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Dynamics of Resistance to Change: A Sequential Analysis of Change Agents in Action

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Dynamics of Resistance to Change: A Sequential Analysis of Change Agents in Action

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ABSTRACT *Despite consensus that successful change management depends on how change is communicated to employees, the dynamic communication process between change agents and recipients remains largely unexplored. We discuss how change language can capture recipients' resistance to and readiness for change, in terms of change versus sustain talk, and adopt a coding instrument from clinical psychology (Motivational Interviewing Skill Code, MISC). We explore whether autonomy-restrictive change agent behaviours may contribute to resistance to change. In a preliminary study, we demonstrate the applicability of the MISC for studying ambivalence in change-related interactions. Next, in a quantitative study of 28 dyadic interactions from a student sample, we examine how change agent behaviours elicit recipients' resistance during the interaction flow, using lag sequential analysis. Our findings show that autonomy-restrictive agent behaviours evoke sustain talk. Recipients' sustain talk in turn evokes autonomy-restrictive agent behaviour. We discuss implications for conceptualizing resistance to change as a dynamically emerging conversational construct and point out practical implications for change agents.*

KEY WORDS: Resistance to change, change management, lag sequential analysis, change talk, motivational interviewing

Successful change management depends on how necessary changes are communicated to the employees whose work lives will be affected (Barrett, Thomas, &

The underlying research materials (the German MISC) for this article can be accessed at, <https://www.tu-braunschweig.de/Medien-DB/aos/hinterlegte-pdfs/misc-d.pdf>

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Hocevar, 1995; Ford & Ford, 1995, 2009). To communicate the necessary changes, organizations rely on change agents. Change agents sponsor and promote change initiatives in organizations; change recipients are those organizational members who carry out the change measures (Ford, Ford, & D'Amelio, 2008; Kanter, Stein, & Jick, 1992). One of the critical obstacles that are faced by change agents concerns recipients' resistance to change (Oreg, 2003). Change projects usually fail if change agents cannot motivate employees (or recipients) to 'pitch in' and work cooperatively for the intended change (IBM-Survey, Jørgensen, Albrecht, & Neus, 2007).

From a traditional change agent-centric perspective, employees who show resistance to change have been portrayed as bad apples that spoil the barrel, implying an intent to 'ruin' an entire change initiative (see Ford et al., 2008). Whereas this traditional person-centred approach demonizes resisting employees (Dent & Goldberg, 1999; Giangreco & Peccei, 2005; Kotter, 1995), more recent approaches propose that change agents themselves may contribute to the resistance they face (Ford et al., 2008). A key to understanding successful change agent–recipient relationships lies in understanding their conversational dynamics (Barrett et al., 1995; Ford & Ford, 1995). However, despite widely shared consensus that communication is the key to understanding successful change management (Doolin, Grant, & Thomas, 2013; Oswick, Grant, Marshak, & Cox, 2010), research has yet to address the communicative dynamics inherent in the change management process. Specifically, it remains to be seen how the verbal behaviour of change agents affects change recipients' responses (Amis & Aissaoui, 2013; Ford & Ford, 2008). In the area of organizational discourse research, only a few previous studies have focused on the observable verbal behaviour of change agents and its connection to change recipients' responses (Kykyri, Puutio, & Wahlström, 2010; Whittle, Suhomlinova, & Mueller, 2010). These qualitative case studies have proposed different constructs that may be important in the context of facilitating change (e.g. 'ownership talk' or 'discursive translation'; Kykyri et al., 2010; Whittle et al., 2010). However, to date no research efforts have been made towards a systematic, quantitative analysis of how observable change agent behaviours impact change recipients' responses. This study seeks to address this research gap.

To explore the idea that change agents themselves can trigger resistance to change in change recipients (Ford & Ford, 2008; Ford et al., 2008), we focus on the dynamic interaction process between change agents and recipients. Although dyadic change agent–recipient conversations do not represent the entire range of social situations in which change projects occur (e.g. company-wide meetings or seminars with smaller subgroups), they provide a rich research context for exploring the conversational dynamics through which resistance to change (or readiness for change) emerges. Moreover, difficult topics or resistance to change can be addressed more easily in a dyadic setting, rather than a larger group context in which change recipients may be more reluctant to voice their concerns.

A dynamic social interaction approach to change processes is particularly useful for understanding how resistance to change might be tackled in order to facilitate recipients' readiness for change, in terms of promoting their acceptance of and

participation in change (Ford et al., 2008). When change recipients verbalize what they think about future change, they usually express ambivalent feelings and thoughts (Piderit, 2000). In fact, management and psychology scholars have reconceptualized resistance to change in terms of ambivalence (Arkowitz, 2002; Moyers & Rollnick, 2002; Piderit, 2000). The concept of ambivalence to change takes into account that employees might have conflicting attitudes towards change (Arkowitz, 2002). Building on the notion of resistance to change as an expression of ambivalence, we propose that this specific form of resistance to change can be naturally observed by listening to how change recipients' talk about future change (cf. Ford & Ford, 2009). Change recipients' verbal utterances can reveal not only resistance to but also readiness for change (By, 2007; Holt & Vardaman, 2013). We argue that an analysis of change-related language provides a tool similar to force-field analysis, which can reveal interpersonal driving and hindering forces in change projects (Lewin, 1952). To do so, we introduce a systematic observation scheme to the field of change management that captures intra-individual ambivalence in terms of change talk (i.e. language that favours change) versus sustain talk (i.e. language that argues against change; Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003).

A behavioural observation approach to the agent–recipient interaction process can provide change agents with valuable tools for identifying and appropriately responding to recipients' resistance to change. Moreover, this approach offers exciting opportunities for scientific insights, such as identifying emergent interaction patterns (Lehmann-Willenbrock, Allen, & Kauffeld, 2013; Magnusson, 2000; Stachowski, Kaplan, & Waller, 2009), verbal behaviour shifts over time (Aharonovich, Amrhein, Bisaga, Nunes, & Hasin, 2008; Amrhein et al., 2003) or linguistic style matching between participants (Taylor & Thomas, 2008). In this study, an interaction analytical approach allows us to investigate behavioural interdependencies between change agents and recipients. Interpersonal theory (Kelley et al., 2003; Kiesler, 1996) as well as previous group interaction research (Lehmann-Willenbrock, Meyers, Kauffeld, Neininger, & Henschel, 2011) suggests that change agents' and recipients' behaviours expressed within their conversation flow will dynamically affect one another. Specifically, we explore how specific verbal behaviours by change agents can trigger resistance to change – in terms of sustain talk – in change recipients.

In summary, this study offers the following contributions. First, we introduce a dynamic conceptualization of resistance to change and explicate how resistance to change manifests in the language of change recipients (cf. Ford & Ford, 1995). Building on research in the area of motivational interviewing (MI, Miller & Rollnick, 2002), we pinpoint specific verbal behaviours by change agents that may elicit resistance to change. Based on interpersonal theory, we hypothesize about specific agent–recipient behavioural patterns that can promote resistance to change within change-related conversations. We investigate the applicability of the MI coding scheme to change-related conversations in a qualitative sample with practitioners, and we test our hypotheses in a quantitative sample of 28 agent–recipient interactions using lag sequential analysis (Bakeman & Quera, 2011). Finally, we integrate our findings with previous conceptualizations of

resistance to change and discuss how dynamic interaction analytical approaches can inform future research on resistance to change and readiness for change.

Observing Change-Related Interactions with MI

Previous research suggests that effective communication to organizational members is critical for creating readiness to change (Bernerth, 2004). In their communication model, Armenakis, Harris, and Feild (1999) propose five key message components that change agents need to communicate in order to ensure effective change management: *self-efficacy* for building confidence, *principal support* from the management, *discrepancy* between the status quo and the desired state, *appropriateness* of the change measures and *personal valence*, in terms of benefits for the change recipient. While there is some empirical support for this model (Bernerth, 2004; Drzensky, Egold, & van Dick, 2012), previous research has not yielded any insights as to how change agents should facilitate such an interaction. In fact, the most frequent critique from managers about the change literature 'is that the prescriptions given are not really actionable' (Ford & Ford, 1995, p. 566). One potential avenue that can yield more specific advice concerns the intervention method MI (Miller & Rollnick, 2002). MI was originally developed for therapists, counsellors and physicians treating clients who were not ready to follow a specific treatment or showed high levels of resistance. These healthcare professionals can be considered change agents in terms of communicating necessary changes to their clients. The basic principles of MI share striking similarities with the communication model by Armenakis et al. (1999): MI is based on the main principles to *express empathy*, *roll with the resistance*, *develop discrepancies* and *support clients' self-efficacy*. Furthermore, one of the goals of an MI intervention that is closely related to the key message of personal valence in the model by Armenakis et al. (1999) is to let clients argue themselves for the need to change and give them the opportunity to talk about the possible reasons for and benefits of changing.

MI describes specific verbal behaviours aimed at facilitating change (termed MI-consistent behaviour) as well as behaviours that will likely evoke resistance (termed MI-inconsistent behaviours). Open-ended questions for example are considered MI-consistent behaviour because they serve to explore the disadvantages of the *status quo* or investigate what the individual benefits of the change could be. Other verbal behaviours consistent with MI include only giving advice about change if the change recipient asked for it or emphasizing the individual's autonomy in the context of change (Miller, Moyers, Ernst, & Amrhein, 2008). In summary, these behaviours aim to reduce reactance, as they do not threaten personal freedom by imposing directions, for example by prompting behaviour change (Brehm & Brehm, 1981). By contrast, MI-inconsistent behaviours increase resistance to change by constraining personal freedom and consequently promoting reactance. Examples of MI-inconsistent behaviours include confronting and arguing about change, giving unwanted advice or warning about negative consequences if a behaviour is maintained (Arkowitz, 2002; Gordon, 1977; Miller & Rollnick, 2002). Some authors have called these behaviours 'communication roadblocks' (cf. Gordon, 1977; Rogers & Roethlisberger, 1991). In summary,

MI-inconsistent or autonomy-restrictive behaviours direct change recipients what he or she should do. Unfortunately, change recipients have ‘tendencies to respond oppositionally to such directives’ (Arkowitz, 2002, p. 222). We propose that this form of resistance in change recipients manifests in their verbal utterances, which can be observed within change-related conversations.

Recipient Behaviours in Change Conversations

Whereas previous research has usually relied on survey measures of resistance to change, a behavioural observation and interaction analytical approach can capture resistance to change within the actual communication setting. To do so, we build on the work of Amrhein et al. (2003) who classified verbal utterances of change recipients into language that favours change (i.e. change talk) or language that argues against change (i.e. sustain talk). Change talk expresses the willingness to move forward in the direction of change, whereas sustain talk constitutes the verbal counterpart and expresses resistance to change, unwillingness or a lack of motivation. Change and sustain talk can be further sub-classified into specific behavioural units. With regard to sustain talk (i.e. resistance to change), individuals might talk about their reasons to sustain (e.g. ‘This measure costs me a lot of time’), desires to sustain (‘I do not want to work with the new team’) or a lack of abilities (‘We do not know how to carry out these procedures’). In change talk on the other hand, individuals might talk about necessities to change (e.g. ‘We must change that energy system, otherwise we will lose a lot of money’) or about steps that they have already carried out (‘We implemented the new system recently’). The original language categorization into desire and ability originates from psycholinguistic laboratory studies using quasi-performative verbs (Amrhein, 1992). This categorization has been extended in therapy field research integrating commitment (Mahrer, Gagnon, Fairweather, Boulet, & Herring, 1994), reasons, need, and taking steps (Aharonovich et al., 2008; Amrhein et al., 2003; Baer et al., 2008) and is incorporated within the observation coding manuals for MI (Martin, Moyers, Houck, Christopher, & Miller, 2005; Miller & Mount, 2001; Miller et al., 2008). Whereas earlier MI coding manuals could only predict the lack of behaviour change based on resistance language (i.e. sustain talk; Miller, Benefield, & Tonigan, 1993), the adapted language categorization by Amrhein et al. (2003) allows predictions of behaviour change in substance abuse. In summary, the coding of language in dyadic interactions into change and sustain talks has only been applied in therapeutic settings. We propose to transfer these constructs (and their measurement) to the field of organizational change management.

In particular, conceptualizing resistance to change in terms of sustain talk offers distinct research advantages. First, resistance to change has typically been measured by questionnaires (Oreg, 2003). However, although survey data can be collected repeatedly at several occasions, questionnaire data only yield a momentary measurement of resistance to change. In contrast, sustain language is measured by means of recording naturally occurring verbal behaviour of individuals. In the second step, observational schemes are used to code and analyse these data (Amrhein et al., 2003; Klonek & Kauffeld, 2012b). Since observational

methods can capture individuals' utterances across time, they offer a richer and time-variant source of individuals' ambivalence (Bakeman & Quera, 2011). Further, a time-variant data source also allows investigating dependencies between verbal behaviour of change agents and change recipients' responses.

The second advantage is that decoding individuals' language is less obtrusive than questionnaire measures; participants are not asked consciously to think about their attitude towards change. In contrast, recording and decoding capture how individuals would naturally talk about intended changes and might reveal a more authentic picture.

Third, by measuring the change recipients' language we can better capture the idea of Arkowitz (2002, p. 226) to replace the 'term *resistance* with the more neutral term *ambivalence*', as it also comprises readiness to change in terms of change talk. While sustain talk may reflect valid concerns about intended organizational changes (Nord & Jermier, 1994), change talk permits to identify driving forces that may facilitate a change project (Lewin, 1952). In conclusion, we assume that verbal coding of change communication is a promising tool to assess resistance to change in change management projects.

How Change Agents Contribute to Resistance to Change

Studies from therapeutic settings suggest that change talk is highly predictive of future behavioural change (Amrhein et al., 2003). However, change agents – who usually are not therapists – might overhear these important verbal cues. More problematically, they might try to argue or persuade change recipients of the importance of a specific change (cf. Gordon, 1977). Unfortunately, this confrontational communication style can increase resistance to change in the form of reactance or non-compliance (Arkowitz, 2002; Brehm & Brehm, 1981; Gordon, 1977; Miller & Rollnick, 2002; Patterson & Forgatch, 1985; Rogers & Roethlisberger, 1991).

Over the course of their conversation, change agents and recipients will likely influence each other's behaviours. Interpersonal theory and related findings suggest that the behaviours shown by one interactant affect or limit the behavioural options of the other (Kelley et al., 1983, 2003; Kiesler, 1996). This results in non-random behavioural patterns during interaction processes (Burgoon, Stern, & Dillman, 1995; Kiesler, 1996). Relatedly, research in the area of team interaction has shown that team members mutually trigger or shape each others' behaviours over time, in terms of sequential cycles or patterns of interaction (Kauffeld & Meyers, 2009; Lehmann-Willenbrock et al., 2013; Lehmann-Willenbrock et al., 2011; Stachowski et al., 2009). Although behavioural interaction processes and mutual influences in change agent–recipient interactions are largely unexplored to date, these previous findings suggest that change agents and recipients can trigger each other's behaviour over the course of their conversation, which can either encourage or discourage change.

Specifically, we focus on the role of autonomy-restrictive behaviour by change agents within the interaction process. Autonomy-restrictive agent behaviour is presumed to increase resistance to change (Arkowitz, 2002; Brehm & Brehm, 1981; Gordon, 1977). As such, we expect that MI-inconsistent behaviours by change agents will promote sustain talk, or resistance to change, by change

recipients. This notion aligns with Ford et al.'s (2008) discussion of agents' contributions to resistance to change through behaviour such as breaching agreements or failing to repair trust. Concerning the interaction process between change agents and recipients, we hypothesize:

H1: Within the agent–recipient interaction process, MI-inconsistent verbal behaviour by change agents triggers recipient sustain talk.

Moreover, we expect interdependencies not only from change agents to recipients, but also vice versa. That is, recipients' resistance to change in terms of sustain talk may elicit specific verbal reactions by change agents. The change literature has often demonized resistance to change and illustrates it as something problematic (Dent & Goldberg, 1999). In consequence, a prominent way of dealing with resistance to change is the tendency to eliminate, minimize or suppress resistance (Giangreco & Peccei, 2005). Elimination strategies range from soft methods, such as education or negotiation, to hard methods, such as coercion (for an overview, see Dent & Goldberg, 1999). In this case, change agents themselves may respond to recipients' resistance by using arguments or even openly confronting the change recipient about the need to change. Although research on change agents' responses to resistance remains scarce, findings from the leadership literature suggest that resistance to change expressed by recipients will evoke agent behaviours that would be considered MI-inconsistent. Specifically, Tepper (2006) showed that leaders might tend to use hard strategies, such as demands, threats or pressure, in response to subordinates' resistance.

As we assume interdependencies not only from change agents to recipients, but also vice versa, we expect that change agents will show MI-inconsistent behaviours (i.e. confrontations, warnings, directing) in response to resistance to change, i.e. sustain talk. Thus, we hypothesize:

H2: Within the interaction process, recipients' sustain talk triggers MI-inconsistent behaviour by change agents.

Figure 1 summarizes the hypothesized effects. First, we conducted a preliminary study with practitioners to investigate the applicability of the MI coding scheme to change-related conversations, as this coding instrument has been predominantly used in clinical settings. Second, we tested the above-stated hypotheses in a quantitative study.

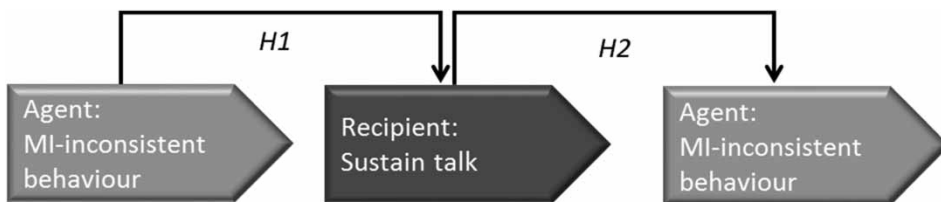


Figure 1. Overview of research model and sequential dynamics within change-related interactions.

Preliminary Study

Data Collection

To examine whether the MI coding scheme (Miller et al., 2008) would be applicable within an organizational change management context, we recorded and coded three dyadic agent–recipient interactions during a European Union re-commissioning project. Re-commissioning is a form of building quality management that involves technical and behavioural changes in building maintenance in order to improve cost and energy performance. Re-commissioning requires interaction with building occupants and owners, as changes to be implemented may affect building operations and standard procedures.

In March 2012, 16 engineers ('Re-Co advisors') from eight different countries and 10 different organizations participated in an expert meeting about raising energy performance in existing non-residential buildings. All Re-Co advisors were involved in implementing measures and strategies to reduce energy costs. The expert meeting included presentations about the project status, administrative project management, and a workshop in which participants had the opportunity to address communication problems with building partners and users. We gathered our preliminary study data during this workshop. Re-Co advisors were given the opportunity to discuss their intended change measures with a fictional user (i.e. fictional change recipient). The role of the change recipient was played by another Re-Co advisor, respectively. This procedure was chosen because building users (actual change recipients) did not participate in this workshop, and because it allowed the Re-Co advisors to empathize with possible concerns of their building partners. Re-Co advisors had received no communication training prior to our data gathering. Our sample contained six participants (i.e. three change agents and three change recipients) who voluntarily participated in the role-plays – either as Re-Co advisor or as fictional building partner – and consented to be videotaped during these interactions. Participating Re-Co advisors who decided not to take part in the role-play were given the role of observers. Each conversation was followed by a short debrief that was facilitated by a research associate from the Psychology Department.

Procedure

Re-Co advisors who took the role of the change agent were brought to a separate room and informed that they would have a meeting with an important stakeholder of the building in which Re-Co measures were to be implemented. The advisors knew that this change recipient would be role-played by another Re-Co advisor. They were instructed that they would have the opportunity to explain why some energy-saving measures were important (see Appendix 1). They were given five minutes to prepare for the meeting and 15 minutes to communicate changes with the change recipient. They were given the opportunity to talk about the individual measures that they actually wanted to apply in the real project.

Change recipients who acted in the role of a fictional building partner were given separate role descriptions. We used two different role descriptions for change recipients to provide workshop participants with different cases of

resistance to change and the opportunity to transfer the situation to different building contexts (e.g. office building or hospital). Both role descriptions stressed that the hypothetical building partner (i.e. the change recipient) was resistant to change (see Appendix 1).

Observational Measure

We used the German version of the MI Skill Code (MISC-d, Klonek & Kauffeld, 2012b) to code change agents' and recipients' verbal behaviour. The coding system was implemented in INTERACT software (Mangold, 2010). Table 1 gives an overview of MISC codes. Although the MISC has been primarily used to code counselling or psychotherapy sessions (Campbell, Adamson, & Carter,

Table 1. Overview of MI Skill Codes (MISC)

Change agent	Change recipient
MI-CONSISTENT	CHANGE TALK
<i>Advise with permission</i> ('May I suggest something?')	<i>Reason-positive</i> (The benefits of changing or the costs of maintaining)
<i>Affirm</i> ('You have made good progress.')	<i>Desire-positive</i> ('I wish ...')
<i>Emphasize control</i> ('This is your responsibility.')	<i>Ability-positive</i> ('I am able to ...')
<i>Simple reflection</i> (Paraphrasing or repeating)	<i>Need-positive</i> ('I need to ...')
<i>Complex reflection</i> (Summarizing, continuing the paragraph, etc.)	<i>Other-positive</i> (e.g. problem recognition)
<i>Open question</i> ('Why do you do to save energy?')	<i>Taking steps-positive</i> (Specific steps towards change)
<i>Reframe</i> (Changing the valence of a statement)	<i>Commitment-positive</i> (e.g. agreements to change)
<i>Support</i> ('I understand that this is difficult.')	
MI-INCONSISTENT	SUSTAIN TALK
<i>Advise without permission</i> ('You should try ...')	<i>Reason-negative</i> (The costs of changing or the benefits of maintaining)
<i>Confrontation</i> (arguing, correcting, blaming, persuading, criticizing)	<i>Desire-negative</i> ('I do not wish ...')
<i>Direct</i> (order, command or direction)	<i>Ability-negative</i> ('I am not able to ...')
<i>Raise concern</i> (pointing out possible problems)	<i>Need-negative</i> ('I do not need to ...')
<i>Warn</i> (implying negative consequences)	<i>Other-negative</i> (e.g. verbal resistance.)
	<i>Taking steps-negative</i> (Specific steps away from change)
	<i>Commitment-negative</i> (e.g. agreements to maintain)
NEUTRAL	FOLLOW NEUTRAL
<i>Facilitate</i> ('mmh', 'okay')	No inclination towards or away from change, questions
<i>Giving information</i> (explaining, educating, providing feedback)	
<i>Structure</i> ('We will first talk about this and later ...')	
<i>Raise concern with permission</i> ('Can I share some concerns about that with you?')	
<i>Closed question</i> ('Do you save energy?')	
<i>Filler</i> ('Nice weather today')	

Note: MISC codes in italics; aggregated codes that we used for our analysis are in capital letters.

2010; Catley et al., 2006), the manual describes that any language that moves in the direction of change is termed ‘change talk’ and language indicating a movement away from change is termed ‘sustain talk’, which makes the instrument applicable to other contexts than therapy. Some preliminary studies from non-clinical settings have used the MISC for coding how women talk about physical activity (Perry & Butterworth, 2011), for analysing employees’ communication during annual appraisal interviews (Klonek & Kauffeld, 2012a) and for examining team interactions in software teams (Paulsen et al., 2013).

Verbal Behaviour of Change Agents

Within the MISC coding scheme, each change agent behaviour is coded into one of 19 different verbal behaviours that can be aggregated into three broader categories (cf. Moyers & Martin, 2006): MI-consistent, MI-inconsistent and neutral verbal behaviours. Table 1 shows the specific codes for each main category.

Verbal Behaviour of Change Recipients

Change recipient behaviour is coded by means of 15 codes that can be aggregated into three main categories (Gaume, Gmel, & Daeppen, 2008; Magill, Apodaca, Barnett, & Monti, 2010; Moyers & Martin, 2006): verbal behaviour that expresses resistance to change (sustain talk), verbal behaviour that expresses readiness for change (change talk), and verbal behaviour that is related to neither change nor resistance (follow neutral; see Table 1).

Coding Change-Related Interactions: Three Illustrations

Appendix 2 shows sample transcripts from the three simulated interactions between a Re-Co agent and a change recipient, coded with the MISC-d (Klonek & Kauffeld, 2012b). The fictional user in the first interaction provided reasons to sustain (‘Now the system works more or less’) or his lacking ability to support change (‘You are the technician. I am just an office man. I can’t do anything about this’). Sustain talk can signal strong resistance to change (‘I am more sceptic, I have to say because if something goes wrong. This is *my* problem and not yours because you will be away but I will stay here!’). On the other hand, it is also possible to detect change language in the same volley (e.g. ‘Let’s hope that it saves some energy’ or ‘I know we have high energy costs’).

The sustain talk voiced by the change recipient in the second transcript shows that resistance can reveal valid concerns, as the change implementation (i.e. not using a machine that has high energy costs) might also affect third parties (i.e. patients being exposed to X-rays). The change agent in this interaction responded with MI-consistent behaviour by using active listening (‘Your use is really important – it is really *life-saving!*’).

The change recipient from the third interaction shown in Appendix 2 switched between voicing change (‘It is fine! You can do it!’) and sustain talk (‘As long as you don’t interfere any second with the work here’). The change agent frequently

provided background information or asked closed questions (e.g. ‘Do you have some measures in your building how to reduce energy?’, ‘Could you communicate to technical staff that it is okay from your side?’).

The coded interactions from the explorative qualitative study revealed that the instrument could be applied to an organizational change context. Furthermore, the utterance-by-utterance analysis of our preliminary study showed that change recipients may engage in change and sustain language at the same time (i.e. within one speaking turn). This process perspective clarifies that individuals do not tend to express solely resistance to change but are usually ambivalent about changing. In this respect, change recipient language can be regarded as a resource: While sustain talk helps the change agent to identify potential problems when implementing change, change talk provides hints in which directions change can be promoted (e.g. reduction in energy costs). Although this study has shown that change and sustain language may also be transferred to other contexts than therapy, this preliminary sample did not allow us to test for the hypothesized dynamics of agent-to-recipient and recipient-to-agent transitions. Therefore, we conducted a quantitative study to analyze behavioural transitions in a larger sample.

Quantitative Study

Sample

To test our hypotheses, we collected a student sample of 28 dyadic interactions between change agents and recipients. Students in the change agent role were 24 years old on average ($SD = 2.93$, $Min = 19$, $Max = 32$), 60% of the participants were male and the majority were pursuing a degree in engineering (79%; mostly mechanical, construction or industrial engineering). About 10% ($N = 3$) studied industrial computer science or social sciences (10%; education or psychology). About 18% ($N = 5$) had already completed a vocational training.

Procedure

Participants were given the incentive that they would receive feedback on their communication skills if they provided a sample of a change-related conversation. Participants recruited conversational partners themselves. Their conversational task was to focus on a behaviour that their conversational partner should change but had little readiness for changing it (see Appendix 3 for the full instruction). Possible topics were offered (e.g. doing more for his studies, a conflict with another person, a behaviour that others criticize). Nearly half of the conversations covered health-related behaviours (43%, e.g. smoking cessation, weight reduction, engaging in physical exercise). A third of the conversations covered topics of self-regulation (32%, e.g. gaining self-assertiveness, controlling purchasing behaviour, planning homework precociously) and the remaining 25% covered very specific change topics (e.g. calling another person, building confidence, or achieving work–life balance). Change recipients were free to choose whether they would give their written consent for the session to be audiotaped.

Measures

The audiotaped conversations were coded by two independent student raters who received a 40–60 hour training using a stepwise learning process (i.e. starting with simple pre-coded transcripts and subsequently proceeding to more complex tasks). We aggregated codes according to Moyers and Martin (2006; see also Table 1) to be able to compare observer agreements with previous studies and used six randomly selected conversations to estimate inter-rater reliability. Time-unit ($\kappa_{\text{TU}} = .76$) and event-based inter-rater agreement kappa ($\kappa_{\text{E}} = .64$) coefficients were calculated as recommended by Bakeman, Quera, and Gnisci (2009) using GSEQ software (Bakeman & Quera, 2011). These kappa values represent strong agreement ($\geq .61$). Appendix 3 shows an interaction transcript with examples of how specific change recipient language was coded and summarized to form aggregate codes. The final coded interaction stream which we used for sequence analyses is shown in the third column of Appendix 3.

Lag Sequential Analysis

To test our hypotheses concerning behavioural interdependencies between change agents and recipients (H1 and H2), we used lag sequential analysis (Bakeman & Quera, 2011). Lag sequential analysis tests how the spontaneous verbal behaviour of one speaker affects the verbal response of another, how verbal behaviour unfolds over time, and tests whether there are meaningful interdependencies between specific types of behaviour. Concerning sustain talk (i.e. resistance to change) as a focal behaviour, lag sequential analysis allowed us to systematically test associations between given and an adjacent target behaviour (see also Figure 1).

We generated lag-sequence matrices with behavioural codes of one speaker (agent or recipient) in the rows (i.e. given behaviours) and the codes of the other speaker in the column of the matrix. In general, a significant χ^2 statistic indicates that the association between the behavioural codes is not determined by chance and that a given behaviour code is followed more often by some behaviours and less often by others. If a global sequential association between agent and recipient behaviours can be established, it is possible to look for hypothesized associations between specific behavioural codes (Bakeman & Quera, 2011).

Associations Between Specific Behavioural Codes: Lag Sequential Analysis

To determine the strength of the specific associations between a given behaviour code (e.g. MI-inconsistent) and a specific target code (e.g. sustain talk), we calculated adjusted residuals. Adjusted residuals are standardized raw residuals (based on the difference between the observed and expected frequencies). This cell-specific statistic reveals whether a sequential association between a given verbal behaviour at lag0 and a target behaviour at lag1 is significantly more or less likely than expected by chance.

If adjusted residuals are positive and greater than 1.96, there is a significant positive association; if adjusted residuals are negative and smaller than 1.96, there is a negative association between the two adjacent (lagged) behaviours, respectively

(Bakeman & Quera, 1995). Note that time lags refer to sequential events, that is, lag1 means ‘the next behavioural event or utterance’. Sequential associations between behaviours may be analysed at different time lags. For example, lag2 indicates the association between the given and the second following behaviours, lag3 indicates the association between the given and the third following behaviours, etc.

Results

Transition Analysis at lag1

Our coded sample contained a total of 1080 inter-individual transitions or speaker switches (on average, 38 per conversation). Table 2 presents agent–recipient transitions and Table 3 presents recipient–agent transitions at lag1 (from one to the immediate next behaviours, respectively). The results show a significant $\chi^2(4) = 17.65$ for the agent-to-recipient transitions and $\chi^2(4) = 48.04$ for the recipient-to-agent transitions, which indicates a non-random sequential pattern within the interaction. Among the agent–recipient transitions in Table 2, transitions from MI-inconsistent to sustain talk were significantly more likely than expected by chance. This finding supports our first hypothesis by showing that MI-inconsistent behaviour of change agents indeed triggered sustain talk of change recipients.

Moreover, we explored whether MI-consistent behaviour by change agents triggered recipients’ change talk, rather than sustain talk. Table 2 shows that the adjusted residual for MI-consistent behaviours followed by recipients’ change talk was larger than the adjusted residual for MI-consistent behaviour followed by sustain talk – however transitions did not reach statistical significance ($ADJR_{(MI-con \rightarrow Change\ Talk)} = 1.33$, $p > .05$; $ADJR_{(MI-con \rightarrow Sustain\ Talk)} = 0.67$, $p > .05$).

Table 3 presents the transition matrix for testing our second hypothesis. MI-inconsistent behaviours were strongly and significantly more likely than expected by chance following sustain talk ($ADJR_{(Sustain\ Talk \rightarrow MI-incon)} = 3.67$, $p < .01$). This result supports our second hypothesis that sustain talk by recipients promotes MI-inconsistent behaviour by change agents.

Table 2. Adjusted residuals for verbal behaviour of change recipients in response to change agent behaviour at lag1

		Event at lag 1		
		Change recipient		
Event at lag 0		Sustain talk	Change talk	Follow neutral
Change agent	MI-inconsistent behaviour	2.04*	0.51	-2.66*
	MI-consistent behaviour	0.67	1.33	-2.15
	Neutral behaviour	-2.11*	-1.62	3.95**

Note: $\chi^2(4) = 17.65$, $p < .01$, $N = 1080$ behavioural transitions.

* $p < .05$.

** $p < .01$.

Table 3. Adjusted residuals for verbal behaviour of change agents in response to change recipient behaviour at lag 1

Event at lag 0		Event at lag 1		
		Change agent		
		MI-inconsistent behaviour	MI-consistent behaviour	Neutral behaviour
Change recipient	Sustain talk	3.67**	0.41	-3.17**
	Change talk	-0.56	3.14**	-2.65**
	Follow neutral	-3.51**	-3.85**	6.41**

Note: $\chi^2(4) = 48.04, p < .01, N = 1067$ behavioural transitions.

* $p < .05$.

** $p < .01$.

Transition Analysis at lag2 and lag3

To test whether the behavioural sequences MI-inconsistent behaviour – sustain talk and sustain talk – MI-inconsistent behaviour reciprocated beyond lag1 we calculated separate 3×3 transition matrices for agent-to-recipient, recipient-to-agent, agent-self-transitions and recipient-self-transitions for lag2 and lag3. An example of an agent-self-transition was MI-inconsistent behaviour followed by MI-inconsistent behaviour at lag2, whereas an example of a recipient-self-transition was sustain talk followed by sustain talk at lag2. Figure 2 illustrates a behavioural event sequence with three speaker transitions (i.e. three event lags) and shows that MI-inconsistent behaviour at lag0 was significantly linked to sustain talk at lag1 ($ADJR_{(MI-incon \rightarrow Sustain\ Talk)} = 2.04, p < .05$). Moreover, after MI-inconsistent behaviour at lag0, significantly more MI-inconsistent behaviour followed at lag2 ($ADJR_{(MI-incon \rightarrow * \rightarrow MI-incon)} = 6.71, p < .01$). Finally, MI-inconsistent behaviour at lag0 was also significantly linked to sustain talk at lag3 ($ADJR_{(MI-incon \rightarrow * \rightarrow * \rightarrow Sustain\ Talk)} = 4.11, p < .01$). Appendix 3 shows a transcript that illustrates this dynamic interaction pattern.

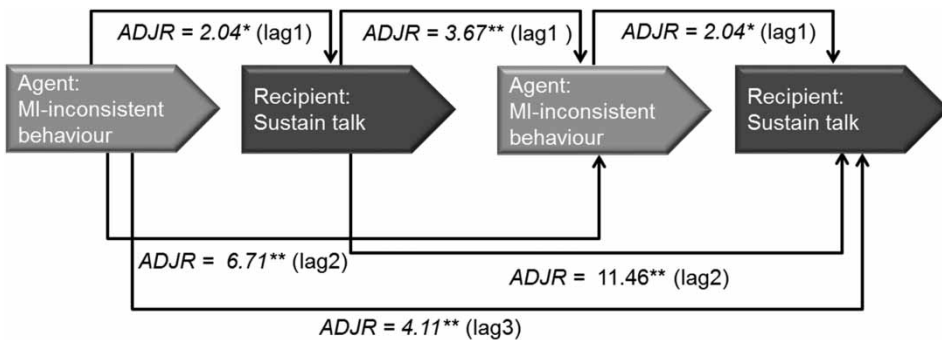


Figure 2. Summary of lag sequential analyses. ADJR = adjusted residuals; * $p < .05$, ** $p < .01$.

Discussion

This study investigated the idea that change agents can trigger resistance to change in change recipients (Ford & Ford, 2008; Ford et al., 2008). We introduced a dynamic interaction approach for understanding emergent resistance to change in agent–recipient conversations. Integrating theory on MI and interpersonal theory, we examined how specific behavioural patterns in agent–recipient interactions can elicit and substantiate resistance to change by establishing the applicability of the MISC observation scheme to change-related conversations and testing behavioural linkages via sequential analysis.

First, in a preliminary study we showed how verbal interactions can be categorized at the micro-level of utterances within change-related conversations, using the MISC (Miller et al., 2008). Change recipients in this first study expressed ambivalence towards proposed changes in terms of sustain and change talk.

Second, building on MI theory (Arkowitz, 2002; Miller & Rollnick, 2002) and findings from clinical psychology (Patterson & Forgatch, 1985), we hypothesized and found that change agents who engaged in behaviours that constrain personal freedom (i.e. MI-inconsistent behaviours) evoked resistance to change (i.e. sustain talk) in change recipients. Lag sequential analysis further revealed that change agents tended to respond with autonomy-restrictive behaviours when change recipients showed resistance (i.e. sustain talk). These linkages between MI-inconsistent agent behaviour and recipient sustain talk persisted for up to three event lags.

Our findings indicate that change agents and recipients can become entrenched in communication patterns in which agents evoke and respond to resistance (sustain talk) by using MI-inconsistent behaviours. This communication pattern can lead to a vicious circle in which change agents battle against recipients' resistance by verbal means (confrontations, warnings, imperatives, etc.) that actually promote further resistance.

Theoretical Implications

Our findings have several theoretical implications. First, we followed recent theorizing (Arkowitz, 2002; Ford et al., 2008; Piderit, 2000) by conceptualizing resistance to change as a dynamically emerging construct. Instead of demonizing resistant change recipients (cf. Dent & Goldberg, 1999), we built on a multidimensional resistance concept that includes both hindering (sustain talk) and driving forces (change talk; cf. Lewin, 1952; Piderit, 2000). The constructs of change and sustain talk can suitably reflect the ambivalence that individuals often experience and express when faced with change (Arkowitz, 2002). Our findings show that resistance to change is indeed embedded in and dynamically emerges through communication processes.

Second, our results suggest that the verbal utterances of change recipients may provide a resource for initiating change (cf. Ford & Ford, 2009). Ford et al. (2008) have argued that resistance to change is an important form of feedback from the employees who see how change will affect the operational level. The qualitative data from our preliminary study support the notion that resistance to change should be regarded as a resource, since sustain talk by change recipients revealed

important concerns (e.g. more exposure to X-rays for patients if the maintenance of a high-energy-using machine is changed). If the informative feedback form of 'resistance' from the employee in this particular example had been excluded from working in this position due to personal selection decisions, the management might have decided to change the maintenance of the machine and patients in the hospital would have suffered more exposure to X-rays. This example underscores the need to regard resistance to change as an important organizational resource, rather than condemning it (Ford et al., 2008; Piderit, 2000).

Third, we investigated dynamic behavioural linkages between change agents and recipients. According to interpersonal theory, the behaviour of one speaker will affect the possible following behaviours of the interacting partner, and vice versa (Kelley et al., 2003); in our case, change agents and recipients. Following this notion, we took an interaction analytical approach and applied sequential analysis to shed light on emergent behavioural linkages in agent–recipient interactions. Previous research has successfully applied sequential analysis for exploring micro-level interaction processes in work groups (Kauffeld & Meyers, 2009; Lehmann-Willenbrock et al., 2011). We applied this methodology for pinpointing emergent behavioural dynamics between change agents and recipients.

One of the strengths of interaction analysis is its ability to observe natural behaviour as it occurs and dynamically unfolds in time (see Bakeman & Quera, 2011). This allowed us to treat every behavioural event as a behavioural cue (or stimulus) that may facilitate or inhibit a subsequent behavioural event. Although the course of one conversation is certainly shorter compared with longitudinal survey designs, our approach provides valuable insights into the temporal micro-dynamics of emergent change-resistance by showing how specific agent behaviours can trigger or inhibit recipients' resistance within the interaction flow. Specifically, MI-inconsistent behaviour elicited sustain talk, but was also preceded by sustain talk. These results suggest that change agents tended to push through, rather than engaging change recipients in developing their own solutions (Ford & Ford, 1995).

Finally, measuring change-related conversational behaviour can yield more accurate insights into individual attitudes towards change than questionnaire measures may achieve. Self-reports of inner states are not necessarily accurate in predicting hypothetical future behaviour (Back & Egloff, 2009; Baumeister, Vohs, & Funder, 2007; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004; Mischel, 1968). Research on MI shows that self-reported communication skills share minimal variance with actual verbal behaviour when sampled from an interaction (Miller et al., 2004). Yet, research based on real behavioural observations remains scarce (Baumeister et al., 2007). Addressing this concern, our findings show that resistance to change can be measured on the basis of behavioural observations. Moreover, this methodological approach is less intrusive than asking change recipients directly about their willingness to change. Our results further support the notion that readiness and resistance to change may evolve over time, that is, even within the course of a conversation. Monitoring ambivalence and exploring changes over time – e.g. in the course of change-related communication – may be more useful for predicting successful change than analysing only short snap-shots of change recipients' attitudes.

Practical Implications

Communication is at the core of every change initiative (Ford & Ford, 2008). However, concrete advice for change managers concerning effective change communication is hard to find. Our results provide several starting points for improving change-related communication practices. First, scholars and managers may benefit from understanding resistance to change in terms of observable ambivalent language, that is, in terms of change and sustain talk. Our study shows that change agents can contribute to resistance to change by their own behaviours during change-related conversations. Our findings imply that change agents should be aware that confronting or arguing about change might trigger resistance, rather than readiness for change. This may be particularly important in situations or conversational moments when change recipients are already highly resistant to change. Again, the observational method seems to be especially useful for sensitizing change agents for their own communication behaviour (Fukkink, Trienekens, & Kramer, 2011). Videotaped interactions are a preferable method in communication training (Kurtz, Silverman, & Draper, 2005). They can be used to feedback verbal behaviour to change agents and allow them to verify for themselves if they might have contributed to resistance during a conversation. As the video can be viewed several times, it provides change agents with an opportunity for becoming more aware of their own behaviours and for reflecting about alternative means for dealing with similar situations.

Second, we introduced MI as a communication method that might facilitate change (Miller & Rollnick, 2002). Research on MI has emphasized how important it is for change agents to listen (Catley et al., 2006), especially in order to grow aware of recipients' change talk (Moyers, Martin, Houck, Christopher, & Tonigan, 2009). On a related note, change management scholars have recommended that change agents and leaders need an ability to decode resistance to change, that is, to 'hear and learn from their critics' (Ford & Ford, 2009, p. 99). Hence, training change agents in MI skills, such as active listening, provides a potential avenue for successful change implementation. Even short trainings of only two to five days in MI can significantly enhance trainees' verbal communicational styles (Madson, Loignon, & Lane, 2009), while a training in active listening of only one day can improve managers' listening skills (Kubota, Mishima, & Nagata, 2004). These findings hint at the efficiency and feasibility of MI training formats in organizational settings.

Limitations and Future Directions

Like any empirical investigation, our study has several limitations. First, we focused on dyadic conversations between change agents and recipients. Thus, our results do not necessarily generalize to larger organizational gatherings, such as organization-wide 'town-hall' meetings or seminars in which more complex group dynamics may be at play. However, our coding and sequential analysis approach can highlight behavioural dynamics not only in dyadic, but also in group settings. For example, future research could explore how change agents can prevent or counteract resistance to change in communication processes with a seminar-style group of change recipients.

Second, in our quantitative study we investigated change-related interactions in a student sample. Although the participants discussed topics that were of personal relevance to both parties, this limits the generalizability of our findings. However, we would expect similar patterns of interaction emerging in change agents and recipients in the organizational setting. By showing that the MISC scheme can be applied to agent–recipient interactions and yields meaningful insights into change-related conversational processes, we have laid the ground for future research in the organizational field. Moreover, future field research should examine agent–recipient interactions in more heterogeneous samples concerning gender, age, professional experience, organizational type (profit, non-profit or intersectoral) as well as different change projects (e.g. restructuring versus bottom-up implementation).

Third, we did not include a questionnaire measure of resistance to change (Oreg, 2003). Our approach to measure resistance to change originates from the concept of change and sustain talk that was developed in psycholinguistics and clinical studies (Amrhein et al., 2003). These different measurement approaches have different underlying assumptions about the origins of resistance to change. Oreg (2003) conceptualizes resistance to change as a dispositional construct and concludes that change-resistance should be included in personal selection. In contrast, our observational approach conceptualizes resistance to change as a product of the interaction between change agents and recipients. Future research should investigate to what extent the observational approach and self-report measures complement each other or yield different results.

Fourth, future research should examine how MI-consistent behaviour can promote readiness for change. One reason why we did not find facilitative effects of MI-consistent behaviour on change talk in our present samples may be that change agents need to be professionally trained in MI in order to show high quantities of MI-consistent and low quantities of MI-inconsistent behaviours (Opheim, Andreasson, Eklund, & Prescott, 2009). Even though the change agents in our two studies showed MI-consistent behaviour, they were not MI experts and hence did not carry out the intervention method as it was originally intended. In fact, the MISC recommends that experts in MI should ideally exhibit less than 10% MI-inconsistent behaviours, which was rarely the case for the change agents in our two samples. Excessive amounts of MI-inconsistent behaviour may not only trigger resistance but also diminish the beneficial effects of MI-consistent behaviour. For example, if a change agent shows active listening but also MI-inconsistent behaviours, change recipients may get the impression that their concerns are not taken seriously (i.e. pseudo-voice effect; de Vries, Jehn, & Terwel, 2012). Pseudo-voice is present when employees get the impression that the management gives them the opportunity to talk about their concerns but that, in fact, their opinion is never considered. To address this notion, future research should include measures of the extent to which employees feel that their concerns are being heard.

Finally, we did not relate recipients' change talk to actual behavioural changes or change implementation after the respective change-related conversation. However, findings from the therapeutic context underscore the predictive nature of change talk for future actions (Aharonovich et al., 2008; Amrhein et al.,

2003; Baer et al., 2008; Gaume et al., 2008; Hodgins, Ching, & McEwen, 2009). Future research should explore whether employee change talk similarly predicts behavioural change in organizational settings. Findings from team interactions in organizations suggest that this may be the case, particularly in the context of action-planning communication and subsequent team performance (Kauffeld & Lehmann-Willenbrock, 2012).

Conclusion

This study applied the theoretical lens of MI to change-related conversations and introduced a dynamic interaction perspective on resistance to and readiness for change, in terms of sustain talk and change talk. Using sequential analysis, we examined how change agent and recipient behaviour dynamically unfolds in interdependent patterns over time. Our findings show that autonomy-restrictive utterances by change agents elicit sustain talk in recipients, and vice versa. These results shed light on the ways in which change agents can contribute to resistance to change. We suggest using video feedback for sensitizing change agents for their own communication behaviour and discuss the benefits of training in MI as a means for handling resistance to change.

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Appendix 1. Instructions for Re-Co advisors in the role of change agents and recipients

Role Play – Selling your idea (change agent)

Today you have a meeting with one of the important stakeholders of your building in order to discuss the new measures you're planning to implement for re-commissioning. Try to explain to him or her why these measures are so important and what the benefits are. Choose one or two of your own measures and try to pitch them as best you can.

In case of disagreement:

- What is the objection to your idea?
- Does the stakeholder need more information?
- Is the stakeholder confused or unclear?
- Are the benefits clear to him/her?

You have **five minutes** to prepare your role. You can take notes to prepare your encounter.

You have **15 minutes** to convince your stakeholder of your measure!

Role Play – Busy Doctor (change recipient)

You are a surgeon and you have worked in this hospital for almost ten years now. Everyone knows that your job is very stressful and you are saving lives every day. You have to work almost every day at the hospital, sometimes at night, sometimes even on holidays. A lot of responsibilities relay on you and you have a lot on your mind.

You wish you had more time for your family. Your daughter has her 6th birthday party on Saturday and you're afraid that you're not going to make it because a surgery was planned on emergency that day. Sometimes you wish you would not have to do so much. The good part is you have this laboratory equipment which makes your life a lot easier. This machine uses a lot of energy and you've already been told not to use it so often. You do not really care about energy saving, but about time saving.

Today, you have a meeting with a re-commissioning agent who wants to talk to you about some measures to save energy. You already are totally busy. You go to the meeting with a skeptical feeling about it.

Try to stay in your role. The important points are:

- You are saving lives every day
- You have to work almost every day, sometimes on holidays too.
- You have this laboratory equipment which makes your life a lot easier.
- This machine uses a lot of energy. But you do not really care.

You have **five minutes to prepare** yourself. Of course, you can take notes that enrich your role, your position or your arguments (beforehand and during the conversation).

The conversation will last about **15 minutes**.

Role Play – Office Boss (change recipient)

Today is your meeting with the re-commissioning team representative. He is going to talk to you about some measures in order to save energy in your office building. You are a little skeptical because you will have to communicate these measures to all of your employees afterwards.

You do not know what kind of measures he's going to propose to you, and you are not sure if you are going to be able to communicate them well. Therefore, you have a lot of questions since you really want to understand all about these methods, you want scientific proofs, numbers if possible.

Your task is to sell everyone this project, and you do not even believe in it. You want to be 100% sure that this is the right thing to do, and that it will benefit all of you in the office.

Try to stay in your role. The most important points are:

- You will have to communicate these measures to all of your employees.
- You have a lot of questions.
- For example: What does the word re-commissioning mean? What are the benefits for me? Why should I believe you? Can you give me some numbers/statistics? Are there other buildings doing the same? When will I begin to see the results? Etc ...
- You want to be 100% sure that this is the right thing to do.

You have **five minutes to prepare** yourself. Of course, you can take notes that enrich your role, your position or your arguments (beforehand and during the conversation).

The conversation will last about **15 minutes**.

Appendix 2. Sample transcripts from the preliminary study on conversations between change agents and change recipients

Note that participants were not native English speakers. Where necessary, transcripts were edited to improve readability.

1) Office supervisor case

Speaker	Transcript	Aggregate code	MISC code
Agent:	Our intention is to install thermal valves on your radiators - in your offices. We suppose that will bring energy savings of about eight per cent. What is your opinion?	Neutral MI-consistent	Giving Information Open Question
Recipient:	Well, you are the technicians. I am just an office man. I can't do anything about this. I am little bit worried . . . you installed this and then people will be dissatisfied, it is cold, things do not function. How can I be sure that this really works, that this will not cause problems first and then . . . Let's hope that it saves some energy. Now the system works more or less. I know we have high energy costs.	Sustain Talk Change talk Sustain talk Change talk	Ability (-) Reason (-) Other (-) Other (+) Reason (-) Reason (-)
Agent:	Our analysis of data says that we can - by installing those thermal valves - increase your indoor quality . . .	Neutral	Giving Information
Recipient:	I am more worried about problems and they all come to me and say "okay, what was this?" I am more skeptic, I have to say if something goes wrong. This is <i>my</i> problem and not yours because you will be away but I will stay here!	Sustain Talk	Other (-) Reason (-)

2) Busy doctor case (1)

Speaker	Transcript	Aggregate code	MISC code
Recipient:	You know I am working as a surgeon. And . . . whenever it is necessary I have to be there - and without that machine it would not be possible.	Follow Neutral Sustain Talk	Need (-)
Agent:	Okay, does this machine have the possibility to have a stand-by function?	Neutral	Closed Question
Recipient:	We need that machine to make some cross-sections of some people before I perform surgery on them. Before, we had to make several X-rays. So the people received many more X-rays.	Sustain Talk	Need (-) Reason (-)
Agent:	Well, your use [of this machine] is really important, I see. It is really life-saving.	MI-consistent	Simple Reflection

3) Busy doctor case (2)

Speaker	Transcript	Aggregate code	MISC code
Agent:	We did a tour previously and examined the solar thermal collectors - on the roof - which are meant for the production of warm water. And in the past they did not work probably . . .	Neutral	Giving Information
Recipient:	If you have to change it, just do it – it's fine with me.	Change Talk	Other (+)
Agent:	If it does not interfere with the organization . . .	Sustain Talk	Desire (-)
Agent:	Okay, we just need some time to fix the regulation system of the solar thermal collectors.	Neutral	Giving Information
Recipient:	It's fine with me. You can do that.	Change Talk	Other (+)
Recipient:	As long as you don't interfere any second with the work here.	Sustain Talk	Reason (-)

Appendix 3. Instructions for change agents and sample transcript (quantitative study)

Preparation tasks	
Participants	2 participants: - 1 interviewer (this is your role) - 1 conversational partner (this is your “client”. It can be a friend or someone that you know)
Preparation	Your conversational partner (client) should bring the conversational topic. The topic should be something that he/she knows that he/she should change but he/she has little awareness of or readiness for changing.
Conversational topic	The topic should be sufficiently complex so that you are able to have a 15–30 minutes conversation about it. Possible suggestions for the topic are the following: - engage in more physical exercising - engage more at university - a conflict with another person in which your client is not willing to make a concession - a behaviour that is regarded by others as bothersome but that he/she is not willing to change
Task	Your task is to talk with your conversational partner about behaviour change and to motivate him/her to change.
Technical issues	The session can be recorded using your mobile phone, a camera, or audiotape. As far as possible, the record should encompass at least 20 minutes. Please clarify with your conversational partner in advance if they agree to be recorded.

Sample transcript between a change agent and a change recipient

Note: The transcript has been edited to improve readability.

Speaker	Transcript	Aggregate code	MISC code
Agent	Okay, our topic is “more commitment in college”. So I know you do precious little for your studies.	MI-inconsistent	Confront
Recipient	I think I really study enough! I still want to have a life.	Sustain Talk	Other (–) Desire (–)
Agent	But just consider . . . you’re laying the foundation now.	MI-inconsistent	Confront
Recipient	But I think that I’m doing just fine!	Sustain Talk	Other (–)
Agent	Yes, but your grades speak a different language.	MI-inconsistent	Confront
Recipient	But it’s up to the individual . . . when I say, “It’s important to me that I still have a life” - Then that’s my decision!	Sustain Talk	Reason (–)