Can group climate explain innovative readiness for change?

Abstract

Purpose: Globally, elder populations are increasing at unprecedented rates. This has precipitated change in the way practitioners are thinking of delivering eldercare services, especially in the public sector. In Norway, innovation scholars, the Norwegian government, and most municipalities delivering eldercare services agree that they must innovate to meet upcoming demands. However, infrastructural impacts are not expected for 15 years. Thus, the more difficult question becomes when a change is so distant, when or with whom should you innovate? The aim of this study is to determine innovative readiness by looking to group climate.

Method: The study will explore the differences between two groups within an organization, those that participate (the participant group) in formal innovation training and those that do not (the nonparticipant group). The differences in each group's climate will be explored using a t-test.

Findings: There exists two identifiable group climates within the same organization. The participant group's climate indicated they are ready for innovative change by showing they are task-oriented (C2), engaged (S1), and have an overall positive attitude towards innovation (A1 & A2). To the contrary, the nonparticipant group's climate indicates they're not ready for innovative change. This group has a dominant role of acceptance (D2), meaning rather than pursuing ideas or causes they believe in, they accept those tasks given to them. Each group's level of innovation understanding was relatively similar prior to any formal training.

Originality/value: This research shows that even though a manger within an organization is championing or encouraging innovative behavior, there can still exist two different group climates; those that are genuinely interested in innovation, and those that aren't. Should participation in innovation training be mandatory or voluntary? This study showed the latter, that the participant group's climate indicated they were more ready for innovative change, while the nonparticipant group's climate indicated they weren't. This could be an important group dynamic for managers to consider when building a new innovative initiative, especially if that organization struggles with maintaining engagement and positivity for the change.

Keywords: change management, climate, innovation, readiness

Article Classification: Original article or case study

1 Background

1.1 Introduction

Many public organizations are facing unprecedented challenges in resolving how to provide for their future elderly (Kulik et al., 2014, Schultz et al., 2016, Schultz et al., 2015). Elderly populations are growing at unprecedented rates, but their impact is not expected to affect the organizations before 2030-2050 (Kulik et al., 2014, Statistics-Norway, 1999, Statistics-Norway, 2012, Statistics-Norway, 2014). Innovation scholars, the Norwegian government, and most Norwegian municipalities agree that they must innovate to meet upcoming eldercare issues (Schultz et al., 2016), but with 15 years before the impact is to be felt and many other organizational issues surfacing, the more difficult question quickly becomes when and with whom should you innovate? Alternatively, if an innovative culture doesn't exist and management has decided that this infrastructure or culture is a must, how important of a role does the composition of the team play? This study will explore how work climate can be used to determine if a group (or organization) is ready for innovative change. It is argued that innovative readiness and group climate can be used by managers to predetermine likelihood of success in implementing an innovative change.

Our study has located a municipal-hospital (the Hospital) that has decided that they need to think new or differently to meet upcoming challenges. In doings so, the Hospital will implement a formal innovation training program within their Health and Welfare department. This department is comprised mostly of nurses and nursing assistance that work primarily with elderly patients. Nurses and nursing assistance working for Norwegian municipalities in the Health and Welfare department have a work environment that is characterized by high stress, high absenteeism, little interest from newly educated nurses, high turnover, few educated nurses, and an increasing elder population that most municipalities are not ready for (Schultz et al., 2016, Mæle, 2014, Nordberg, 2013, Sundberg and Myhr, 2016, Sundberg and Samdal, 2013, Begat et al., 2005, André et al., 2013c). In general, Norwegian municipalities are experiencing many challenges. As a result, the Hospital's manager has decided the time to innovate is now. The manager wishes to build a culture for innovation within their Hospital.

In doing this, the Hospital will implement a formal innovation training program. The formal innovation training will be conducted with two groups of participants; one group will participate in the program (the participant group), while the other group (the nonparticipant group) will not participate. Prior to any formal innovation training, this study attempts to first, identify if there are differences in the two group's work climate. Secondly, if differences do exist, can these differences help explain each group's innovative readiness for change?

1.2 Literature Review

Organizational readiness for change is considered a critical precursor to the successful implementation of complex change in healthcare settings (Richards and Hallberg, 2015, Weiner, 2009, Armenakis et al., 1993). Organizational readiness has been termed a shared psychological state (Weiner, 2009, Weiner et al., 2008), where an organization attempts to influence the beliefs, attitudes, intentions, and ultimately the behavior of their organizational members (Weiner, 2009, Armenakis et al., 1993, Weiner et al., 2008, Armenakis and Bedeian, 1999, Walker et al., 2007). At the core of readiness for change is the message for change. The readiness message is generally two-part: (a) the need for change, which explains the discrepancy between the current state and the desired end-state; and (b) the individual and collective efficacy (i.e., the perceive ability to change) of parties affected by the change (Armenakis et al., 1993). In the context of eldercare, most public health managers understand and advocate the need for change, so this will not be the focus of the study. This study is focusing on the latter, exploring whether organizational climate (or perceived ability to change) can be used to explain group or organizational readiness for innovative change, specifically part (b) of the readiness for change test.

Looking to organizational climate to help explain organizational readiness is not a foreign affair. Organizational culture that embraces innovation, flexible organizational policies, and positive organizational climate supports organizational readiness for change (Jones et al., 2005, Ingersoll et al., 2000, Eby et al., 2000, Caliskan and Isik, 2016). Additional research has been called for, to clarify how an organization's culture or climate of change contributes to employee willingness to work for the goals of the organization (Ingersoll et al., 2000).

Exploring work culture is important to understanding the challenges and experiences that employees face at the workplace (André et al., 2013b, André et al., 2015). Organizational culture appears to have an influence on the degree to which creativity and innovation are stimulated in the organization (Martins and Terblanche, 2003, Frohman, 1998, Ahmed, 1998). Understanding and assessing this work culture can have a major impact on the innovative outcome of a project (Ahmed, 1998, Frohman, 1998). It can have as dramatic effects as identifying a project as doomed to fail before it has begun, merely by looking to the groups work culture. To a less dramatic extent, work culture may help in optimizing innovative outcomes by having the right individuals working in the right groups.

Prior organizational research has shown that both organizational culture and organizational climate may play key roles in organizational outcomes (Meeks, 1988, Ostroff et al., 2002). These constructs may have important impacts on innovative outcomes (Martins and Terblanche, 2003). Distinguishing between these two concepts has become more important as there is a tendency for the two terms to be used interchangeably (Gershon et al., 2004). There is also difficulty in determining where culture leaves and climate begins as they are so intimately tied to each other (Gershon et al., 2004). *Organizational culture* is defined as the norms, values and basic assumptions of a given organization (Gershon et al., 2004, Christensen, 2000). This culture can be difficult to measure as organizational values, beliefs, and capabilities tend to be abstract or intangible (Christensen, 2000, Gershon et al., 2004, O'Reilly and Tushman, 2004). It is suggested that qualitative methods are better suited for measuring culture, due to the abstract or intangible nature (Gershon et al., 2004). To the contrary, o*rganizational climate* is a bit more simple to measure as it refers to the employees' perception and attitude of their organization's culture (Gershon et al., 2004). Organizational climate is a collective reflection of the employees experience of their culture (Schneider et al., 1996). Climate is easier to measure as employees' perceptions and attitudes are more tangible (Gershon et al., 2004). For these reasons, it is suggested that quantitative methods may be better suited to measure climate (Gershon et al., 2004). Although both constructs (organizational culture and climate) may be evaluated using qualitative and quantitative methods (Gershon et al., 2004). Its suggested that qualitative methods may be better suited for measuring culture, while quantitative methods may be better suited for climate (Gershon et al., 2004).

Organizational culture will not be at the focus of this article. This study assumes that no innovative culture existed previously, and that management has recently decided they need to build an infrastructure and culture for innovation. This study is going to test how organizational climate (or perceived work culture) influences innovative readiness for change. So that managers may be able to make more informed decisions about who they should include in building up a new innovative infrastructure. This may provide managers with enough

information to pre-determine the likelihood of success of a formal innovation training program, merely by looking to their organizational climate. However, this study will be breaking the organization (or department) down into two groups; the participating group and nonparticipating group. Thus, this study will be analyzing organizational climate in terms of group climate. Prior to any formal innovation training, this study will first determine if there are two distinct group climates, rather than one organizational climate, which may help explain innovative readiness for change between the two groups.

Prior to conducting the formal innovation training, this study needed to determine each group's level of engagement and understanding of innovation to be able to adequately measure the impact that the formal innovation training or intervention had, and to be sure that neither group had an unfair advantage prior to the training. As a result, this study adopted a previously developed questionnaire for evaluating innovation understanding within an organization (Hansen and Birkinshaw, 2007). This model breaks an organizations innovation understanding down into three main phases; idea generation, conversion, and diffusion (Hansen and Birkinshaw, 2007). This model was modified to include two additional phases; innovation strategy and innovation attitude. However, the focus of this article is on whether work climate (or perceived ability to change) can explain organizational readiness for innovation change. Thus, this study will not elaborate on the complexity in defining innovation, nor will it discuss conflicting innovation theories. This section is included merely as an anchor, so that the impact of the formal innovation training can later be measured.

Hypothesis 1a: Prior to any formal training, did the organization have two identifiable and differentiable group climates present, or was there merely one work climate?

Hypothesis 1b: Prior to any formal training, does this group climate give any indication to either groups organizational readiness for innovative change?

Hypothesis 2: Prior to any formal innovation training, both groups will have a relatively similar understanding of innovation.

2 Methods

2.1 Subjects and data collection
A formal innovation intervention study will be conducted at the Hospital, located in a rural part of Trøndelag, in Norway. Currently there are 40 health care practitioners working at the Hospital within the Health and Welfare department. Management decided that it was economically feasible to offer the course to 20 employees. Management at the Hospital solicited interest in the course. Only 15 employees expressed interest in the training. Accordingly, the Hospital was divided into two groups, the participating group (N=15) and the nonparticipant group (N=25). The participant group included those employees that volunteered to participate in the study, while the nonparticipant group included those employees that chose not to participate. The members of the participant group had an average age of 43 years old; the ages ranged from 19 to 61 years old. There was only 1 male, while there were 14 females. The members of the nonparticipant group had an average age of 44 years old; the ages ranged from 27 to 69 years old. There was only 1 male, while there were 22 females. Both groups were comprised of a unit leader, registered nurses, and nursing assistants. The nonparticipant group was not a control group, they did not know the content of the formal innovation training, but they knew of its existence, and willingly chose not to participate; thus shaping their attitudes prior to any measurements being taken. In actuality we have two participating groups. One (the participant) group that chose to participate in the study, and the other (nonparticipant) group that chose not to participate. Thus, prior to the intervention, both groups differed in their attitude towards the treatment. In this study, the department as a whole is the combination of these two groups.

Prior to any formal innovation training, this study will identify if two different group climates can exist within the same organization. Secondly, if two different work climates do exist, can that be used to indicate if one group is more ready for innovative change than the other group. Two different quantitative scales are used. Quantitative scales were used to measure climate because prior literature suggested that quantitative measures may be more appropriate for measuring climate, than qualitative measures (Gershon et al., 2004). One scale (SPGR) measures the organizational climate (or perceived work culture), while the other scale (Innovation) measures their innovativeness. Both groups completed a questionnaire that included both scales. Both questionnaires were completed by the participants in Norwegian, and later translated to English. From the participant group, 15 of 20 (75%) placements were filled for the innovation education course. From this group, 15 of 15 (100%) completed the SPGR and Innovation questionnaire sufficiently. From the nonparticipant group, only 19 of 25 (76%) of the SPGR questionnaires were completed sufficiently, and 22 of 25 (88%) of the Innovation questionnaires were sufficiently completed.

The data responses were analyzed to determine whether the questionnaires were filled out adequately. The participant needed to show that they read and understood each question. If a questionnaire was received and had one box filled in, with a line through the entirety of the questionnaire, indicating the participant intended to respond with the same score throughout the questionnaire, this type of questionnaire was excluded, as a determination could not be made as to whether each question was read and understood. However, if each question throughout the entire questionnaire had the same number written by the respondent, that questionnaire was included, as it was assumed the participant read and understood each question.

2.2 Study design
This study will use the SPGR and Innovation scale to identify each group's climate and understanding of innovation. Data will be gathered, and a separate t-test will be conducted for each individual group separately. If there is statistical significance from either group, then we will compare each group's statistical significance to the other group. From this comparison, a determination will be made as to whether or not there are distinctive group climate differences between each group which may indicate innovative readiness for change.

The SPGR scale will show the differences in group climate characteristics between the participant and nonparticipant group by comparing their self-perception of two perspectives. First, how each group perceives their actual organizational culture to be, and secondly, how they perceive the ideal organizational culture to be. For example, the participant group will evaluate the perspective how they perceive their actual work culture compared to the other perspective that is how they perceive their ideal work culture. When identifying their ideal work culture, we will capture their willingness to change and in which preferable direction they will change. This is important for being able to identify their readiness to change (André et al., 2013a). The t-tests will be conducted to identify if potential similarities or distinctions between the two perspectives exist. The t-tests will explore the most dominate characteristics in the particular group climate. SPGR is a 24-item questionnaire exploring organizational climate (or individuals' perception of their organization's work culture), both actual and ideal. This gives insight into how employees view their organization's work culture today, and how they believe their ideal work culture should be. Each of the 24-items asks the participants to evaluate whether their perception of certain work culture attributes occurred: (a) seldom, (b) occasionally, or (c) often. The results from questionnaire will result in a mean value on a linear scale from 1-9. The theoretical and psychometric foundations of SPGR has been detailed elaborately in prior studies (André et al., 2013b, Sjøvold, 2006, Sjøvold, 2007, Sjøvold, 2014).

Additionally, a 25-item, Innovation scale will be used to measure each groups understanding of innovation on six different phases. This scale used a 5-point Likert scale, which is based on Hansen and Birkinshaw's innovation value chain model (2007). The six phases of innovation included in this study are innovation strategy, idea generation, selection, development, diffusion, and innovation attitude. However, prior to the intervention, no statistical significance is expected as neither group has had any formal innovation training. Thus, prior to the training, the innovation data will be used merely as an anchor-point, to later determine the impact that the innovation training has on their firm-level innovativeness. Accordingly, this study will be focusing predominately on work climate (or perceptions of their work culture) data, which may explain if there are dominant characteristics differentiating innovation readiness for change between the two groups.

2.3 Statistical analysis
Based on the data collected and the aim of this study, a t-test will be conducted. It is suggested that this is an appropriate measure as we are looking for organizational climate distinctions between two groups and using a method (SPGR) that has established comparison studies as the norm (Sjøvold, 2007). The comparison data from SPGR will analyze how each group perceives their actual and ideal work culture. Thus, one t-test will compare how the participant group respondents perceive their actual work culture against how they perceive their ideal work culture. The other t-test will compare how the nonparticipant group respondents perceive their actual work culture to their ideal work culture. The statistical significance of each group's self-perception will be tested, and identifying statistical significance within each respective group will be explored. Last, a comparison of each groups climate will be made. This should explain if there are dominant characteristics that differentiate the two groups climate.

A second comparison will be conducted using the innovation data. However, this comparison study will test for statistical significance between both groups. This will compare the participant group's innovation competence, before any formal training, to the nonparticipant group's innovation competence, before any formal training. Very little statistical significance is expected from the Innovation scale, prior to any formal innovation training.

Participation in this study was voluntary and the participants could withdraw from the study at any point. All participants were informed about the aim and purpose of the study. All data is registered anonymously to preserve confidentiality. Management for both the unit- and municipal-level approved the study.

3 Results

Hypothesis 1a is affirmed, there are statistically significant work climate differences between the participant group and the nonparticipant group, meaning two different group climates are identifiable within the same organization (or working unit). Hypothesis 1b is affirmed, for both the participant group and nonparticipant group, meaning group climate can be used to evaluate readiness for innovative change. Hypothesis 2 is affirmed, both the participant and nonparticipant group have relatively similar levels of innovation competence, prior to any formal training (see Table 3). These findings are discussed in more detail below.

Table 1. The participant group's perception of their actual versus ideal work culture.

Factors	Code	Typical behavior	Actual	Ideal	Statistical Significance
Ruling	C1	Controlling, autocratic, attentive to rules and procedures	4,36	4,52	
Task-orientation	C2	Analytical, task-oriented, conforming	5,65	7,75	**
Caring	N1	Taking care of others, attentive to relations	7,75	8,56	
Creativity	N2	Creative, spontaneous	1,45	0,65	
Criticism	O1	Critical, opposing	2,10	2,10	
Assertiveness	O2	Assertive, self-sufficient	2,74	2,26	
Loyalty	D1	Obedient, conforming	7,10	8,56	*
Acceptance	D2	Passive, accepting	7,43	8,56	
Resignation	W1	Sad appearance, showing lack of self-confidence	1,94	0,32	**
Self-sacrifice	W2	Passive, reluctant to contribute	1,94	0,65	*
Engagement	S1	Engaged, inviting others to contribute	6,94	9,04	***
Empathy	S2	Showing empathy and interest in others	7,91	8,72	*

$* p < 0.05 \quad ** p < 0.01 \quad *** p < .001$

Table 2. The nonparticipant group's perception of their actual versus ideal work culture.

Factors	Code	Typical behavior	Actual	Ideal	Statistical Significance
Ruling	C1	Controlling, autocratic, attentive to rules and procedures	3,33	4,39	
Task-orientation	C2	Analytical, task-oriented, conforming	5,95	7,44	*
Caring	N1	Taking care of others, attentive to relations	6,54	7,98	*
Creativity	N2	Creative, spontaneous	1,07	0,40	
Criticism	O1	Critical, opposing	2,26	2,66	
Assertiveness	O2	Assertive, self-sufficient	2,97	2,92	
Loyalty	D1	Obedient, conforming	6,30	7,58	*
Acceptance	D2	Passive, accepting	6,90	8,64	**
Resignation	W1	Sad appearance, showing lack of self-confidence	0,95	0,27	
Self-sacrifice	W2	Passive, reluctant to contribute	1,31	0,40	*
Engagement	S1	Engaged, inviting others to contribute	6,78	8,24	*
Empathy	S2	Showing empathy and interest in others	7,02	8,38	*

$* p < 0.05 \quad ** p < 0.01 \quad *** p < .001$

Tables 1 and 2 show the mean value of how each group perceives their organization's work culture to be. In Table 1, the participant group has statistical significance in 6 of 12 SPGR factors. In three factors, loyalty (D1), self-sacrifice (W2), and empathy (S2), the differences are significant (p<0.05), in two factors, task-orientation (C2) and resignation (W1), the differences are significant (p<0.01), and in one factor, engagement (S1), the difference is significant (p<0.001).

In Table 2, the nonparticipant group has statistical significance in 7 of 12 SPGR factors. In six factors, task-orientation (C2), caring (N1), loyalty (D1), self-sacrifice (W2), engagement (S1), and empathy (S2), the differences are significant (p<0.05), and in one factor, acceptance (D2), the difference is significant (p<0.01).

An additional filter was used to control for similar characteristics between the two groups. This additional filter will omit those factors where the two groups have either the same statistical significance or significantly less significance than the other group in the same factor. This will ensure that the distinguishing characteristics are not be diluted by similar characteristics.

Accordingly, in Table 1, the participant group has statistical significance in the following factors: task-orientation (C2), and resignation (W1) (p<0.01); engagement (S1) (p<0.001). In Table 2, the nonparticipant group has statistical significance in the following factors: caring (N1) (p<0.05); acceptance (D2) (p<0.01).

Table 3. The level of innovation understanding for both, the participant group and the nonparticipant group, before any formal innovation education

Innovation Phase	Code	The focus of each question	Participant Group	Nonparticipant Group	T-test	Statistical Significance
Innovation strategy	S1	Understanding of current organizations strategy	2,20	2,10	0,376	
	S2	Long-term strategy	2,60	2,52	0,415	
	S3	Time allocated towards thinking differently	2,47	2,45	0,485	
Idea generation (IG)	IG1	Internally, the openness of the working environment	2,93	3,50	0,030	*
	IG2	Internally, extent the organization can think differently	2,93	3,24	0,180	
	IG3	Internally, quality of the organizations ideas	2,40	2,73	0,113	
	IG4	Internally, the extent we partner with other departments	2,73	2,81	0,390	
	IG5	or other firms on normal and innovative projects	3,29	2,95	0,136	
External IG	eIG1	Importance of external ideas	3,00	3,05	0,390	
	eIG2	Value given to ideas that come from outside the firm	2,64	2,86	0,172	
Selection	Sel1	How easy it is to bring an idea forward to the org	2,53	2,57	0,450	
	Sel2	The importance of each individual's opinion in selection	3,40	3,18	0,246	
	Sel3	The importance of the group's opinion in selection	3,50	3,45	0,433	
	Sel4	The org understands why a particular idea is chosen	3,21	3,41	0,273	
	Sel5	Is the more conservative or risky idea more often chosen	2,13	2,48	0,131	
Development	D1	Using formal innovation processes to measure progress	3,00	3,05	0,433	
	D2	Ideas are generally developed on time, without delays	3,07	2,81	0,123	
	D3	Management generally has strong support in developing	3,21	3,10	0,350	
Diffusion	Diff1	How fast the org is at bringing idea to the market	3,20	2,95	0,169	
	Diff2	How quickly our ideas are copied (e.g., by competitors)	2,92	2,73	0,245	
	Diff3	Extent maximizing value (e.g., markets, customers, etc.)	2,67	2,70	0,447	
	Diff4	Extent org discusses lessons learned with develop team.	2,57	2,57	0,500	
	Diff5	Extent org discusses lessons learned with entire org	3,20	3,19	0,488	
Innovation attitude	A1	Personal enthusiasm towards innovation	4,07	3,45	0,029	*
	A2	Optimistic attitude towards innovation education course	3,75	2,75	0,004	**

* p < 0.05 ** p < 0.01 *** p <.001

Table 3 shows the mean value that both the participant and nonparticipant group scored on their level of innovation competence in the six different innovation phases. The results revealed that there aren't significant differences in understanding of innovation between the two groups. Of the 25-items, only innovation attitude (A1) and (A2), and internal idea generation (IG1) had statistical significance.

The only innovation phase with statistical significance between the two groups is innovation attitude (A1) (p<0.05) and (A2) (p<0.01). The participant group scored significantly higher on both personal enthusiasm and optimism towards innovation, while the nonparticipant group's personal enthusiasm towards innovation is neutral, and they did not believe that formal innovative training would help improve their innovativeness. The nonparticipant group evaluated the openness in their working environment significantly higher than the participant group (IG1).

4 Discussion
The results from this study show (Tables 1, 2, and 3) that there are statistical significance differentiating the participant and nonparticipant group's climate, thus affirming Hypothesis 1a. Additionally, the findings show that two distinct group climates are identifiable, rather than merely one organizational climate.

Hypothesis 1b is affirmed for the participant group. Looking at Tables 1 and 3, as a whole, shows that the participant group's climate indicates they are more ready for innovative change. The results show that the participant group has statistical significance in: task-orientation (C2), engagement (S1) resignation (W1), and innovation attitude (A1 & A2). The characteristics S1 (Table 1), A1 and A2 (Table 3), show that this group is excited, enthusiastic, engaged, and in general have a positive attitude towards innovation. The characteristics (C2 and W1) (Table 1) are a bit unusual at first glance. Task-orientation (C2) focuses on being analytical, focused, and conforming to the task. Resignation (W1) is described as showing a lack of self-confidence. Both task-orientation (C2) and resignation (W1) are not generally associated with innovation. However, if formal innovation training is at the focus, and a group is task-orientated with respect to participation in the program, that

characteristic can be quite positive for their group's innovativeness. Upon further examination, our analysis shows that resignation (W1) can actually act as a motivator for the group. This group may feel that there is a gap or something missing, and that this can drive them as an additional motivator. Otherwise, this group characteristic is a bit unusual and difficult to understand. When looking to the group characteristics, as a whole, the participant group has a clear group climate that distinguishes themselves from the nonparticipant group. When we compare the participant group's climate characteristics (above) to the core of readiness for change, the results indicate that the participant group is ready for innovative change. The core of readiness for change is "the message for change". This message is two-part, (a) the need for change, which has been established prior to this study, and (b) the individual and collective efficacy (perceived ability to change) of the parties affected by the change. The statistical significance of the participating group's climate is evidence of their individual and collective efficacy towards innovative change, meaning that their work climate indicates they're ready for innovative change. Engagement (S1), and innovation attitude (A1 & A2) show their individual and group's strong belief in their own ability, further supported by the group's commitment illustrated by their task-orientation (C2).

For the aforementioned reasons, the participant group's work climate of task-oriented (C2), engaged (S1), and positive attitude towards innovation (A1 & A2) tends to indicate that they are more ready for innovative change. The need for change exists, and their group has a collective efficacy in their perception of the upcoming formal innovation training program. The participant group's innovation attitude was approximately 4, on a 1-5 Likert scale. The resignation characteristic is a bit unusual, and will require further studying to determine if it is actually a motivator, or something else.

Hypothesis 1b is affirmed for the nonparticipant group. The nonparticipant group's dominant characteristic is caring (N1) and acceptance (D2). These are interesting findings. Caring (N1) refers to taking care of others, and attentive to relations, while acceptance (D2) reflects a passive or accepting attitude. However, these two characteristics are seemingly contradictory to each other. For example, if acceptance is dominant, the group would more likely do what they're told and be passive towards the nurturing opportunity that presented itself. For this reason, we overlooked the caring (N1) factor, as the acceptance (D2) was most significant (p<0.01) for this group. In this study the nonparticipant group was given an option to participate in an innovation program, and they chose not to. It's unclear why their dominant characteristic of acceptance, didn't prioritize their involvement in the innovation training. Even though their manager is encouraging employee participating in innovation, they prioritized their everyday-work activities over the innovation course. It's unclear, why the encouragement from management wasn't merely accepted by this group. It's difficult to assess what impact the nonparticipating group's climate would have on the formal innovation training if their participation would have been mandatory; whether it would dilute innovation interest throughout the department, be destructive to the innovation initiative as a whole, or not have an effect at all. Regardless, a determination that can be made is whether the nonparticipant group's climate indicates they're ready for innovative change. When we compare the nonparticipant group's climate to the core of readiness for change, the results indicate that the nonparticipant group is not ready for innovative change. The core of readiness for change is "the message for change". This message is two-part, (a) the need for change, which has been established prior to this study, and (b) the individual and collective efficacy (perceived ability to change) of the parties affected by the change. The nonparticipant group's personal enthusiasm about innovation is neutral, approximately a 3, on a 1-5 Likert scale. Their optimistic attitude towards an innovation course was lower than 3, thus indicating a negative attitude or disbelief, rather than belief in their ability. The only indication the nonparticipating group has in their ability to be ready for innovative change is their dominant work climate of acceptance (D2). Acceptance (D2) does not display any self- or group-efficacy for innovative change, to the contrary it merely shows this group doesn't believe in the cause, they merely accept it. Thus, reflecting negatively on their innovative readiness. The nonparticipant group's need for change was established, but the group lacked collective efficacy for innovative change.

There is very little statistical significance in the level of understanding of organizational innovation processes between the two different groups, affirming hypothesis 2. This is not surprising, in part, as neither group has participated in formal innovation education before. Thus, the level of understanding, prior to any formal education, ought to be relatively similar. Table 3 does show that the nonparticipant group has statistical significance in one of the 25 subcategories, over the participant group, in internal idea generation (IG1). It is difficult to interpret the significance of this one variable. Only one (IG1) of the five internal idea generation questions is significant for the nonparticipant group, making it difficult to generalize the impact for that group. It may be that the nonparticipant group has more confidence in coming forward with their idea, or maybe (IG1) is merely an outlier. Notwithstanding, there is no statistical significance in the innovation phase idea generation (IG) as a whole.

5 Conclusion

The results of the study are quite interesting. They show that in building an innovation program in an organization, work climate can be used to determine readiness for innovative change. This is important for managers, especially if there isn't entire organizational consensus. In this study, even though the manager was championing or encouraging innovative behavior, less than half of the organization was actually interested in formal innovation training. When trying to build an infrastructure or culture for innovation, should a manager require organization-wide participation, or merely offer innovation education to those interested? This study tested the latter, and found that there was not one organizational climate, rather two divergent climates. One group (the participant group), was ready for innovative change, while the other group (the nonparticipating group) was not ready for innovative change. This could be an important finding for managers in the process of building a new infrastructure or culture for innovation in their organization. If managers are struggling to gain support for an idea or program, this study will help mangers identify those individuals making up their organization that will be more ready for the change than others. Although this study doesn't test the affect that innovative readiness has on firm innovativeness, it is believed that innovative readiness can be used by the manager to predetermine the likelihood of success or failure of the innovative (or organizational) change, merely by looking to the organizational or group climate. The extent that group climate and innovative readiness can be used to explain actual innovative change should be further explored.

6 Limitations

This data represents one case; which case studies tend to do. The data would be richer if it was a longitudinal study or was supplemented by other case studies (more municipalities) trying the same thing. Ideally, this study would have had two hospitals, one hospital being the participant group, while the other would be the nonparticipant group. Unfortunately, data was only accessible from one hospital. The generalizability is quite limited when the results are based only on one case study. However, this is also the strength of the data. Even though there is only one case study, all data was gathered by the authors. Thus, the authors had full control of their data, for quality assurance. This tends to be the difficult balance with large versus small data.

Norway was geographically chosen due to logistics for the authors and accessibility to data. The municipal-hospital context was also chosen because of the accessibility to significant data from this industry.

Ideally, more participants would have been included in the study. It would have been interesting to see a combination of the two groups; have one participant group, one nonparticipant group, and one group that combined both participants and nonparticipants, so that the we could measure the affect that each group had on each other. If this was done, the study might have been able to determine if it's better to implement an organization-wide innovation training (requiring those not interested to participate), or if its best to split the organization up into those that want to participate and those that don't. However, due to time and capacity, it was not possible to expand the study.

7 Future Implications

This study showed that the participant group's climate indicated that they were more ready for innovation change than the nonparticipant group, prior to the innovation intervention. However, it did not test the impact of the intervention. A formal innovation intervention should be conducted, the intervention should test the impact of the intervention on both the participant and nonparticipant group. This would confirm, whether or not innovative readiness could be a legitimate tool for predicting the likelihood of success for innovation initiatives. Regardless, the results should have a significant impact for managers. If the innovation intervention impacts merely the participant group, this would mean that managers of an organization need to include as many nonparticipant group members as they can, while maintaining the dominant group characteristics of the participant group, to gain and continue support for their innovation program(s). If the innovation intervention improves innovativeness for both groups, that could mean that the participant group had such a strong influence on the nonparticipant group that their knowledge gained or positive attitude was contagious to the nonparticipant group. The climate and innovation understanding that the innovation intervention has on both groups, should be further explored.

Additionally, it would be interesting to test both climate and the innovation intervention in other contexts to better understand the generalizability. Climate and innovative readiness can be an important group dynamic for managers (in both the public and private sector) to consider when building a new innovative initiative, especially if that organization struggles with maintaining engagement and positivity for innovation. This research suggests that managers should pay close attention to their group or organizational climate. Climate should allow managers to predetermine the likelihood of success of an initiative prior to its implementation, merely by looking to their

group or organizational climate. However, these types of predictions cannot yet be made. The innovation intervention needs to first be tested. Than the research questions need to be further explored in other contexts, to better understand generalizability outside of the Norwegian, municipal-hospital context.

8 Conflicting Interest
There authors declare that they have no known competing conflicts.

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Appendix

Table 1. The participant group's perception of their actual versus ideal work culture.

Factors	Code	Typical behavior	Actual	Ideal	Statistical Significance
Ruling	C1	Controlling, autocratic, attentive to rules and procedures	4,36	4,52	
Task-orientation	C2	Analytical, task-oriented, conforming	5,65	7,75	**
Caring	N1	Taking care of others, attentive to relations	7,75	8,56	
Creativity	N2	Creative, spontaneous	1,45	0,65	
Criticism	O1	Critical, opposing	2,10	2,10	
Assertiveness	O2	Assertive, self-sufficient	2,74	2,26	
Loyalty	D1	Obedient, conforming	7,10	8,56	*
Acceptance	D2	Passive, accepting	7,43	8,56	
Resignation	W1	Sad appearance, showing lack of self-confidence	1,94	0,32	**
Self-sacrifice	W2	Passive, reluctant to contribute	1,94	0,65	*
Engagement	S1	Engaged, inviting others to contribute	6,94	9,04	***
Empathy	S2	Showing empathy and interest in others	7,91	8,72	*

$* p < 0.05 \;\; ** p < 0.01 \;\; *** p < .001$

Table 2. The nonparticipant group's perception of their actual versus ideal work culture.

Factors	Code	Typical behavior	Actual	Ideal	Statistical Significance
Ruling	C1	Controlling, autocratic, attentive to rules and procedures	3,33	4,39	
Task-orientation	C2	Analytical, task-oriented, conforming	5,95	7,44	*
Caring	N1	Taking care of others, attentive to relations	6,54	7,98	*
Creativity	N2	Creative, spontaneous	1,07	0,40	
Criticism	O1	Critical, opposing	2,26	2,66	
Assertiveness	O2	Assertive, self-sufficient	2,97	2,92	
Loyalty	D1	Obedient, conforming	6,30	7,58	*
Acceptance	D2	Passive, accepting	6,90	8,64	**
Resignation	W1	Sad appearance, showing lack of self-confidence	0,95	0,27	
Self-sacrifice	W2	Passive, reluctant to contribute	1,31	0,40	*
Engagement	S1	Engaged, inviting others to contribute	6,78	8,24	*
Empathy	S2	Showing empathy and interest in others	7,02	8,38	*

$* p < 0.05 \;\; ** p < 0.01 \;\; *** p < .001$

Table 3. The level of innovation understanding for both, the participant group and the nonparticipant group, before any formal innovation education

Innovation Phase	Code	The focus of each question	Participant Group	Nonparticipant Group	T-test	Statistical Significance
Innovation strategy	S1	Understanding of current organizations strategy	2,20	2,10	0,376	
	S2	Long-term strategy	2,60	2,52	0,415	
	S3	Time allocated towards thinking differently	2,47	2,45	0,485	
Idea generation (IG)	IG1	Internally, the openness of the working environment	2,93	3,50	0,030	*
	IG2	Internally, extent the organization can think differently	2,93	3,24	0,180	
	IG3	Internally, quality of the organizations ideas	2,40	2,73	0,113	
	IG4	Internally, the extent we partner with other departments	2,73	2,81	0,390	
	IG5	or other firms on normal and innovative projects	3,29	2,95	0,136	
External IG	eIG1	Importance of external ideas	3,00	3,05	0,390	
	eIG2	Value given to ideas that come from outside the firm	2,64	2,86	0,172	
Selection	Sel1	How easy it is to bring an idea forward to the org	2,53	2,57	0,450	
	Sel2	The importance of each individual's opinion in selection	3,40	3,18	0,246	
	Sel3	The importance of the group's opinion in selection	3,50	3,45	0,433	
	Sel4	The org understands why a particular idea is chosen	3,21	3,41	0,273	
	Sel5	Is the more conservative or risky idea more often chosen	2,13	2,48	0,131	
Development	D1	Using formal innovation processes to measure progress	3,00	3,05	0,433	
	D2	Ideas are generally developed on time, without delays	3,07	2,81	0,123	
	D3	Management generally has strong support in developing	3,21	3,10	0,350	
Diffusion	Diff1	How fast the org is at bringing idea to the market	3,20	2,95	0,169	
	Diff2	How quickly our ideas are copied (e.g., by competitors)	2,92	2,73	0,245	
	Diff3	Extent maximizing value (e.g., markets, customers, etc.)	2,67	2,70	0,447	
	Diff4	Extent org discusses lessons learned with develop team.	2,57	2,57	0,500	
	Diff5	Extent org discusses lessons learned with entire org	3,20	3,19	0,488	
Innovation attitude	A1	Personal enthusiasm towards innovation	4,07	3,45	0,029	*
	A2	Optimistic attitude towards innovation education course	3,75	2,75	0,004	**

$* p < 0.05 \quad ** p < 0.01 \quad *** p < .001$