-2015	14-Oct-2015	6-Oct-2015
Workshop 3	25-Sep-2015	26-Oct-2015	8-Oct-2015	30-Oct-2015	2-Nov-2015

Procedure

The intervention was a program of three workshops in which participants were guided through the AI 4D model (workshop 1 and 2) and asked to evaluate the 4D model as a method (workshop 3). To prevent demand characteristic from influencing participants, participants were not informed about the research questions and research aim. Workshops were scheduled based on availability of the participants and therefore the timeframe of the workshop program varied from approximately 10 weeks between the first and the last workshop at the most, to two weeks between the first and the

last workshop at the least (Table 1). For all teams at least one week was scheduled between workshop 1 and 2, since participants were asked to do some homework after workshop 1.

Teams needed approximately four hours to complete workshop 1, while workshop 2 and 3 took approximately 2 hours per workshop to complete. For workshop 2 and 3 teams were offered the possibility to either schedule the workshops on separate dates, or to schedule workshop 3 immediately after workshop 2. Each workshop was facilitated by two facilitators: one communication professional and the researcher. They both had limited experience with AI. The researcher facilitated all workshops and four different communication professionals (facilitator 1, 2, 3, and 4) took turns in joining the researcher to co-facilitate a workshop, depending on their schedules. As a result, some teams had the same facilitators for all three workshops, while other teams had different facilitators per workshop (Table 2). Since team Banana comprised only six participants, the researcher was the only facilitator for this team.

Table 2: Facilitators per team and workshop

Teams and workshops	Facilitator(s) per workshop	
Team Apple		
Workshop 1	Facilitator 1	Researcher
Workshop 2	Facilitator 1	Researcher
Workshop 3	Facilitator 1	Researcher
Team Banana		
Workshop 1		Researcher
Workshop 2		Researcher
Workshop 3		Researcher
Team Cranberry		
Workshop 1	Facilitator 2	Researcher
Workshop 2	Facilitator 2	Researcher
Workshop 3	Facilitator 2	Researcher
Team Coconut		
Workshop 1	Facilitator 1	Researcher
Workshop 2	Facilitator 3	Researcher
Workshop 3	Facilitator 3	Researcher
Team Cherry		
Workshop 1	Facilitator 4	Researcher
Workshop 2	Facilitator 3	Researcher
Workshop 3	Facilitator 3	Researcher

Intervention design

For each workshop the duration, the applied elements of the AI 4D model and the main goal was decided on upfront (Table 3). Workshop 1 was mostly an introduction to AI in which participants were invited to Discover (first step of the 4D model) and share positive experiences regarding the chosen or prescribed theme. At the start of the first workshop participants were also informed about the assessment procedure that started one week after the last workshop (the survey and in-depth interviews). During workshop 2, participants completed the entire AI model. In workshop 3 participants were invited to reflect on the method and decide if any of the elements of the method had been helpful and, if so, whether they wanted to preserve them by incorporating elements of AI into their daily work. For each workshop a detailed script was designed as a guide for the facilitators (Appendix A). In the next paragraphs a summary of the content of each workshop is given, as well as how the content relates to opportunity-recognition behaviors, individual psychological ownership and collective psychological ownership.

Table 3: Workshop characteristics, ownership routes and opportunity sources facilitated

Workshop	Duration	4D model	Goal	Ownership route	Opportunity source
Workshop 1	4 hours	Discover	Deciding and/or narrowing down the scope of the theme, introduction to and familiarize with AI	Intimate knowledge	New knowledge
Workshop 2	2 hours	Discover	Discover strengths, design a shared vision, make plans	Intimate knowledge	‘What is’ vs. ‘what could be’ gap
		Dream		Control	
		Design			Self-investment
Workshop 3	2 hours	Discover	Incorporating AI (elements) in daily work	Control	New knowledge
		Design		Self-investment	
		Destiny			

Workshop 1

The first workshop took approximately four hours and had two main goals: 1) inviting participants to decide on the topic (if relevant) and narrow down the scope of the topic, and 2) familiarizing participants with the appreciative interview style by practicing such an interview in pairs.

The main elements of the program were conducting AI mini-interviews (in pairs) about the topic, sharing success stories with each other, finding the common thread in the stories, and deciding which success factors contributed to the success of the topic. At the end of workshop 1, the participants were asked to conduct at least one appreciative interview about the topic with someone else in the organization. The stories of these mini-interviews were the input for workshop 2.

This discovering exercise particularly provided participants the opportunity to gain new and intimate knowledge on the chosen topic, thereby facilitating one of the routes to ownership (gaining intimate knowledge) and offering an opportunity source (new knowledge) in order to promote opportunity-recognition behaviors (Table 3).

Workshop 2

This workshop took approximately two hours and during the workshop participants applied the complete AI model to the chosen topic.

Workshop 2 started with participants sharing experiences and interview stories with each other. After doing so, participants were asked again to identify the common thread and success factors of the stories. This resulted in the discovery of the strengths (referred to as the positive core) of the organization regarding the topic. This positive core reflected what is already good in the organization and giving it life. After this step, participants were invited to Dream (phase 2 of the 4D model) by making a drawing of what the organization would look like if there was to be more of this positive core. Next, participants were asked to think about and Design (phase 3) what the organization should look like, by formulating ambitions for the short-term, mid-term and long-term future. Together, the results of the Dream and Design phase embodied the desired future of participants regarding the topic. During the final phase, Destiny, participants were asked to decide on the first steps they were going to take in order to realize their desired future. By the end of workshop 2, participants had a clear vision of their desired future and a plan of how to get there.

Through completing the entire 4D model during workshop 2, participants were exposed to the three opportunity sources: new knowledge, the gap between 'what is' vs. 'what could be', and a change in perception. In addition, the three routes to psychological ownership were also facilitated: exercising control, gaining intimate knowledge and investing the self (Table 3). Accordingly, both opportunity-recognition behaviors and individual and shared ownership were expected to be promoted most strongly during this workshop.

Workshop 3

In workshop 3 it was not the previous chosen topic but the method that was the subject of interest. The main question participants were asked to answer was: "Which elements of the method have

inspired new thoughts and ideas and which of those elements would you like to hold on to by incorporating them into your daily work activities?” After identifying these elements (Discover), participants were invited to share ideas with each other on how to incorporate these elements (Design) and who would undertake which action to realize the implementation of these ideas (Destiny).

Through completing the Discover, Design, and Destiny phases of AI, participants were able to exercise control and decide to what extent they would invest themselves in plans to incorporate AI (elements) in work activities. This way ownership for their ideas and plans could arise. The new knowledge on AI they gained during workshop 1 and 2 provided the opportunity resources for them to tap into (Table 3).

Assessing successfulness

To assess if and how the intervention successfully promoted opportunity-recognition behaviors and individual and collective psychological ownership, the SCM (Brinkerhoff, 2006) was used after which a within-case and cross-case analyses was conducted.

The SCM is a qualitative approach that assesses the impact of learning interventions through determining what has been learned, how it was applied in daily activities, and to what extent it led to valuable results. This will provide an answer to the question of *if* the intervention as successful. In addition, the SCM recognizes that an intervention can never be the single reason for improved performance and aims to identify which other factors contributed to or impeded success. This makes the SCM an appropriate method to answer *how* the intervention was successful. It answers the two research questions by identifying which enablers and barriers to opportunity-recognition behaviors and individual and collective ownership participants encountered during and shortly after the intervention.

Dependent variables: the impact model

The first step of the SCM is to design an impact model. The impact model guided the assessment of opportunity-recognition behaviors, individual ownership and collective ownership promoted by the intervention. The impact model (Table 4) was used to design the measurement instruments and to compare the intended results with the actual results of the intervention.

The impact model improved construct validity through ensuring that the three measurement methods – observations, a survey, and in-depth interviews – all measured the same constructs: opportunity-recognition behaviors, individual psychological ownership, and collective psychological ownership. The operationalization of these constructs was based on the previous theoretical investigation and the resulting conceptual framework (Figure 3). Hence, opportunity-recognition

behavior was operationalized into four variables: 1) Paying attention to opportunity sources, 2) looking for opportunities, 3) recognizing opportunities, and 4) gathering information about opportunities. The variables for individual and collective psychological ownership were operationalized as the following: (collective) feelings of control, (collectively) gaining intimate knowledge, and (collective) investment of the self/selves. Using the impact model to design and analyze the observations, survey and semi-structured in-depth interviews improved construct validity.

Table 4. Impact model

Research goals	Tapping into the innovative potential of employees by promoting employee opportunity-recognition behaviors <i>and</i> individual and collective ownership for opportunities recognized
Key results (job-level)	<ol style="list-style-type: none"> 1. Increased opportunity-recognition behaviors which contributed to innovation or improvement of products, services, or processes 2. Increased sense of individual ownership 3. Increased sense of collective ownership <ol style="list-style-type: none"> 3.1 Experiencing a sense of ‘us’
Critical actions (new behaviors)	<ol style="list-style-type: none"> 1a. Paying attention to opportunity sources 1b. Looking for opportunities to innovate 1c. Recognizing opportunities to innovate 1d. Gathering information about the opportunities 2a. Feelings of control 2b. Gaining intimate knowledge 2c. Investing the self 3a. Collectively recognized and shared control 3b. Collectively recognized and shared intimate knowledge 3c. Collectively recognized and shared investment of the selves

Data collection

To assess whether or not opportunity-recognition behaviors and individual and collective ownership were successfully promoted by the intervention, three different measurement methods were used: the researcher’s observations (N=38; 5 teams), a survey (N=25) and interviews (N=10).

SCM survey

The survey was conducted with two goals: 1) to identify participants who experience the greatest, a moderate level of and the least success, and 2) to assess the range and impact of success for all research participants. After conducting the survey the results were used to select participants who represented the highest and lowest levels of success for the in-depth interviews. In addition, the survey also provided some quantitative data from which can be determined – without statistical testing – for example, how many participants indeed learned new behaviors and how many did not.

One week after the last workshop, all participants were invited to complete the survey. The survey was distributed via e-mail through an online survey tool. The survey started with a short introduction and a consent form, after which questions about the participant’s experience with the intervention immediately followed (Appendix B). These questions focused on the extent to which the critical actions (Table 4) were displayed by participants during and after the intervention. The final question asked participants to state their full name, so the researcher was able to contact them for an interview if they would be selected. Participants were assured confidentiality.

The results of the survey were categorized using a coding scheme (Table 5). Similar to the survey-design the impact model (Table 4) was also used to design the coding scheme. Based on the coding scheme participants were categorized into one of four categories: high success case, moderate success case, low success case, or wafflers. Wafflers were participants who had given contradictory answers. To identify to which category they belong, they were contacted by phone and asked to elaborate on their answer until they could be categorized (Appendix C).

Table 5: Coding scheme

Category	Opportunity- recognition behavior		Individual ownership	Collective ownership
	Item 1	Item 2	Item 3a & 4a	Item 3b & 4b
High success	At least 1 x option 1	& Option 1 or 2	3a. At least 1 x option 1 4a. agree	3b. At least 1 x option 1 4b. Agree
Low success	No option 1	& Option 4, 5, or 6	3a. No option 1 4a. Disagree	3b. No option 1 4b. Disagree
Moderate success	No option 1, at least 1 x option 2	& Option 2 or 3	3a. At least 1 x option 2 4a. Agree	3b. At least 1 x option 2 4a. agree
Wafflers	Answer is contrary with item 2	& Answer is contrary with item 1	Answers to 3A/4A are contrary	Answers to 3B/4B are contrary

SCM in-depth interviews

Two participants from each team were selected for the in-depth interviews (N=10). The in-depth interviews (N=10) had two goals: finding more evidence for the impact of the intervention and identifying enablers and barriers participants had experienced during or after the intervention. To identify the enablers and barriers, one low-success and one high-success case participant were selected from each team. The in-depth interviews were semi-structured interviews in which answers to the following main questions were sought: Which elements of AI did you use during and after the workshop program and what results did you achieve using these elements? Do you feel you or the team recognized an opportunity during or after the workshops and do you feel individual and/or collective ownership for this opportunity? What factors contributed to and what factors impeded the success of the intervention? What suggestions do you have for improvement of the workshop program?

Observations

In addition to the surveys and the in-depth interviews, observations made by the researcher were also used to assess the success of the intervention. For each team, a summary of the most important observations per team (N=5) was made (Appendix D) by the researcher. These summaries were also based on the reflections on the workshops of the co-facilitator(s) who were present during a particular workshop. Similar to the survey and in-depth interviews, the observations were also guided by the impact model. Therefore the extent to which the critical actions were exhibited during the workshops is reported in the observation summaries.

Data analysis

The analysis of the data comprised several steps. First, a within-case analysis per team was performed to examine the successfulness of the intervention and to identify enablers and barriers participants had experienced, per team. Next, a cross-case analysis was performed using the results of the within-case analysis. Based on the cross-case analysis, overall conclusions could be drawn regarding the success of the intervention for promoting opportunity-recognition behaviors and individual and collective ownership, and regarding the enablers and barriers experienced by participants.

Within-case analysis

Starting with team Apple (N=9), first the extent to which the intervention had promoted opportunity-recognition behaviors was examined per measurement method (Table 6). To analyze the observations (N=9), it was taken into account if and how many opportunity-recognition behaviors were displayed during the intervention. The results of the surveys (N=6) were analyzed using the coding schema that guided the categorization of participants into low, moderate or high success

cases of opportunity-recognition behaviors. The interview data (N=2) was examined for interviewees who had reported to have recognized an opportunity during or after the intervention, or not. For individual and collective ownership, the approach was similar. The observations were analyzed for the presence of the three routes to ownership. The survey-coding scheme again guided the categorization of participants into low, moderate or high success cases of individual and collective ownership. To analyze the interviews, experiences of individual or collective ownership during or after the intervention were taken into account.

Table 6. Results for opportunity-recognition behaviors and individual and collective ownership for team Apple

Method	Opportunity-recognition behaviors	Individual ownership	Collective ownership
Observed N=9	Yes 2 out of 4 behaviors	Yes	Yes
Reported in survey N=6	Yes 4 high, 1, moderate, 1 no	Yes 4 high, 1 moderate, 1 no	Yes 4 high, 2 moderate
Reported during interview N=2	Yes No (not a new idea)	Yes Yes	Yes Yes

After analyzing the successfulness of the intervention for promoting opportunity-recognition behaviors and individual and collective ownership, the enablers of and barriers to the success of the intervention experienced by team Apple were identified through analyzing the interviews and observations (Table 7).

Table 7. Results for enablers of and barriers to a successful intervention for team Apple

Category	Observed	Reported during interview
Enablers	Participants' openness	Curiosity
	Participants' willingness	Responsibility to develop as a team
	Creative approach (drawing)	Attendance and support of manager
	Being challenged (write ambition)	Attending out of free choice Critical group attitude: reflective
Barriers	Not having a concrete goal	Rigidity of method

Skepticism	Group composition: different work field
Not feeling a need/urgency	Critical group attitude

For team Banana Cranberry, Coconut and Cherry the data was analyzed following the same procedure (see Appendix E for a complete overview of the with-in case analyses per team).

Cross-case analysis

The results of the with-in case analyses, in turn, served as the data to be analyzed for the cross-case analysis. Results for opportunity-recognition behaviors and individual and collective ownership were compared, looking for congruencies and incongruities between teams. To account for (in)congruencies, the observations and interviews were further analyzed for patterns and possible explanations. To identify the enablers and barriers experienced by participants, all data regarding the enablers and barriers identified per team was gathered and analyzed for patterns and central themes. To pinpoint which elements of the intervention had been most effective, a separate analysis of the interviews and observations was performed.

This research aimed to investigate whether an intervention could simultaneously promote employees' opportunity-recognition behaviors and employees' sense of individual and collective ownership for opportunities, and identify the conditions under which such an intervention would be successful. In the following section the results are presented.

RESULTS

This results section provides the results of the cross-case analysis. As an introduction to these results, first the intervention process is described since the results were influenced by how the intervention process unfolded. This way the results can be interpreted in light of the intervention process. Next, the extent to which opportunity-recognition behavior and individual and collective ownership were indeed promoted by the intervention is discussed. This in turn provides the basis for the interpretation and explanation of the enablers and barriers that were identified next. The final paragraph describes some additional results that, although not related to the current research's aim and questions, are worth to be shortly addressed.

The intervention process

To discuss the process that unfolded during the workshops, first the overall results per workshop are presented. Next, the extent to which and at what point in the process opportunity-recognition behaviors and individual and collective ownership emerged is discussed.

Workshop 1

Overall participants were moderately to very enthusiastic at the start of the first workshop. Team Coconut was the least enthusiastic compared to the other teams. They seemed rather preoccupied with the fact that the workshop program was part of a research study and were very inquisitive about the AI method and the goal. This continued during the other workshops. In contrast, for example team Cranberry was very enthusiastic. Especially when sharing success stories with each other. All teams participated in all activities of the workshop. Some teams asked more questions about the AI method (team Apple, team Coconut, team Cherry) than others (team Banana, team Cranberry).

At the end of the first workshop participants were asked to do some homework for the second workshop. The assignment was to conduct at least one appreciative mini-interview with someone in the organization who was not participating in the workshop program. In all teams a few participants became hesitant at that point. Some participants expressed this by mentioning they had some difficulty grasping the goal or possible results of the AI exercises (such as the homework). Similar feedback was also anonymously given when participants were invited to write down feedback at the end of the workshop. One participant from team Apple expressed feeling a bit uncomfortable conducting an appreciative interview since it felt like asking for a compliment. However, other participants pointed out that they enjoyed looking at their work from a new and positive perspective. They had experienced the workshop as inspiring and were curious regarding the possible outcomes. Overall, based on the observations (including the written feedback) and the in-depth interviews approximately half of the participants seemed somewhat hesitant and the other half seemed curious and enthusiastic after workshop 1.

Workshop 2

At the start, participants' attitudes seemed to vary in a manner similar to what was observed at the end of workshop 1. In some teams, several participants were skeptical and others curious and enthusiastic (team Apple, team Cherry). Those who were skeptical mostly expressed feelings of doubt regarding the possibility of valuable outcomes of the workshop program. One team (team Coconut) was also rather concerned with the intentions of and results expected by their manager. Some participants were mostly curious and enthusiastic; participants in team Cranberry for example showed great enthusiasm to get started. Most participants of team Banana expressed that they did not have enough time to do the homework. They were however curious and enthusiastic to commence with the second workshop.

As workshop 2 progressed, overall the level of engagement and energy seemed to increase amongst all teams. Sharing stories during the discovery phase changed the atmosphere, making it

more positive and energetic. In general, participants listened carefully and mutual understanding seemed to increase.

For most teams, the dreaming phase seemed to be inspiring and meaningful. Participants were invited to think about and create their vision of the future and make it concrete by drawing it and explaining it to each other. Especially for team Cherry this was a turning point. The energy, enthusiasm and engagement increased significantly and participants who previously felt skeptical seemed to let go of their doubts. For team Banana, the drawing assignment was more difficult. They made some sketches but it did not result in a joint vision. According to the participants, it was hard to draw a shared vision since they all belonged to different departments and there was also no shared organizational vision that connected them. During the interviews, one participant pointed out that the topic of the workshop (chosen by the manager) was also not really of interest to her. However, in their attempts to make a drawing participants did engage in a meaningful conversation. From this conversation participants drew some main conclusions (e.g., the organization does not have a shared vision, participants do not really know what other colleagues actually do), which in turn inspired several ideas for improvement they intended to realize after the workshop.

The next steps, articulating short-, mid- and long-term ambitions (design phase) and deciding which actions to take (destiny phase), appeared to help teams to set some concrete goals and make plans to realize their vision. Here, a difference between how teams articulated their ambitions and intended actions was noticeable. Team Apple formulated clear ambitions. However, they agreed that their new shared vision and ambitions would significantly affect their current way of working. Hence, they decided to further discuss the new vision and its implications in another meeting, so they would have more time to think it through. Team Banana did not draw a shared vision, so they could also not articulate ambitions to go along with it. However, from their discussion some ideas for improvement arose. They immediately made arrangements for these ideas during the destiny phase. For team Cranberry the process became more difficult after designing their shared vision. Although they had created an inspiring shared vision, they felt they had limited opportunity to actually realize change. Consequently, articulating ambitions and deciding on actions to take was a bit more of a struggle for this team. In the end, they agreed on some actions they believed were within their range of influence. For team Coconut and team Cherry the design and destiny phases were the most valuable and helped them to articulate and discuss some clear goals and actions. When invited to share ideas on how to realize these ambitions, these teams quickly came up with actions to take and ideas to realize for improvement. By articulating ambitions and actions in line with their drawing, these teams had set out a clear future direction.

Workshop 3

Due to different causes, the original program for workshop 3 was either altered or not used for all teams. Team Apple first started with the program as it was intended. When participants were asked to agree together on which actions to take to incorporate meaningful elements of AI into their daily activities, participants indicated that was not what they needed. According to them, AI was a new skill they had learned. They would keep it in their 'toolbox' along with their other skills and use it whenever appropriate.

Due to a lack of time, team Banana did not complete workshop 3. However, when time became an impending factor they were allowed to choose how to proceed with the workshop program. They chose to use the rest of the time to complete workshop 2. Team Cranberry expressed that the workshops overall had been valuable and fun for them. It was however difficult for them to pinpoint what specific elements of AI or parts of the workshop had been of real value to them. As a result they did not decide on actions to take to incorporate AI (elements) in their daily work activities. For team Coconut the program of workshop 3 was not used at all. The program was altered to meet their needs, which was to prepare a presentation of the results of workshop 2 to their manager. Since they had been questioning his intentions for the workshop program from the start, being well prepared was very important to them.

Team Cherry decided to organize an AI workshop themselves for all colleagues who had not participated in the workshop program. They were so excited about their ideas and how these ideas came about that they wanted to share their intervention experience with other colleagues, so they could all work on the envisioned change together. Since they hereby fulfilled the goal of workshop 3 (incorporating AI elements into daily activities) themselves, the researcher and participants agreed that completing the program of workshop 3 would not add anything to what they were already doing themselves.

Effect on the dependent variables

Overall, the intervention resulted in ideas and plans for improvement or renewal for all teams. The scope and impact of these ideas and plans on, for example, the team, department or organization did however differ per team. Based on the observations, survey results and interviews, it appears opportunity-recognition behaviors were promoted for most participants during and after this workshop. Which and how many of the four opportunity-recognition behaviors were displayed varied per participant. The results also show that individual and collective psychological ownership emerged during the intervention. Again, the degree to which ownership emerged varied per participant and per team. Moreover, collective ownership seemed to be more strongly promoted than individual ownership.

All in all, results indicate the AI-based intervention indeed promoted opportunity-recognition behaviors and individual and collective ownership to some extent (Table 8). The following paragraphs describe the overall finding per variable.

Table 8. Overall results for opportunity-recognition behaviors, individual ownership and shared ownership

Method	Opportunity-recognition behaviors	Individual ownership	Shared ownership
Observed (N=5 teams)	Yes (N=38)	Yes	Yes
Reported in survey N=25	High success case (N=14)	High success case (N=12)	High success case (N=13)
	Moderate success case (N=8)	Moderate success case (N=7)	Moderate success case (N=10)
	Low success case (N=3)	Low success case (N=6)	Low success case (N=2)
Reported during interview (N=10)	Yes (N=7)	Yes (N=8)	Yes (N=8)
	No (N=3)	No (N=2)	No (N=2)

Opportunity-recognition behaviors

Opportunity-recognition behaviors were observed by the researcher for all teams (N=5) during the intervention. Of the 25 participants (N=25) who completed the survey, 14 participants reported that the intervention had helped them to demonstrate at least one of the four opportunity-recognition behaviors during or after the intervention and that they had experienced concrete and valuable results due to the intervention. Therefore they are considered high success cases. Another eight participants reported that the intervention had also helped them to demonstrate at least one of the four opportunity-recognition behaviors during or after the intervention but that they did not experience any concrete or valuable results due to intervention. These cases are classified as moderate success cases. Finally, three participants reported that the intervention had not helped or enabled them to demonstrate any of the four opportunity-recognition behaviors. These cases are referred to as low success cases. A total of ten participants (N=10) were asked whether they had seen one or more opportunities during or after the intervention. Seven participants indicated they had seen new opportunities, while three participants indicated they had not seen new opportunities as a result of the intervention.

Individual and collective ownership

Regarding individual ownership, the researcher observed all five teams (N=5) demonstrating taking one or more routes to ownership during the intervention. For most teams, both gaining intimate

knowledge and investing something of the self, seemed to be available routes to individual ownership. The results are identical for collective ownership. Looking at the survey results for individual ownership, 12 participants had strongly experienced at least one route to individual ownership and explicitly indicated feeling individual ownership for the opportunities recognized during or after the intervention. These are referred to as high success cases. For collective ownership, 13 participants can be considered high success cases. Seven participants are categorized as moderate success cases, since they somewhat experienced individual ownership through one or more routes to ownership. For collective ownership, ten participants are categorized as moderate success cases. Six participants experienced no routes to ownership and also explicitly indicated not having felt a sense of individual ownership; these cases are categorized as low success cases. For collective ownership, two participants are low success cases. During the interviews, ten participants (N=10) were asked if they felt they had experienced individual and collective ownership as a result of the intervention. Eight participants stated that they felt individual ownership for the opportunity they recognized, while two participants indicated that they did not feel individual ownership. The results for collective ownership were identical.

Enablers and barriers of the intervention

Based on the observations made during the interventions and interviews with ten participants afterwards, enablers and barriers can be divided into five types of characteristics that affected the successfulness of the intervention (Table 9): participant characteristics, team characteristics, management characteristics, characteristics of the intervention and organizational characteristics. In the following paragraphs each characteristic is further discussed.

Table 9: Cross-case results for enablers and barriers of the intervention

Type of characteristic	Enablers	Barriers
Characteristics of the participants	Open attitude	No need/ urgency for the theme
	Enthusiasm	Need for a clear goal to work to
	Feeling responsible to develop	Feeling insecure
	Attending voluntarily	Already familiar with method
	Curiosity	Difficulty focusing on the positive
	Positive attitude	
Characteristics of the team	Critical, reflective attitude	Critical, skeptical attitude
	Psychological safety	Different works fields/ jobs/tasks/ backgrounds

	Positive attitude	Group dynamic: speaking a different language
	Willingness to try	Believe to have limited influence and control
	Willingness to take a risk	
	Group composition: similar personalities	
Characteristics of the management	Presence	No support
	Support	No concern
	Appreciation	Not informing participants regarding reason for and intentions of intervention
	Enthusiasm	
	Involvement	
	Providing in needs (time and other resources)	
Organizational characteristics	Appreciation of other colleagues	Skepticism regarding colleagues' willingness to change/join
		No time to conduct interviews (busy)
		Not having a sparring partner (colleague)
		No shared vision in the organization
		Culture very different from intervention approach
		Reorganization: less safe environment
Characteristics of the intervention	Practical tools	Goal and result is unclear at start
	Being heard by sharing stories	Chosen theme was vague/too abstract
	A different / new approach	Rigidity of method
	Clear instructions	Very different way of working
	Enthusiasm facilitator	Intervention was part of a research
	Creative approach	More time needed between workshops, for interviews
	Being challenged	

Types of enablers and barriers

Participant characteristics

Participant characteristics include traits, attitudes and behaviors of participants that either contributed to (enablers) or impeded (barriers) the success of the intervention. For example, the open attitude and curiosity of most participants enabled them to share stories, listen and also to try new things, even if the purpose was not always clear to them. Thus, these characteristics clearly affected the intervention process in a positive way. On the other hand, the fact that – although it is partly inherent to an AI intervention – there was no clear goal or concrete outcome towards which participants could work was rather difficult for some participants. It seemed to make them a bit hesitant to go along with some of the assignments. Here, an organizational characteristic might explain this need for an end goal or outcome to work towards. Some participants stated that the AI process was very different from the organizational culture and their day-to-day operating style. Especially participants from the national first-response agency (team Cranberry, Coconut and Cherry) mentioned in the interviews that they were used to having a well-defined problem they would be asked to solve, for which they often also relied on routines and approaches that had proven to be effective. In an AI intervention there is no problem to solve, but a strength to build upon in whatever way and direction the participants choose to.

Team characteristics

Looking at characteristics of the team, it is clear that attitude, group composition and group dynamics seem to have affected the successfulness of the intervention. With regard to the overall attitude of the group, participants experienced a willingness as a group to try something unknown which enabled them to experience something new as a group. A willingness to take a risk was an enabler mentioned by a participant from the national first-response agency. This enabler is associated with one of the organizational characteristic barriers: the reorganization. Due to an impending reorganization in the national first-response agency, participants from these three teams were not sure about their future jobs and tasks. Some participants felt this was a barrier because it might affect the extent to which participants spoke freely. Others experienced the workshop as an environment in which they could take a risk and speak freely, despite the reorganization. Having similar personalities within the team was also mentioned as contributing to the successfulness of the intervention. Most participants had experienced the group as a whole as positive, willing and enthusiastic. However, the mixture of participants from different jobs, departments and backgrounds felt like a barrier (especially for team Banana) as they found it difficult to speak a common language and find common ground for a shared vision. A skeptical attitude was considered both an enabler and a barrier. A reflective or critical attitude towards oneself was an enabler as it contributed to a successful intervention. On the other hand, a skeptical attitude towards the method (and specifically

regarding not having a clear goal or outcome to work towards) was sometimes also mentioned as a barrier since it tempered positivity and participants' willingness to try. Another barrier was the participants' belief that the group had limited or no influence on certain aspects of the organization or department. This particularly prevented some teams (team Banana, team Cranberry and team Coconut) from being ambitious regarding actions to take in order to realize their shared vision. Interestingly, this changed for team Coconut after they shared their ideas with managers and co-workers. The supportive and appreciative reactions they received increased their feelings of control and effectiveness.

Management characteristics

Attitudes and behaviors of managers either enabled or impeded the intervention's success. Taking all management characteristics into account, supportiveness seemed to have been one of the most influential enablers and barriers for all teams. Teams who felt their manager(s) supported the ideas and opportunities that arose due to the intervention (such as team Apple and team Cherry) explained that the support of their manager(s) made it possible for them to try to realize opportunities and plans for improvement. It also resulted in getting the time and resources to work on ideas. Together, this allowed them to act upon the change they envisioned and believed in (team Cherry). If participants did not feel their managers were supportive or interested (team Banana and some participants from team Cranberry) this feeling prevented them from really envisioning and initiating change. If their manager was not concerned or supportive, the intervention felt pointless because nothing could or would change. Team Coconut seemed to be more skeptical and hesitant due to not knowing if they had the support of their manager(s) and not knowing their manager's intention for letting them participate in the workshop program. However, after the intervention team Coconut received support for their ideas from several managers. This positively affected their attitudes and beliefs, and they started to believe they were allowed to and actually could initiate improvements.

Organizational characteristics

Some of the organizational characteristics, such as culture, a shared vision and a reorganization, were already explained due to their relationship with other enablers and barriers. In addition to those enablers and barriers, colleagues also played a role in the success of the intervention. Colleagues' appreciation of what participants had learned and for the outcomes (ideas for improvement) of the workshop program was especially important for team Coconut. This appreciation lowered one of the barriers they experienced during the intervention, that is, their previous skepticism regarding the willingness of colleagues to make changes. Finally, not having enough time impeded some participants from conducting an appreciative interview (mostly participants from team Banana and team Cranberry).

Intervention characteristics

Characteristics of the intervention that enabled the intervention to be successful, or impeded its success, mostly concern either the method and working formats or the organization and facilitation of the intervention. Regarding the method and working format, enablers included sharing stories and being heard, which increased mutual understanding and commitment. Further, some working formats were perceived as practical tools participants could use again in their day-to-day work. Moreover, a new approach (looking at a topic from a positive angle) and a creative approach (drawing) were mentioned as enablers, since these had facilitated participants to think differently and more concretely. On the other hand, some participants had struggled, especially during and just after the first workshop, with not having a clear goal or result and the very different way of working (team Apple, team Coconut, and team Cherry). Additionally, to some participants (team Banana and Coconut) the chosen theme felt too vague or abstract. This resulted in skepticism which affected the level of enthusiasm and engagement. For some participants of team Apple, the steps of the 4D model felt rather inflexible and rigid which might impede creativity and thinking freely. Regarding the organization and facilitation of the intervention, according to participants the clear instructions and enthusiasm of the facilitators had contributed to the success of the intervention. The fact that the intervention was part of a research study raised a barrier for team Coconut, since it increased skepticism and possibly also caused some distrust. On a more practical note, teams which had approximately one week between workshop 1 and 2 (team Banana and Cranberry) expressed they did not have enough time to conduct an appreciative mini-interview.

Interdependence between characteristics

Besides the enablers and barriers identified for the five characteristics that influence the successfulness of the intervention, some characteristics seem to, in turn, influence other characteristics. For example, culture (organizational characteristics) affected how comfortable participants felt letting go of the traditional problem-oriented approach (participant characteristics, team characteristics, and intervention characteristics). Another example is how the team characteristic 'willingness to take a risk' (an enabler) is related to the organizational characteristic 'a reorganization' (a barrier). Together, these five characteristics seem to affect the successfulness of the intervention in different ways for each team, due to the different dynamics and relationships between the characteristics for each team and organization. Overall, the most influential characteristics that enabled or impeded success seemed to be characteristics of the team and the management.

Additional results

Although not related to the research aim and questions, some additional results were found. Since they can be of interest to other researcher these additional results are briefly addressed here. During the in-depth interviews interviewees indicated which elements of the AI methodology had had the most profound influence on the results of the intervention according to them. These results are presented next and give more insights in the effectiveness of the separate elements of the intervention.

Several of the interviewees experienced conducting interviews and sharing stories as an important element of the intervention (Table 10). They stated that conducting interviews and sharing stories resulted in more positive energy and more insight in each other’s experiences. It also made people feel proud of themselves, their team or the organization. Moreover, asking a positive or appreciative question was mentioned several times because it resulted in different and meaningful conversations for the interviewees. Both interviewees from team 5 stated that the creative element (drawing) also made a difference and a valuable contribution to the result.

Table 10. Interview results per team for most effective elements of the intervention

Team	Interviewee 1	Interviewee 2
Team 1	Awareness of the effect of a positive question and conversation	Bringing in a new perspective through the question: “What would it look like if ... did work?”
Team 2	Gathering and sharing success stories	Sharing stories and experiences, and working together to improve
Team 3	A positive question to look at positive things	sharing stories and finding something positive in each story
Team 4	Sharing stories	Conducting interviews and sharing the intervention experience with other colleagues and managers afterwards
Team 5	Conducting the interviews, sharing success stories and finding the common thread; the drawing was fun and effective too	A new way of asking questions by using an appreciative question; The creative element, drawing, was fun and made a big difference in the process

DISCUSSION

In an effort to tap into the innovative potential of employees, this research investigated *if* and *how* an intervention could simultaneously promote employees’ opportunity-recognition behaviors and individual and collective ownership. In this final section, the findings are recapitulated and

scrutinized and the theoretical and practical contributions of this research are discussed. Finally, suggestions for future research are given.

To assess *if* the intervention was successful, the degree to which opportunity-recognition behaviors and individual and collective ownership were promoted by the intervention was investigated. In general, the findings indicate that the administered intervention indeed promoted opportunity-recognition behaviors and individual and collective ownership for the majority of the research participants. However, the extent to which opportunity-recognition behaviors as well as individual and collective ownership was promoted varied substantially between teams as well as between individual participants. To identify *how* the administered intervention had promoted opportunity-recognition behaviors and individual and shared ownership, and to answer the two research questions, the enablers and barriers that affected the intervention's results were identified. Multiple barriers and enablers were identified and they could be categorized into five types: participant characteristics, team characteristics, management characteristics, characteristics of the intervention, and organizational characteristics. These five types of barriers and enablers could possibly explain some of the variation in successfulness of the intervention between teams and individual participants since earlier studies also identified characteristics such as leadership, individual characteristics and work-group behavior that influence IWB (Scott & Bruce, 1994). Regarding ownership, Pierce et al. (2001, 2003) also previously argued that the degree to which ownership for a target is developed is moderated by three types of characteristics: characteristics of the target, the individual, and the context. They also stated that, regardless of the routes taken to psychological ownership, feelings of psychological ownership might not last forever.

Inherent to performing a real-life experiment, the experimental conditions varied per team. Some of the most obvious and salient variations in conditions are discussed next. First, some managers chose the topic of the intervention themselves and other managers invited the participants to choose a topic. Looking at the enablers and barriers of the intervention, this did not seem to affect the success of the intervention. What did seem to affect the success was whether or not participants felt an urgency to look for improvement concerning the chosen topic. This is in line with Cooperrider and Whitney's (2005) argument that the most importance requirement of an AI topic is that those who will inquire about a topic must feel a necessity to be working on the matter to begin with. The second varying condition was the presence or absence of the manager during the intervention. Interestingly, it appears that the presence or absence of a manager is not what had the most noteworthy impact on the result. To participants it is more important if and how a manager shows interest and support for ideas for improvement. Moreover, the extent to which participants feel they are allowed to make decisions and changes (having control) affects the results of an

intervention. These findings correspond with earlier (Scott & Bruce, 1994) and recent research (De Jong & Den Hartog, 2010) on leadership styles and innovative work behavior (IWB). Third, contrary to workshops 1 and 2, the content and intervention approach of workshop 3 differed considerably per team. Although some might debate the scientific rigor of such an approach, it does however honor one of the fundamental principles of AI: social constructionism. According to social constructionism, it is through how we understand and relate to what we experience that we construe our worlds and truths (Gergen, 1982; Cooperrider & Srivastva, 1987). In other words, through interactions with others we give meaning to and create our own reality. The intervention is thus a social process and in line with the social constructionism principle the content is determined by (the needs) of the group of participants at any given moment.

Theoretical and practical contributions

From a positivism paradigm, the validity, reliability and generalizability of this research can be questioned and criticized. For example the role of the researcher, who was also one of the facilitators of the intervention and had limited experience with the AI methodology, could be considered a liability for subjective bias. Furthermore, a lack of statistical testing could be considered a limitation of this research. However, this exploratory research simply scratches the surface of this particular topic and the findings are thus preliminary. Conclusions can only be drawn cautiously based on these results and these conclusions are merely applicable to the participants of the current study. Before generalizations can be made and firm conclusions can be drawn, more and varied sorts of research into similar and other interventions and factors that encourage or discourage employees to recognize opportunities and develop psychological ownership is required.

Although positivist researchers may criticize the methods of this research, this research contributes to theory as well as practice. As this research originated from a trend in organizational practice – reliance of organizations on all employees to innovate and renew – the core motive to conduct this research has been to offer a practical tool to organizations, helping them to tap into the innovative potential of their employees. The results imply that, depending on the circumstances (enablers and barriers), an intervention that facilitates opportunity sources and the routes to ownership is an effective tool.

From the start, the classical scientific approach of rigor and control was secondary to the researcher's wish to bring theoretical knowledge into organizations through real-life experiments and be an integral part of the experiment. Such an approach permits organizations to learn from theory and, at the same time, also allows the researcher to abstract new knowledge from practice in order to build new theory. All this is exactly in line with the premise of AI according to its founders Cooperrider and Srivastva (1987). Even though all results are preliminary and not generalizable, this

research took the first steps toward building theory from practice regarding how to tap into the innovative potential of employees.

Future research

Overall, this research shows that an intervention that paves the way can indeed promote opportunity-recognition behaviors and individual and collective psychological ownership. For this study the intervention was based on AI methodology. However, other methodologies that also facilitate the routes to ownership and opportunity sources might be just as or even more successful. More research into different intervention methods is thus necessary. When searching for and selecting other methodologies, the additional results found in this research might be of interest to researchers. For example, participants mentioned sharing stories and experiences as one of the most meaningful activities of the intervention. This is in line with Tuominen and Toivonen's (2011) findings that knowledge gathering and knowledge sharing enables opportunity-recognition behaviors. Therefore, gaining more knowledge on how and why sharing stories is a catalyst for innovation might be of interest to both science and practice.

As a consequence of the exploratory nature of this research, evidence for the assumption underlying this study – simultaneously promoting opportunity-recognition behaviors and individual and collective ownership will result in more positive organizational outcomes – is not provided or found. Thus, more empirical research concerning this assumption is key. Second, since the phases of IWB can be exhibited separately but are more often combined at any given moment (Scott & Bruce, 1994), more research concerning the effect of an intervention on the other phases of IWB could provide more insight into scope of the effect of the intervention on the entire innovation process. As feelings of ownership might not last forever (Pierce et al., 2001, 2003) long-term research into the effects of the intervention overtime could be of great value. Being a field study, other factors might have affected the results of the intervention. More research into such factors is therefore desirable. Finally, even though both types of psychological ownership were promoted by the intervention, collective psychological ownership seemed more strongly promoted compared to individual psychological ownership. For collective ownership to arise, existing theory argues a group mindset has to be present (Pierce & Jussila, 2010). This research did not investigate if such a mindset was present or how it emerged during or due to the intervention. To explain the stronger sense of collective psychological ownership, more research into the antecedents of the construct would be necessary.

In sum

In an effort to contribute to theory *and* to make a significant difference in true organizational life by providing organizations with a helpful tool to tap into the innovative potential of employees, this research was conducted in a real life setting. Although such an approach entails several scientific challenges, this research did result in meaningful contributions to both practice and science. These first small steps towards building theory from practice were taken and the results can inspire future research on the innovative potential of employees and how to tap into it by using similar or other intervention methods. For now, practitioners can already make use of the encouraging results of using AI as an intervention to boost the innovation process. Through appreciating the already existing strengths of the organization and dreaming of what could be, employees are inspired to recognize opportunities and psychologically own them through feelings of 'mine-ness' and 'our-ness'. By doing so, the intervention has paved the way to unleashing the innovative potential of employees.

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