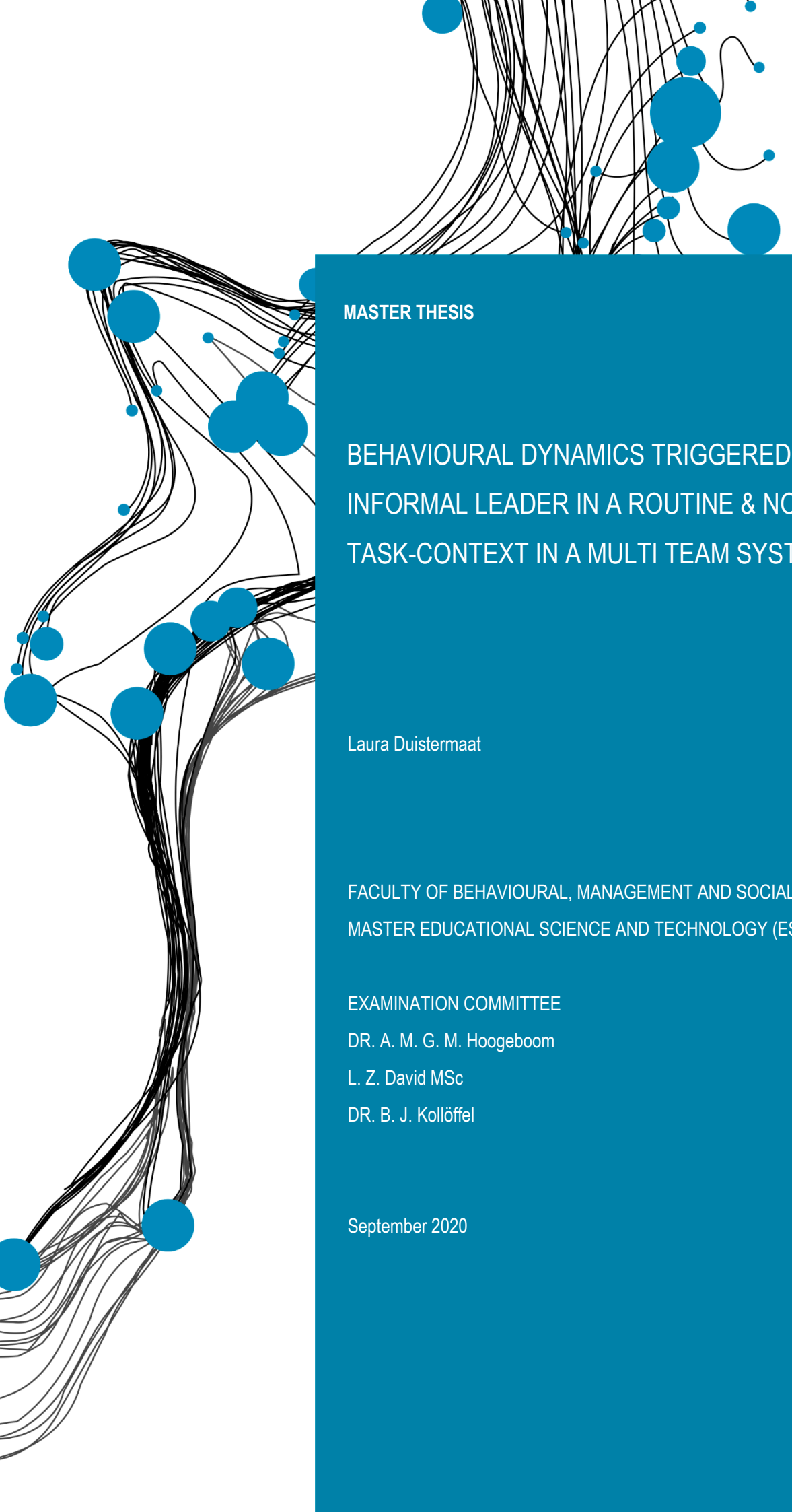

MASTER THESIS

BEHAVIOURAL DYNAMICS TRIGGERED BY AN INFORMAL LEADER IN A ROUTINE & NON-ROUTINE TASK-CONTEXT IN A MULTI TEAM SYSTEM

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Abstract

Background: Because of the responsiveness and adaptability of Multi Team Systems (MTSs), they have benefits when handling challenging environments (Anderson et al., 2001). Informal leadership has been found to quickly emerge, especially in external MTSs, and informal leadership is important for the functioning of an MTS (Johannessen et al., 2015; Jonassen & Hollnagel, 2019; Nesse, 2017; Zaccaro et al., 2020). Moreover, an informal leader can influence the behavioural dynamics of a team, which in turn influence the functioning of a team (Hoogeboom & Wilderom, 2019; Kauffeld & Meyers, 2009; Klonek et al., 2016; Meinecke et al., 2017). In addition, whether it is a routine or a non-routine task-context can also influence the behavioural dynamics in teams (Chung & Jackson, 2013; Kerr, 2017; Klonek et al., 2016; Unger-Aviram et al., 2013). This study was aimed at gaining a better understanding of informal leadership in an MTS context. This was done by studying behavioural dynamics triggered by an informal leader in routine and non-routine task-context in an MTS.

Method: An MTS of Dutch railway network operator ProRail is studied in a routine and non-routine task-context by observing and coding video tapes of different teams of the MTS working together. With the results of the coding, a lag sequential analysis is performed to give insight into the behavioural dynamics that are triggered by the informal leader.

Results: The results show that, regardless of the task-context, the informal leader only shows task-oriented behaviour. Moreover, lag sequential analysis indicates that two behavioural sequences occur significantly more frequently than expected by chance in the routine task-context that do not occur above chance in the non-routine task-context (namely, delegating from the informal leader followed by clarifying and by informing from the other team members).

Discussion: An interesting implication is that the informal leader does have a different role in an MTS than other team members have. Therefore, with this study a first step has been taken to gain more understanding of informal leadership in an MTS. Future research on behavioural dynamics triggered by an informal leader in a routine and non-routine task-context in MTSs with different characteristics is recommended to deepen the understanding of informal leadership in an MTS context. Furthermore, a longitudinal study is recommended to analyse whether behavioural dynamics triggered by an informal leader change over time.

Keywords: Multi Team Systems, informal leadership, routine and non-routine task-context, lag sequential analysis

1. Introduction

In recent years a new way of working in organizations emerged, namely Multi Team Systems (MTS). MTSs are "two or more teams that interface directly and interdependently in response to environmental contingencies toward the accomplishment of collective goals" (Anderson, Ones, Sinangil, & Viswesvaran., 2001). This definition entails that the teams of an MTS communicate directly with other teams of the MTS, work interdependently from the other teams of the MTS, and work toward accomplishment of collective MTS goals. MTSs are often seen in settings where complex tasks require multiple teams and diverse expertise (such as in an intensive care unit in a hospital) (DeChurch & Marks, 2006). A primary reason for the existence of an MTS is the responsiveness and adaptability of an MTS to challenging performance environments (Anderson et al., 2001). Due to the importance and more frequent use of MTSs in organizations, research into MTSs is growing. What is already clear from research is that leadership plays an important role in the functioning of an MTS (Shuffler, Jiménez-Rodríguez, & Kramer., 2015).

1.1. Informal leadership in MTSs

There are indications that informal leadership quickly emerges especially in external MTSs (i.e., MTS consisting of teams from two or more organizations) (Johannessen, McArthur, & Jonassen., 2015; Jonassen & Hollnagel, 2019; Nesse, 2017; Zaccaro, Dubrow, Torres, & Campbell., 2020). Informal leadership is defined as "leadership carried out by individuals who do not possess formal authority or power within an organization but can influence and guide others based on the respect and credibility they possess" (Peters & O'Connor, 2001). Informal leaders can perform necessary group functions, such as facilitating team processes and fulfilling team member's needs (Neubert, 1999). Moreover, informal leadership is adaptive and flexible, and can contribute to a systems capacity for flexible adaption (Johannessen et al., 2015). Thus, informal leadership fits in with the main objective of an MTS to be responsive and adaptable to challenging situations, as such informal leadership is important for the functioning of an MTS. Because informal leadership is a frequently occurring form of leadership, especially in external MTSs, and informal leadership is important for the functioning of an MTS, this study's aim is getting a better understanding of informal leadership in an MTS context.

1.2. Behavioural dynamics triggered by an informal leader

When studying informal leadership in an MTS context, it is important to study the behaviour that a leader shows. The reason for this is that previous studies point out that the behaviour of a leader in general has much influence on the behaviours that team members show, and as such the leader can influence the behavioural dynamics of a regular team[1] (e.g., if leaders show relation-oriented behaviour during performance appraisals, it results in greater voice and participation from employees) (Hoogeboom & Wilderom, 2019; Kauffeld & Meyers, 2009; Klonek, Quera, Burba, & Kauffeld.,

[1] With a regular team, a normal team from an organization is meant, not a team that is working in an MTS.

2016; Meinecke, Lehmann-Willenbrock, & Kauffeld., 2017). Hence, in order to gain more insight into informal leadership in MTSs, an important aspect is thus to study what behavioural dynamics triggered by an informal leader look like in an MTS.

Behavioural dynamics refer to the sequence of behaviours between for instance leaders and team members. For example, a leader is asking a question and a team member is answering the question, then the sequence of asking a question followed by answering the question could be called a behavioural dynamic. Hence, studying behavioural dynamics can be done by looking at behavioural sequences of verbal behaviours (Klonek et al., 2016; Leenders, Contractor, & DeChurch., 2016; Lehmann-Willenbrock, Meinecke, Rowold, & Kauffeld., 2015; Lehmann-Willenbrock & Allen, 2017; Meinecke et al., 2017). A behavioural sequence "is represented as a series of time-ordered codes for the observed events along with information about their onset and offset times." (Klonek et al., 2016). Hence, behavioural sequences in teams can be examined by analysing the teams and then coding the verbal behaviour with predetermined codes. Behavioural sequences are useful because the temporal order of behaviours allows answering the question: what happens after what? Furthermore, by looking at behavioural sequences, actual behaviour can be captured, rather than relying on perceptions of behaviours (e.g., surveys) or interpretations of behaviour (e.g., observations by researchers) (Lehmann-Willenbrock & Allen, 2017). Therefore, the benefit of studying behavioural sequences is that the obtained behavioural data is closer to phenomena of interest (Lehmann-Willenbrock & Allen, 2017). All in all, behavioural dynamics triggered by an informal leader are important to study because actual behaviour can be studied, which provides insight into the specific role of the informal leader in the MTS.

1.3. Routine and non-routine task-contexts

Next to studying behavioural dynamics triggered by an informal leader in an MTS, it is important to take the routine and non-routine task-contexts into account, because the task-context can strongly moderate the behavioural dynamics in a regular team (Kerr, 2017). The task-context can namely have an influence on both the behaviour that a leader displays and the behaviour that a leader triggers (Burke, Stagl, Salas, Pierce, & Kendall., 2006).

A routine task-context involves tasks that are predetermined, predictable, stable, and which involve standard operating procedures (Chung & Jackson, 2013; Hoogeboom & Wilderom, 2019; Lei, Waller, Hagen, & Kaplan., 2016). Routine tasks are often less knowledge- and information-intensive, and require less coordination (Brown & Miller, 2000; Chung & Jackson, 2013; Van De Ven, Delbecq, & Koenig., 1976). Furthermore, routine tasks are more predictable and can be handled with efficient team interaction and standardized work procedures (Resick, Murase, Randall, & DeChurch., 2014). A non-routine task-context involves tasks that are more complex, novel, and which involve more unique acts due to frequently changing requirements that are characteristic for a non-routine task-context (Hoogeboom & Wilderom, 2019; Rousseau & Aubé, 2010).

Previous studies highlighted the difference between a routine and non-routine task-context as one of the most powerful moderators of behavioural dynamics (e.g., leaders tend to discuss more with team members about what to do in a non-routine task-context as compared to a routine task-context) (Driskell & Salas, 1991; Kerr, 2017; Lei et al., 2016). Hence, the difference between a routine and non-routine task-context can influence the behavioural dynamics in teams. However, previous studies on routine and non-routine task-contexts examined the dynamics of the entire team instead of specifically taking into account the behavioural dynamics that the informal leader triggers with their behaviour, and they studied regular teams in organizations instead of teams in an MTS. Therefore, it is interesting to examine if the routine and non-routine task-contexts also influence the behavioural dynamics that an informal leader triggers in an MTS.

Concluding from the above, to get more insight into informal leadership in an MTS, it is interesting to study behavioural dynamics triggered by the informal leader in routine and non-routine task-context in an MTS. The research question of this study is therefore:

What do behavioural dynamics triggered by an informal leader look like in a routine and non-routine task-context in an MTS context?

Before going into the theoretical and practical relevance of this study, first an in-debt literature review about MTSs, (informal) leadership in MTSs, behavioural sequences and routine versus non-routine task-contexts will be given to provide more understanding of the relevant constructs of this study and why they are important to take into account in this study.

2. Theoretical framework

2.1. Multi Team System

To fully comprehend why informal leadership can play an important role in MTSs, it is important to know more about characteristics of MTSs, the distinctions of characteristics between MTSs and the advantage of MTSs over regular teams, as those concepts have an influence on what leadership types emerge in an MTS. Therefore, the next paragraphs will focus on the characteristics of an MTS, the distinction of characteristics between MTSs and the advantage of MTSs over regular teams.

2.1.1. Characteristics of MTSs

There are a few characteristics that distinguish an MTS from a regular team. First of all, MTSs are larger than regular teams, but smaller than full-scale organizations (Anderson et al., 2001). Second, MTSs consist of two teams or more. Third, there is interdependence with at least one other team of the MTS. Fourth, MTSs are open systems where particular configuration stems from the performance requirements of the environment that they confront and the technologies that they adopt. Lastly, the different teams of an MTS may not share proximal goals, but they do share a common distal goal or a set of goals (Anderson et al., 2001).

2.1.2. Example of an MTS

An example of an MTS can be found in the intensive care unit of a hospital. In the intensive care different specialists (e.g., nurses, doctors assistants, medical specialists, internist) are working together to cure a patient. The first and second characteristic (i.e., MTSs are larger than regular teams, but smaller than organizations and MTSs consists of two or more teams) can be seen when looking at the team size. There are more than two different teams involved, because every specialist comes from their own team, for instance a team of nurses. However, the hospital has a lot of different teams but not all teams are involved in the care of the patient on the intensive care, (e.g., a team of secretaries of the hospital is not involved in the care of the patient in the intensive care). Furthermore, the teams in the intensive care work interdependently of each other (third characteristic). For example, if the medical specialists think the patient needs a new medicine, the nurses need to know that, so they can give the medicine. The fourth characteristic (MTSs are open systems where particular configuration stems from the performance requirements of the environment that they confront and the technologies that they adopt) is also present. Because what the specialists working in the intensive care have to do depends on the needs of the patient. The fifth characteristic (MTSs may not share proximal goals, they do share a common distal goal) is also present, as every healthcare professional has their own goal, but they all share one common goal: to help the patient to get better.

2.1.3. Distinctions of characteristics between MTSs

Next to the characteristics that distinguish an MTS from a regular team, there can also be differences in characteristics between different types of MTSs. Zaccaro et al. (2020) mentions three characteristics

that can be used to distinguish between MTSs, namely (1) boundary status, (2) component team distance (CTD) and (3) goal type. Boundary status refers to whether MTSs are composed of teams from the same organization (internal boundary status), or from different organizations (external boundary status) (Zaccaro et al., 2020). CTD captures geographical, cultural, functional, and disciplinary forms of diversity. Zaccaro et al. (2020) makes a distinction between low, moderate, and high CTD. MTSs with low CTD have zero or one form of diversity, moderate CTD MTSs have two forms of diversity, and high CTD MTSs have three or more forms of diversity. Goal type refers to the difference in core purpose of the MTS, this entails that an MTS has intellectual or physical distal goals (Devine, 2002; Zaccaro et al., 2020). An intellectual task is "thinking as a core task, mental skills, a nonlinear work process, the derivation of new knowledge, and information as the primary work outcome" (Devine, 2002). A physical task "involves a core task, physical skills, a linear work-flow, applying existing knowledge, and a tangible product." (Devine, 2002). Hence, these characteristics can be used to make a distinction between MTSs.

2.1.4. Advantage of an MTS

The advantage of an MTS can be seen when comparing an MTS with regular teams. First of all, MTSs demand skill sets and areas of expertise residing within the boundaries of individual teams to be brought together in new ways to tackle challenges (such as curing a patient in the intensive care) (Shuffler et al., 2015). In addition, an MTS is often better in responding and adapting to a challenging performance environment than a regular team (Anderson et al., 2001). Due to the combination of different elements that are often non-routine and require a unique and system-wide response in limited time periods, an environment is challenging and difficult to work in (Anderson et al., 2001; Dess & Beard, 1984; Dutton & Dukerich, 1991). When looking at the example of the intensive care, it can be seen that it is a challenging environment. In the intensive care unit there are non-routine situations (every patient is different and has different needs), which require a unique response (unique care for the patient) in a limited time period (help the patient fast, otherwise the patient might not be cured). The MTS in the example is better than regular teams at responding and adapting to the situation because every team of the MTS has the skills needed to fulfil the overall goal (with all the specialists of different teams together, the specialists are able to help the patient in the intensive care get better).

Despite the advantages of MTSs over regular teams, MTSs are in general also more complex than regular teams. Because of the complexity, leadership plays an important role in MTSs. To understand why leadership plays an important role in MTSs it is important to know what makes MTSs so complex. A recent review from Shuffler et al. (2015) found that MTSs are in general extremely complex because of cross-collaboration between component teams (i.e., the different teams of an MTS) with both unique and shared goals (Zaccaro et al., 2012). Moreover, as the size of the MTS increases, component teams must cross more organizational boundaries and are more dispersed across space and time. This creates an increased potential for problems and errors to occur, which will

decrease effectiveness of the MTS. Furthermore, if these larger MTSs do not adapt to their specific composition demands, the possible consequences could go from simple consequences, for instance loss of resources such as time, to more drastic consequences, such as loss of lives (Shuffler et al., 2015). Because of the complexity of MTSs and the need of MTSs to adapt to their demands, leadership plays an important role in the functioning of an MTS and in handling problems when they occur (Shuffler et al., 2015). Hence, leadership in an MTS context is important for the effective functioning of an MTS.

Furthermore, other research that shows the importance of leadership in MTSs is a laboratory study of MTSs that demonstrates that misaligned teams may succeed individually, but fail collectively (DeChurch & Marks, 2006; Marks, DeChurch, Mathieu, Panzer, & Alonso., 2005). A leader in an MTS should bridge the actions with other teams. When this does not happen, one team can succeed, but the other teams can fail, and therefore the whole MTS fails. So, without the leader who bridges the teams, a whole MTS can fail. Because leadership plays an important role in the functioning of an MTS, it is important to study leadership in an MTS context. As mentioned in the introduction, this study will focus on informal leadership. However, before going deeper into why informal leadership plays an important role in an MTSs, first will be explained how leadership in MTSs differs from leadership in regular teams, what tasks leaders have to do in MTSs, and what types of leadership can be seen within different types of MTSs. This information will help in understanding why the focus of this study is on informal leadership. Therefore, the next paragraphs will elaborate on leadership in MTSs.

2.2. Leadership in an MTS context

Leadership in an MTS differs from leadership in a regular team in a few ways. Leaders of MTSs do not only need to interact with direct subordinates, they also need to bridge their actions with other teams of the MTS and with the leaders of those teams (DeChurch, Burke, Shuffler, Lyons, Doty, & Salas., 2011). Furthermore, leading in an MTS involves playing out complex interactions between different teams working in the MTS, which leading in a regular team does not involve (DeChurch et al., 2011). Leaders in MTSs do not only have to coordinate the actions of the team members from their team, but the leader also needs to coordinate and bridge the actions of their team members with the team members of the other teams of the MTS (DeChurch et al., 2011). Hence, not only because leadership is important for the functioning of an MTS, but also because leadership in an MTS context is different than leadership in a regular team it is important to study leadership in an MTS.

2.2.1. Leadership tasks in an MTS

DeChurch et al. (2011) studied the tasks leaders have in many MTSs, which gave an overview of the core leadership tasks that are important in an MTS context (see Table 1). According to this study, a leader in an MTS should do the following things: analyse the situation, gather information, understand the bigger picture, establish roles and responsibilities, plan, take initiative, be a reactionary unity of

command, orchestrate actions, and manage the flow of information (DeChurch et al., 2011). When complexity in an MTS increases, leadership tasks related to adaptation, conflict management, and external environment analysis and alignment become more important (Zaccaro et al., 2020). These tasks are important to keep in mind when studying informal leadership in an MTS context, because they are found to be core leadership tasks of leaders in general, so no specific leadership type.

Summary of inductively derived leadership processes in multiteam systems.

Leadership function	Subtask	Description
Strategy	Analyze the situation/ Mission analysis	This is a cognitive process which is most seen within the transition phase of MTS process. It involves such actions as gathering information, figuring out what's going on, determining constraints, awareness of the situation, and problem definition.
	– Gather information	This is a subprocess involved in the higher level process of analyzing the situation. It involves searching for information within teams, across component teams, and outside the MTS regarding the environment, situational factors, MTS member abilities and resources. This information is then used to assist in mission analysis
	– Understanding the big picture	This is a subprocess involved in the higher level process of analyzing the situation. It involves the integration of gathered information such that an understanding of the MTSs, and correspondingly its component teams, place in the larger mission context is created. This also involves developing an understanding of the situation or problem model, and correspondingly environmental constraints.
	Establish roles and responsibilities	This process occurs within the transition phase of MTS and refers to the a priori establishment of roles and responsibilities for the components of the MTS and the system as a whole. It includes specification of coordinating elements and command/reporting structure for the elements of the component teams within the MTS system.
	Planning	This occurs during the transition phase of MTS process and refers to the process of developing a plan of action either at the component team level or for the MTS as a whole. This involves specifying the end state, delineating the actions needed to achieve the end state, including the timing and synchronization and elements involved.
	Taking initiative	This refers to the process of initiating action without being specifically told to do so (e.g., getting the ball rolling). Often times failure to take the initiative were seen at the system level, even when it was clear what should happen next.
Coordinating	Reactionary/Adaptive unity of command	This process occurs within the action phase of MTS and refers to the adjustment of roles and responsibilities for the components of the MTS and the system as a whole. It may include adapting the initial command structures based on changes in the environment. It happens near real time versus during the transition phase.
	Orchestrate actions	This is a behavioral process which is associated with the action phase of MTS process. It involves facilitating communication (sometimes acting as a communication hub), determining who's going to do what and specifying the corresponding timing, and creating the conditions to get things done.
	Manage the flow of information	This is a behavioral process which is associated with the action phase of MTS process. It refers to the process of information exchange in real time as well as the management of the flow and timing of that information (i.e., who needs what information). This includes a recognition of the best manner in which to distribute information.

Table 1: Reprinted from 'A historiometric analysis of leadership in mission critical multiteam environments', by L. A. DeChurch, C. S. Burke, M. L. Shuffler, R. Lyons, D. Doty, and E. Salas, 2011, *The Leadership Quarterly, 22*, p.162.

The study of DeChurch et al. (2011) is important to mention because to fulfil the core leadership tasks in MTSs, leaders have to show certain behaviour. To give an example, the description of the task 'analyse the situation' is "[…] gathering information, figuring out what's going on, determining constraints, awareness of the situation, and problem definition." (DeChurch et al., 2011). This fits to the definition of the behaviour clarifying that is often used in coding schemes to analyse behaviour. Namely, the definition of clarifying as used in the coding scheme of Bienefeld and Grote (2014) is "Somebody proactively acquires, organizes, and evaluates information to gain an overview, identify the causes, or elaborate solutions and requirements for problem solving.". Hence, through examining the behaviour of leaders in MTSs, it is also possible to say something about whether the leaders are carrying out the core leadership tasks, because certain behaviour is needed to carry out those tasks. Thus, it is interesting to compare the core leadership tasks with the results of this study. Because the behaviours that an informal leader shows in an MTS can be used to examine which leadership tasks the informal leader is likely to fulfil. Then can be compared if for instance there is a difference

between tasks that informal leaders are likely to perform in MTSs and tasks that leaders in general are likely to perform in MTSs. This helps to get more insight into the role of an informal leader in an MTS.

Before going deeper into why informal leadership is examined in this study, first leadership structures and forms that are often present in MTSs will be explained, this will then lead to the reason for examining informal leadership.

2.2.2. Leadership forms in different types of MTSs

With regard to leadership forms that occur in MTSs, there are differences in leadership forms that occur often, depending on how the MTS is structured and whether the MTS is internal (i.e., MTSs that consist only of teams from one organization) or external (i.e., MTS consisting of teams from two or more organizations) (Zaccaro et al., 2020).

In internal MTSs there is one structure that is often seen, namely a hierarchically organized structure. This is a structure where there is a senior leadership team and every other team of the MTS also has its own formal leader (Bick, Spohrer, Hoda, Scheerer, & Heinzl., 2018). In this structure, the formal leaders of the teams of the MTS report to the senior leadership team (Bick et al., 2018; Zaccaro et al., 2020). Hence, in this structure formal leadership forms are often seen.

In external MTSs there are two structures that can be seen often. The first structure is one in which the team from a lead organization provides leadership for the teams from partnering organizations (e.g., by appointing a person from the lead organization to lead the whole MTS) (Lavallée & Robillard, 2018). This structure can be seen within external MTSs where one of the organizations has a primary responsibility for distal goal completion. A multi-organization product development composed of a lead firm and suppliers is an example of such an MTS (O'Sullivan, 2003). The second structure that can be seen in external MTSs is a structure in which there is a senior leadership team that is composed of representatives from each of the partnering organizations (Zaccaro et al., 2020). This is a structure that is often used just before the start of an MTS, when is determined which component teams should be selected for the MTS. This happens for instance for an emergency response MTS, when the (already existing) senior team first arrives at the crisis scene and then decides which component teams are needed to handle the emergency. In this structure the senior team becomes the leadership team (Zaccaro et al., 2020).

When comparing the structures in internal and external MTSs it is found that internal MTSs often have more predetermined structures, whereas external MTSs often have more flexible structures, which are based on situational assessments and actions of the senior command team (Zaccaro et al., 2020). Furthermore, external MTSs tend to have a high degree of dynamism in their structures, because it is found to be necessary for system flexibility in response to disruptions (Jonassen & Hollnagel, 2019; Zaccaro et al., 2020). This entails that not only formal leadership forms, but also informal leadership forms are often seen in external MTSs. The reason for seeing informal leadership

more often could be that in external MTSs, issues often arise due to the composition of the MTS, whereas those problems do not arise in internal MTSs. The issues that arise are for instance, different strategic goal orientations of the senior leadership team that influence subsequent multiteam action, and intergroup biases that are stronger in external MTSs. Also, in an MTS context with high workload team members of external MTSs did not want to ask help from team members of the other organization of the MTS for fear of losing control (Power & Alison, 2017; Schipper, 2017; Stoate, 2015; Zaccaro et al., 2020). These issues increased the likelihood of failure of the MTS, and thus it is important to handle them (Zaccaro et al., 2020). When these issues arise, informal leaders could help with handling them. Because of the importance of handling the issues that can arise, and because informal leaders could help with handling them, this study is focused on gaining more understanding of informal leadership in an MTS context. Therefore, the next section will focus on why informal leadership is important for MTSs, and thus why it is important to focus on informal leadership in an MTS context.

2.3. Informal leadership in an MTS context

Even though little research has been done into informal leadership in an MTS context, in recent years the importance of informal leadership in an MTS context has become increasingly clear. First of all, MTSs need to be flexible in order to respond to disruptions in a good manner. It has been shown that leadership that is adaptive, flexible, and functional in MTSs is necessary for the system flexibility of MTSs (Jonassen & Hollnagel, 2019; Nesse, 2017; Zaccaro et al., 2020). Informal leadership is adaptive and flexible because it allows team members to fulfil leadership tasks when the situation requires this. Moreover, according to Johannessen et al. (2015), informal leadership "may provide the capacity needed for improvisation to occur — both in regard to who takes initiative, and how they address the problem.". This is important in an MTS because of the need to be flexible in responding to an emergency. Furthermore, it has been found that informal leadership can contribute to a system's capacity for flexible adaptation (Johannessen et al., 2015). Informal leadership is thus important for the functioning of an MTS.

2.3.1. Current knowledge of informal leadership in an MTS context

What is currently known about informal leadership in an MTS context is that informal leadership is effective when three conditions are met, individuals must be (1) available to act, (2) willing to act and (3) their actions must be accepted by others of the teams of the MTS (Johannessen et al., 2015). When those conditions are met, it is likely that the informal leader can positively influence the MTS by performing necessary tasks for the MTS, such as facilitating team processes and fulfilling team member needs.

What is already known about what informal leadership looks like in a regular team is that the person who is identified as informal leader is often identified as such because this person gives a lot of task related advice to other team members (Neubert & Taggar, 2004). Furthermore, informal leaders

are often persons who are very central in the team, thus they often speak to almost all of their team members (Neubert & Taggar, 2004). Moreover, in regular teams informal leaders often help in "determining shared goals, motivating task activity in pursuit of those goals and creating a positive social climate" (Yukl, 1989).

When studying informal leadership in an MTS context, it is important to study the behaviour that an informal leader shows. The reason for this is that the behaviour of a leader has much influence on the behavioural dynamics of a team (Kauffeld & Meyers, 2009). Therefore, the next section will explain how leaders can influence behavioural dynamics and why informal leaders can also influence behavioural dynamics in an MTS.

2.4. Influence of leadership on behavioural dynamics

Several studies show that the behaviour that a leader shows can influence the behaviour that other team members show, as such a leader has influence on the behavioural dynamics in teams (Lehmann-Willenbrock et al., 2015; Meinecke et al., 2016; Meinecke et al., 2017). When looking at previous research of the influence of formal leadership on the behavioural dynamics in regular teams it can be seen that when leaders show relation-oriented behaviour during performance appraisals, it results in greater voice and participation from employees (Meinecke et al., 2017). Moreover, a study of Kolbe et al. (2014) showed that in high-performing surgical teams, the behaviour 'monitoring' triggered 'speaking up' behaviour of followers. In addition, in those high-performing teams, 'monitoring' behaviour that surgeons performed triggered followers to express ideas about what they think of the situation at hand. Thus, this would suggest that leaders can trigger behaviour of followers. Subsequent to the study of Kolbe et al. (2014), a study of Hoogeboom and Wilderom (2016) found that highly effective leaders trigger active, complementary behaviour in the employees. Hence, these studies show that the behaviour that a leader performs has influence on the behaviour that other team members show, as such the leader can have influence on the behavioural dynamics in a team.

However, these studies all looked at the influence of formal leadership on the behavioural dynamics in regular teams. It is expected that an informal leader can have an influence on the behavioural dynamics in and between teams of an MTS as well. Informal leaders can namely influence and guide others, are often giving task related advice to other team members, and are helping team members in "determining shared goals, motivating task activity in pursuit of those goals and creating a positive social climate" (Neubert & Taggar, 2004; Peters & O'Connor, 2001; Yukl, 1989). Hence, because informal leaders are guiding and helping other team members, it is expected that with the behaviours that informal leaders perform in an MTS, they can influence the behaviour of other team members in an MTS. As such, it is expected that informal leaders can influence the behavioural dynamics in an MTS context.

In order to get more insight into informal leadership in MTSs, this study will examine the behavioural dynamics that are triggered by an informal leader in an MTS context. Studying

behavioural dynamics triggered by an informal leader can be done by examining behavioural sequences, which are the sequences of verbal behaviour such as asking a questions, followed by answering a question (Klonek et al., 2016; Leenders et al., 2016; Lehmann-Willenbrock et al., 2015; Lehmann-Willenbrock & Allen, 2017; Meinecke et al., 2017). Hence, in this study behavioural dynamics triggered by an informal leader are studied through examining the behavioural sequences. However, in addition to the influence of an informal leader on behavioural dynamics in teams, whether a situation is routine or non-routine also has an influence on the behavioural dynamics (Lei et al., 2016). Hence, the next paragraph will focus on the influence of routine and non-routine task-contexts on informal leadership.

2.5. Influence of a routine and non-routine task-context on informal leadership

When looking at leadership in routine and non-routine task-contexts, it can be seen that leaders behave differently depending on the task-context they are in. Routine task-contexts can be seen as "normal everyday situations" and involve standard operating procedures (Chung & Jackson, 2013). As such, in routine task-contexts leaders also behave like they would normally do. Subsequent to this, it is also expected that informal leaders show the same behaviour in a routine task-context as they would normally do. As mentioned before, informal leaders are often giving task related advice and are helping team members in "determining shared goals, motivating task activity in pursuit of those goals and creating a positive social climate" (Neubert & Taggar, 2004; Yukl, 1989). Hence, in routine task-contexts in an MTS, informal leaders are expected to show this behaviour as well.

In non-routine task-contexts teams should adapt norms and role structures that are most fitting for the dynamic circumstances (Burke et al., 2006). In accordance with this, Driskell and Salas (1991) found that leaders should become more receptive to everyone's input in non-routine task-contexts. This entails that leaders are more compelled to seek judgements and opinions of others and have more discussion with others about what to do (Driskell & Salas, 1991). As informal leaders take on the leadership role, it is expected that in non-routine task-contexts in an MTS, informal leaders also become more receptive to the other team members.

Concluding from the above, it is expected that informal leaders perform different behaviour in a routine task-context than in a non-routine task-context in an MTS. Considering that the behaviour that an informal leader shows influences the behaviour that the team members show and as such influences the behavioural dynamics, it is expected that when the informal leader shows different behaviour in a routine and non-routine task-context, the behavioural dynamics would also differ. Hence, it is expected that the behavioural dynamics triggered by the informal leader will differ in the routine and non-routine task-context in an MTS.

2.6. Theoretical & practical relevance

As mentioned in the introduction, this study will analyse behavioural dynamics triggered by an informal leader in a routine and non-routine task-context in an MTS. Hence, the research question of this study is: 'What do behavioural dynamics triggered by an informal leader look like in a routine and non-routine task-context in an MTS context?'. Before explaining the methods which are used to answer the research question, first the theoretical and practical relevance of this study will be explained.

The aim of this study is to get a better understanding of informal leadership in an MTS context. Contributions to theory are made with this research in several ways. First of all, this study builds on the understanding of informal leadership behaviour in an MTS context and what behavioural dynamics an informal leader triggers in an MTS context. Hence, with this study, knowledge will be added about what informal leadership looks like in an MTS context. This is important, because with this study the role of an informal leader in an MTS context can be determined. If an informal leader plays an important role in an MTS context and if knowledge is provided about what informal leadership looks like in an MTS context, a next step could be for instance to examine the effectiveness of an informal leader. This would be important to study because if informal leadership is important for the functioning of MTSs, it is also important to know when informal leadership is effective and when it is not, because that could then also have an influence on the functioning of an MTS. However, before being able to say something about effectiveness first has to be examined what the role of an informal leader exactly is in an MTS context. Hence, this study is a first step in providing more information about informal leadership in an MTS context. Moreover, this research adds knowledge about whether routine and non-routine task-context also influences the behaviour of an informal leader in an MTS context. This is interesting to know, because when studying informal leadership in an MTS context it is also important to take aspects into account that could influence the behaviour of an informal leader. Furthermore, if as mentioned above, the effectiveness of an informal leader in an MTS context will be studied and the routine and non-routine task-contexts influence the behaviour of an informal leader, the effectiveness of an informal leader could also differ in routine and non-routine task-contexts. Or it could be that to be an effective informal leader in both routine and non-routine task-contexts, the behaviour that the informal leader shows in routine and non-routine task-contexts has to differ. However, before being able to examine these questions, first has to be studied whether a routine or non-routine task-context influences the behaviour of an informal leader at all.

The practical relevance of this study is that organizations who make use of an MTS structure could gain new insights into behavioural dynamics triggered by an informal leader in a routine and non-routine task-context in an MTS context. This could help organizations learn about their MTSs and make improvements to their MTSs so that the MTSs can function as effectively as possible (Zaccaro et al., 2020).

3. Method

The data that is analysed for this research is secondary data, which was gathered by Lo and Meijer (2019). In the following sections, the design and procedure of the study will be explained first. After that, an explanation of the exact data that is examined will be given. Thereafter, an explanation of the coding scheme is given and at last the explanation of the data analysis will follow.

3.1. Design

A quantitative approach is used to answer the research question. This is an instrumental case study, as this type of research provides insight in understanding a particular issue and involves examining a single case ('Instrumental Case Study', 2010). In this study one organization (ProRail) will be analysed, thus it involves a single case. Moreover, the design fits this study because the aim of the research is to provide understanding of behavioural dynamics triggered by an informal leader in routine and non-routine task-contexts in an MTS context. Therefore, this research can be called an instrumental case study.

3.1.1. Procedure

In order to analyse behavioural dynamics triggered by an informal leader in routine and non-routine task-contexts in an MTS, an organization that makes use of an MTS context is studied, namely the Dutch railway network operator ProRail. To study an MTS of ProRail, data of the teams in the MTS working together is needed. Within ProRail simulations were held within the MTS, which were videotaped and those videos are analysed in this study. This data is suitable for this study because the videos are of the same teams of the MTS working on two scenarios, namely a routine scenario and a non-routine scenario. In both scenarios, the teams of the MTS worked on handling a disruption in the railway network. Scenario 1 was a routine task-context where the teams had to handle the disruption like they would normally do. Scenario 2 was a non-routine task-context in which the teams had to handle the disruption in another way than they normally would.

3.2. Dataset

The data that is studied consists of eight synchronized videos of four different teams within ProRail, during two different scenarios. Hence, per scenario one video per team is made, and those videos are synchronized. Studying behaviour of the informal leader and team members is done by coding the videos. To code the videos, the program 'The Observer XT' of Noldus is used. This is a program in which videos can be easily coded and analysed (Lehmann-Willenbrock & Allen, 2017; Noldus, 1991; Noldus, Trienes, Hendriksen, Jansen, & Jansen., 2000). Furthermore, a coding scheme is used to measure the leadership variables. In the following sections the different aspects of the data will be explained, beginning with an explanation of what the MTS of ProRail looks like, followed by an explanation of the participants, and at last an explanation of the simulations that are analysed will follow.

3.2.1. ProRail

The organization that has been chosen to be studied is the Dutch railway network operator ProRail. Within ProRail several teams are working on the same goal, and those teams are all dependent on each other in order to do their job well. Therefore, this organization has an MTS context. Moreover, the MTS of ProRail is external, because there are two organizations involved: ProRail and NS (Zaccaro et al., 2020). The MTS has a high CTD because the teams are diverse in geography, function, and discipline (Zaccaro et al., 2020). The goal type of this MTS is physical, which entails that the tasks that have to be done "involve a core task, physical skills, a linear work-flow, applying existing knowledge, and a tangible product." (Devine, 2002).

For ProRail it is very important that the teams within the MTS work well together on handling the goal. The reason for this is that ProRail is an organization that, amongst other things, handles disruption in the railway network of the Netherlands. If those disruptions are not handled efficiently, the risk is that the whole railway network of the Netherlands becomes stuck, and passengers cannot travel by public transport anymore. Hence, the reason to study ProRail is that it has an MTS that is very similar to the definition of an MTS context in literature. Moreover, ProRail also works with a routine and non-routine task-context, which we want to study. To fully comprehend the MTS that will be studied, some more information about ProRail will be given.

The Dutch government separated the national railways into rail infrastructure management (ProRail) and in the principle train service, Dutch Railways (Nederlandse Spoorwegen; NS) in 1995 (Lo & Meijer, 2019). The goal of ProRail is to ensure passengers and goods arrive safely and on time at their destination. ProRail wants to make sure that as many trains as possible drive safely and on time, with as few disruptions as possible (*Meewerken aan vervoer waar Nederland beter van wordt*, n.d.; *Over ProRail*, n.d.). Since the railway network of the Netherlands is one of the busiest in Europe, and is also technically complex because of the high number of switches, double tracks, and associated signalling, the railway network is vulnerable to disruptions (Ramaekers et al., 2009; Schipper, 2017). Next to the responsibility of ProRail to handle disruptions, ProRail also works together with Dutch Railways in the MTS. The structure of the MTS can be seen in figure 1, as well as the different teams who work on handling the disruptions.

There are three different types of teams that work on handling disruptions: operational control centre rail (OCCR), regional traffic control centre (RTCC), and regional operations control centre (ROCC). The OCCR monitors railway traffic at a national level, but they can also intervene at a local level if necessary (Schipper, 2017). There are 13 RTCCs throughout the Netherlands, and they are responsible for railway traffic in the area where they are located (Schipper, 2017). There are 5 ROCCs throughout the Netherlands. They monitor railway traffic, and manage train crew and rolling stock schedules (Schipper, 2017). The different teams consist of multiple team members, each with their own function. However, in this study only the role of informal leader will be looked at, so there is no need to explain the function of each team member in detail.

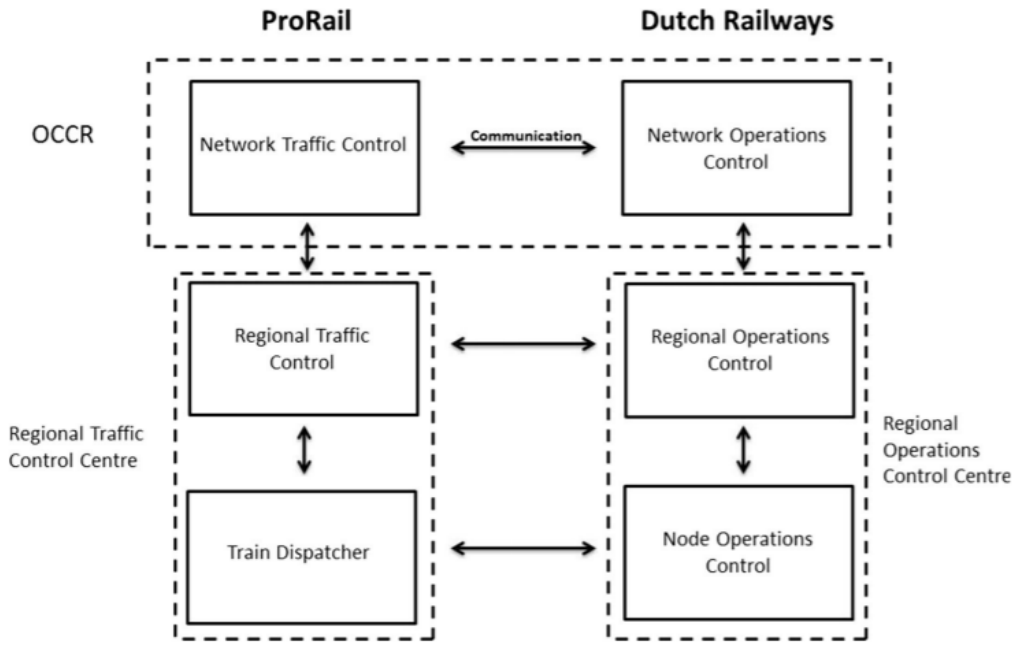

Figure 1: Different roles involved in the traffic management and their lines of communication. Reprinted from "Challenges to multiteam system leadership: an analysis of leadership during the management of railway disruptions" by Schipper, D., 2017, *Cogn Tech Work, 19*, p. 447.

3.2.2. Participants

Multiple teams of the MTS of ProRail are studied. In total, 4 teams and 12 team members (of which one informal leader) of the MTS of ProRail are studied. Those teams are the OCCR, two RTCC teams, and one ROCC team. With the 4 teams of the MTS, a simulation is held. In the simulation those 4 teams work together on handling a disruption in the railway network. To study those teams, videos of the teams working on handling a disruption are analysed. Those videos were made during two simulation sessions that were held in 2013. The team members of the teams all agreed with participating in the simulation and agreed that they were being filmed for research purposes.

3.2.3. Simulations

To train the teams that handle disruptions, simulations are held within ProRail. During the simulation, the participants played out two different scenarios. Both scenarios took place in the afternoon, during peak hours. Scenario 1 started at 16.40 and scenario 2 started at 16.25 (Lo & Meijer, 2019). The two scenarios differ from each other in type of procedure for handling a railway disruption.

Scenario one (routine task-context)

In the first scenario, the team members and informal leader handled a railway disruption how they would normally handle a railway disruption. Hence, this is a task which has high levels of stability and predictability (Hoogeboom & Wilderom, 2019). A routine task-context involve tasks that are predetermined, predictable, stable, and involve standard operating procedures (Chung & Jackson,

2013; Hoogeboom & Wilderom, 2019; Lei et al., 2016). Therefore, in this scenario, the participants work in a routine task-context.

Scenario two (non-routine task-context)

In the second scenario, the team members and informal leader handled a railway disruption using an alternative procedure. The alternative procedure differed from the normal procedure in four ways. There was (1) a predefined protocol for disruption management, (2) stronger emphasis on the operational process of isolating the disrupted area, (3) faster availability of the predefined disruption protocol and (4) general applicability of the predefined protocol on the infrastructure, rolling stock and personnel (Lo & Meijer, 2019). A non-routine task-context involves tasks that are more complex and novel (Hoogeboom & Wilderom, 2019; Rousseau & Aubé, 2010). The complexity of tasks that have to be done in scenario 2 is a little higher than the complexity in scenario 1, due to a higher component complexity. Complexity of a task comes from (1) component complexity, (2) coordinative complexity and (3) dynamic complexity. Component complexity refers to the amount of distinct acts that need to be done in order to complete the task, and the amount of information cues that need to be processed in order to complete the task (Wood, 1986). When looking at scenario 2 and the component complexity, the amount of acts that need to be done is not necessarily higher than the amount of acts in scenario 1. However, the amount of information cues that need to be processed is likely to be higher than in scenario 1. Due to the new protocol it is likely that the team members and informal leader of the scenario do not only have to get information cues about what is going on with the disruption, but also need to get information cues about the new protocol. When looking at scenario 1, it is likely that the team members and informal leader already know the protocol, so they do not have to get information cues from the protocol. Hence, the component complexity is likely to be higher in scenario 2 than in scenario 1.

In addition to the higher complexity in scenario 2, the tasks that have to be done are also more novel due to the new procedure that the team members and informal leader have to follow. Because the complexity is higher and the tasks are novel, in scenario 2 the participants work in a non-routine task-context.

3.3. Coding scheme

To study the behavioural dynamics triggered by the informal leader, the behaviours of the informal leader and team members had to be studied, and what behaviour of the informal leader triggers behaviour of the other team members. To study the behaviour of the informal leader and the other team members, a coding scheme is made, which is then used by two coders to code the videos. Furthermore, the informal leader had to be identified. In this section will be explained how the coding scheme is developed, how the informal leader is identified and after that an explanation of the coding process follows.

3.3.1. Coding scheme development

To make sure the coding scheme fits the context of ProRail and is as complete as possible, six different coding schemes are compared, namely the coding schemes of Yukl (2012), Bienefeld & Grote (2014), Hoogeboom & Wilderom (2019), Zijlstra, Waller, & Phillips (2012), Meinecke et al. (2017) and Behrendt, Matz, & Göritz (2016). The choice of these six coding schemes is based on literature of leadership and communication behaviour and all coding schemes contain behaviours that leaders and team members show during team work. Furthermore, the coding scheme of Bienefeld & Grote (2014) was the only coding scheme of leadership behaviours in an MTS context. The other five coding schemes were chosen because they were most used and generalized in literature and/or were best fitting for the research purposes. After choosing the different coding schemes, one overview table was made with all the different behaviours, which can be seen in appendix A. With the use of the overview table all the behavioural codes are compared, after which behavioural codes with different names but the same meaning are taken together. To give an example, the code 'Monitoring' from Yukl (2012), the code 'Monitoring' from Bienefeld & Grote (2014) and the code 'Task monitoring' from Hoogeboom & Wilderom (2019) have the same meaning, so these codes are taken together into the code 'Monitoring' and the description of the codes are taken together in the description: "Checks on the progress and quality of the work; asking team members for, and confirmation about (the progress on) their tasks; (examines relevant sources of information to determine how well important tasks are being performed; evaluates the performance of members in a systematic way: Yukl, 2012).". This is done for every code of the six coding schemes. Furthermore, the codes are divided into different meta-analytic categories. An example of a meta-analytic category is 'Task-oriented behaviour', so in this category behaviours are grouped that are all task-oriented (e.g., clarifying, planning, monitoring). Using meta-analytic categories is useful, because it can indicate what kind of behaviour a leader is showing the most. This information can be used for instance to look at whether a certain context (e.g. routine or non-routine task-context) enhances a certain behaviour of a meta-category. Comparing the different behavioural codes and dividing them into different meta-analytical categories led to a coding scheme with 28 different behavioural codes divided in 8 meta-analytical categories, which can be seen in appendix B.

3.3.2. Identification of informal leader

After watching the videos of the simulations, the two coders independently identified the same person from one of the RTCC teams as informal leader. The reason for identifying this person as informal leader is because this person was central in the network and talked to almost every one of the other team members about the work that needed to be done. Furthermore, this person was delegating tasks to other team members and it seemed like this person had the best overview of the situations at hand. Moreover, the other team members started working on the tasks that the informal leader had given to them. Hence, the other team members trusted the informal leader in what he was doing and saying.

Looking at the definition of informal leadership, it can be seen that the informal leader can "influence and guide others based on the respect and credibility they possess" (Peters & O'Connor, 2001). Thus, the identification of this person as informal leader fits the definition because this person influenced and guided the other team members based on respect and credibility that he possessed. In addition, previous research pointed out that the informal leader often gives task related advice to other team members (Neubert & Taggar, 2004). The person that is identified as informal leader is also doing this because he is informing team members a lot and delegating tasks to team members as well, thus the behaviour of this person also matches the behaviour of informal leaders in previous research. Furthermore, the identification of this person as informal leader was also in line with results of a study from Lo & Meijer (2019) into the MTS of ProRail, who studied the same data as studied in this research. They did a social network analysis that showed that the team member that is identified in this research as informal leader was "the so-called 'spider' in the traffic control network" (Lo & Meijer, 2019). In addition, previous studies point out that the informal leaders are often persons who are very central in the team (Neubert & Taggar, 2004). Hence, also this aspect of the identification of the informal leader is in line with previous research.

3.3.3. Coding process

To analyse the informal leadership behaviours, the videos were coded and the results were analysed. Coding the videos was done by making use of the codebook and two different independent coders. The coders have both separately coded the videos and have given labels to the verbal behaviours that were displayed. After the two coders coded the videos, the results of the coders were compared to see whether they coded the videos in the same way and if their results are reliable. The inter-rater reliability was 74% with a Cohen's kappa of 0.52, which is considered a moderate level of agreement (Landis & Koch, 1977). A disagreement is counted when the coders do not assign the same code within 2 seconds of each other. Due to sometimes chaotic communication, it was difficult to determine when a code should be assigned. This resulted in the coders not assigning the code within 2 seconds of each other, which was reflected in the moderate kappa. Therefore, the coded data was discussed again after coding by the coders, and this cleared the difference in when to code. This gave an inter-rater reliability of 92% and a Cohen's kappa of 0.92, which is considered close to perfect (Landis & Koch, 1977).

3.4. Data analysis

To examine behavioural dynamics triggered by an informal leader in the routine and in the non-routine task-context, a lag sequential analysis is executed for the routine as well as for the non-routine task-context. This analysis shows whether a specific interaction pattern occurs more or less often than expected (Bakeman & Quera, 2011; Hoogeboom & Wilderom, 2019; Lehmann-Willenbrock & Allen, 2017). Lag 1 analyses are performed, which means that behavioural events that directly follow each other are considered behavioural sequences. The first behaviour in the sequence is called criterion

behaviour and the second behaviour is called target behaviour. In the program 'The Observer XT', lag sequential analyses are done to generate a frequency count of behavioural sequences in scenario 1 and scenario 2. Then, Z-scores are computed of the frequencies to test "whether the transitional probabilities differed significantly from the unconditional probability for the code that followed" (Kolbe et al., 2014). When a Z-score is larger than 1.96 or smaller than -1.96 it indicates that a behavioural sequence occurred above or below 95% chance level, or when a Z-score is larger than 2.58 or smaller than -2.58 it indicates that a behavioural sequence occurred above or below 99% chance level, and thus happens more or less often than expected (Bakeman & Quera, 2011).

4. Results

In table 1 the frequency (N) and percentage (%) of the coded behaviours of the informal leader in the routine and non-routine scenario can be seen. For both scenarios, the informal leader showed clarifying and informing behaviour most frequently. Furthermore, the informal leader only showed behaviour from the task-oriented meta-analytic category in the routine scenario, as well as in the non-routine scenario, which entails that the informal leader only showed clarifying, planning, informing and delegating behaviour. When comparing the routine task-context with the non-routine task-context the biggest difference is that in the routine task-context the informal leader showed delegating behaviour and in the non-routine task-context not anymore. Moreover, the informal leader showed a lot more informing behaviour in the non-routine task-context as opposed to the routine task-context (i.e., 63% as opposed to 53%).

Table 1. Frequency and percentage of coded behaviour of the informal leader in the routine and non-routine scenario

		Routine scenario		**Non-routine scenario**	
Meta-analytic category	Behaviours	N	%	N	%
Task-oriented	Clarifying	24	39%	35	37%
	Planning	1	2%	0	0%
	Structuring meetings	0	0%	0	0%
	Monitoring	0	0%	0	0%
	Correcting	0	0%	0	0%
	Problem solving	0	0%	0	0%
	Informing	33	53%	59	63%
	Delegating	4	6%	0	0%
	Agreeing	0	0%	0	0%
	Disagreeing	0	0%	0	0%
Action-oriented	Negative counteractive behaviours	0	0%	0	0%
Procedural behaviours	Negative procedural behaviours	0	0%	0	0%
	Positive procedural behaviours	0	0%	0	0%
Relation-oriented	Mental support	0	0%	0	0%
	Work related personal development planning	0	0%	0	0%
	Recognizing	0	0%	0	0%
	Empowering intellectual stimulation	0	0%	0	0%
	Negative relation-oriented behaviours	0	0%	0	0%
	Neutral relation-oriented behaviours	0	0%	0	0%
Change-oriented	Advocating change	0	0%	0	0%
	Envisioning change	0	0%	0	0%
	Encouraging innovation	0	0%	0	0%
	Facilitating collective learning	0	0%	0	0%
External	Networking	0	0%	0	0%
Additional	Additional codes/fillers	0	0%	0	0%
Unclassified	Inquiry	0	0%	0	0%
	Answer	0	0%	0	0%
	Non-work/social	0	0%	0	0%
	Total	62	100%	94	100%

4.1. Behavioural dynamics triggered by the informal leader in the routine task-context

Table 2 shows the results of the lag sequential analysis (in Z-scores) in routine scenario of behaviours where the informal leader shows the first behaviour (criterion behaviour), followed by a second behaviour (target behaviour) that the other team members show. In the routine scenario, six behavioural sequences occurred more often than expected by chance (i.e., $p <. 01$ or $p < .05$). Clarifying by the informal leader was followed by clarifying and informing by the other team members ($z = 2.56$ and $z = 4.32$, respectively), informing behaviour of the informal leader triggered clarifying and informing behaviour of the other team members ($z = 3.65$ and $z = 3.42$, respectively), and delegating performed by the informal leader led to clarifying and informing performed by the other team members (both $z = 3.54$), more than as expected by chance.

Table 2. Results of sequential analysis of the informal leader for coded behaviours at Lag 1 for the routine scenario (Z-scores)

	Target behaviours														
Criterion behaviours	Clarifying (TM)	Planning (TM)	Structuring meetings (TM)	Monitoring (TM)	Correcting (TM)	Problem solving (TM)	Informing (TM)	Delegating (TM)	Agreeing (TM)	Disagreeing (TM)	Negative counteractive behaviours (TM)	Negative procedural behaviour (TM)	Postive procedural behaviour (TM)	Mental support (TM)
Clarifying (IL)	**2,56 (8)**	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	**4,32 (13)**	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (IL)	**3,65 (17)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,42 (16)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Delegating (IL)	**3,54 (2)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,54 (2)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Agreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

In the target behaviours only behaviours of team members without the informal leader are indicated.

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 58.

Frequencies of behavioural sequences are presented in parentheses.

Table 2. Results of sequential analysis of the informal leader for coded behaviours at Lag 1 for the routine scenario (Z-scores) (continuation of previous page)

	Target behaviours													
Criterion behaviours	Work related personal development planning (TM)	Recognizing (TM)	Empowering intellectual stimulation (TM)	Negative relation-oriented behaviour (TM)	Neutral relation-oriented behaviour (TM)	Advocating change (TM)	Envisioning change (TM)	Encouraging innovation (TM)	Facilitating collective learning (TM)	Networking (TM)	Additional codes/fillers (TM)	Inquiry (TM)	Answer (TM)	Non-work/social (TM)
Clarifying (IL)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (IL)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Delegating (IL)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Agreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

In the target behaviours only behaviours of team members without the informal leader are indicated.

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 58.

Frequencies of behavioural sequences are presented in parentheses.

4.2. Behavioural dynamics triggered by the informal leader in the non-routine task-context

Table 3 shows the Z-scores in the non-routine scenario where the informal leader shows the first behaviour (criterion behaviour), followed by a behaviour (target behaviour) that the other team members show. In the non-routine scenario four sequences occurred more often than expected by chance ($p < .01$). Clarifying by the informal leader was followed by clarifying and informing by the other team members ($z = 3.42$ and $z= 3.65$, respectively) and informing behaviour performed by the informal leader triggered clarifying and informing behaviour performed by the other team members ($z = 4.14$ and $z = 2.82$, respectively), more than as expected by chance.

Table 3 . Results of sequential analyses of informal leader for coded behaviours at Lag 1 for the non-routine scenario (Z-scores)

	Target Behaviours													
Criterion behaviours	Clarifying (TM)	Planning (TM)	Structuring meetings (TM)	Monitoring (TM)	Correcting (TM)	Problem solving (TM)	Informing (TM)	Delegating (TM)	Agreeing (TM)	Disagreeing (TM)	Negative counteractive behaviours (TM)	Negative procedural behaviour (TM)	Postive procedural behaviour (TM)	Mental support (TM)
Clarifying (IL)	**3,42 (16)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,65 (17)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (IL)	**4,14 (30)**	-0,13 (1)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**2,82 (21)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Delegating (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Agreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

In the target behaviours only behaviours of team members without the informal leader are indicated.

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 85.

Frequencies of behavioural sequences are presented in parentheses.

Table 3. Results of sequential analyses of informal leader for coded behaviours at Lag 1 for the non-routine scenario (Z-scores) (continuation of previous page)

	Target Behaviours													
Criterion behaviours	Work related personal development planning (TM)	Recognizing (TM)	Empowering intellectual stimulation (TM)	Negative relation-oriented behaviour (TM)	Neutral relation-oriented behaviour (TM)	Advocating change (TM)	Envisioning change (TM)	Encouraging innovation (TM)	Facilitating collective learning (TM)	Networking (TM)	Additional codes/fillers (TM)	Inquiry (TM)	Answer (TM)	Non-work/social (TM)
Clarifying (IL)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (IL)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Delegating (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Agreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (IL)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

In the target behaviours only behaviours of team members without the informal leader are indicated.

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 85.

Frequencies of behavioural sequences are presented in parentheses.

4.3. Post hoc analysis

The results shown in the previous sections, give some answers about the behavioural dynamics that an informal leader triggers in routine and non-routine contexts in an MTS. To get a better understanding about the specific role of an informal leader in relation to the team members in an MTS, a post hoc analysis is conducted. For the post hoc analysis the behavioural dynamics are examined that team members trigger in one another, thus without the informal leader. With this analysis can be explored how team members as opposed to the informal leader influence the behavioural dynamics in a routine and non-routine task-context in an MTS. This can be explored because the behaviours of the informal leader and behavioural dynamics triggered by the informal leader can be compared with the behaviours of the team members and behavioural dynamics triggered by the team members in routine and non-routine task-context in an MTS. Hence, the results of the post hoc analysis can give a better understanding of the specific role of the informal leader in a routine and a non-routine task-context in an MTS. Therefore, in the following section, the results of descriptive statistics of the team members (without informal leader) in the routine and non-routine task-context in an MTS and the results of a lag sequential analysis to examine which behaviours team members trigger in the other team members (excluding the informal leader) in the routine and non-routine scenario will be presented.

4.3.1. Descriptive statistics of team members in routine and non-routine task-context

In table 4, the absolute frequency (N) and percentage (%) of the coded behaviours of the team members (without the informal leader) in routine and non-routine scenario can be seen. For both scenarios, the team members showed clarifying and informing behaviour most frequently. Furthermore, the team members show behaviour of the task-oriented and unclassified meta-analytic category in the routine scenario, whereas in the non-routine scenario, the team members only show behaviour of the task-oriented meta-analytic category.

Table 4. Frequency and percentage of coded behaviour of team members in the routine and non-routine scenario

Meta-analytic category	Behaviours	N	%	N	%
Task-oriented	Clarifying	216	49%	192	55%
	Planning	0	0%	3	1%
	Structuring meetings	0	0%	0	0%
	Monitoring	0	0%	0	0%
	Correcting	0	0%	0	0%
	Problem solving	0	0%	0	0%
	Informing	205	46%	156	44%
	Delegating	4	1%	0	0%
	Agreeing	1	0%	0	0%
	Disagreeing	5	1%	0	0%
Action-oriented	Negative counteractive behaviours	0	0%	0	0%
Procedural behaviour	Negative procedural behaviour	0	0%	0	0%
	Positive procedural behaviour	0	0%	0	0%
Relation-oriented	Mental support	0	0%	0	0%
	Work related personal development planning	0	0%	0	0%
	Recognizing	0	0%	0	0%
	Empowering intellectual stimulation	0	0%	0	0%
	Negative relation-oriented behaviour	0	0%	0	0%
	Neutral relation-oriented behaviour	0	0%	0	0%
Change-oriented	Advocating change	0	0%	0	0%
	Envisioning change	0	0%	0	0%
	Encouraging innovation	0	0%	0	0%
	Facilitating collective learning	0	0%	0	0%
External	Networking	0	0%	0	0%
Additional	Additional codes/fillers	0	0%	0	0%
Unclassified	Inquiry	5	1%	0	0%
	Answer	3	1%	0	0%
	Non-work/social	2	1%	0	0%
	Total	441	100%	351	1000%

4.3.2. Behavioural dynamics triggered by team members in the routine task-context

Table 5 shows the results of the lag sequential analysis (in Z-scores) in the routine scenario of behaviours where the team members (without informal leader) show the first behaviour (criterion behaviour), followed by a second behaviour (target behaviour) that the team members (without informal leader) also show. Thirteen behaviours occurred more than as expected by chance ($p < .01$) in the routine scenario for the team members. Clarifying behaviour of the team members was followed by clarifying and informing behaviour of the team members ($z = 3.29$ and $z = 3.77$, respectively), informing by the team members triggered clarifying and informing by the team members ($z = 4.03$ and $z = 2.97$, respectively), delegating performed by the team members evoked clarifying and informing

by the team members (both z = 3.54), agreeing by the team members led to clarifying by the team members (z = 5.10), disagreeing behaviour of the team members was followed by informing behaviour of the team members (z = 4.95), inquiry by the team members caused clarifying and answer by the team members (both z = 3.32), answer by the team members resulted in informing by the team members (z = 4.83), and non-work/social performed by the team members triggered non-work/social and informing by the team members (both z = 3.54), more than as expected by chance.

Table 5. Results of sequential analysis of the team members for coded behaviours at Lag 1 for the routine scenario (Z-scores)

	Target behaviours													
Criterion behaviours	Clarifying (TM)	Planning (TM)	Structuring meetings (TM)	Monitoring (TM)	Correcting (TM)	Problem solving (TM)	Informing (TM)	Delegating (TM)	Agreeing (TM)	Disagreeing (TM)	Negative counteractive behaviours (TM)	Negative procedural behaviour (TM)	Postive procedural behaviour (TM)	Mental support (TM)
Clarifying (TM)	**3,29 (96)**	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	**3,77 (109)**	-0,18 (3)	-0,29 (0)	-0,14 (4)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)
Planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (TM)	**4,03 (114)**	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	**2,97 (86)**	-0,24 (1)	-0,24 (1)	-0,24 (1)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)
Delegating (TM)	**3,54 (2)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,54 (2)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Agreeing (TM)	**5,10 (1)**	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)
Disagreeing (TM)	1,06 (1)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	**4,95 (4)**	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)
Negative counteractive behaviours (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (TM)	**3,32 (2)**	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	1,50 (1)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)
Answer (TM)	1,45 (1)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	**4,83 (3)**	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)
Non-work/social (TM)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,54 (1)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 443.

Frequencies of behavioural sequences are presented in parentheses.

Table 5. Results of sequential analysis of the team members for coded behaviours at Lag 1 for the routine scenario (Z-scores) (continuation of previous page)

	Target behaviours													
Criterion behaviours	Work related personal development planning (TM)	Recognizing (TM)	Empowering intellectual stimulation (TM)	Negative relation-oriented behaviour (TM)	Neutral relation-oriented behaviour (TM)	Advocating change (TM)	Envisioning change (TM)	Encouraging innovation (TM)	Facilitating collective learning (TM)	Networking (TM)	Additional codes/fillers (TM)	Inquiry (TM)	Answer (TM)	Non-work/social (TM)
Clarifying (TM)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,29 (0)	-0,21 (2)	-0,25 (1)	-0,25 (1)
Planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Structuring meetings (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (TM)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,28 (0)	-0,16 (3)	-0,28 (0)	-0,28 (0)
Delegating (TM)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Agreeing (TM)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)	-0,19 (0)
Disagreeing (TM)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)	-0,23 (0)
Negative counteractive behaviours (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (TM)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	-0,33 (0)	**3,32 (2)**	-0,33 (0)
Answer (TM)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)	-0,24 (0)
Non-work/social (TM)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,54 (1)**

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 443.

Frequencies of behavioural sequences are presented in parentheses.

4.3.3. Behavioural dynamics triggered by team members in the non-routine task-context

Table 6 shows the Z-scores in the non-routine scenario of behaviours where the team members (without informal leader) show the first behaviour (criterion behaviour), followed by a second behaviour (target behaviour) that the team members (without informal leader) also show. In the non-routine scenario six behaviours occurred more frequently than expected by chance ($p < .01$ or $p < .05$) for the team members. Clarifying by the team members was followed by clarifying and informing by the team members ($z = 3.08$ and $z = 3.95$, respectively), planning behaviour of the team members led to clarifying and informing behaviour of the team members ($z = 4.55$ and $z = 2.14$, respectively), and informing by the team members triggered clarifying and informing by the team members ($z = 4.62$ and $z = 2.00$, respectively), more than as expected by chance.

Table 6. Results of sequential analysis of the team members for coded behaviours at Lag 1 for the non-routine scenario (Z-scores)

	Target behaviours													
Criterion behaviours	Clarifying (TM)	Planning (TM)	Structuring meetings (TM)	Monitoring (TM)	Correcting (TM)	Problem solving (TM)	Informing (TM)	Delegating (TM)	Agreeing (TM)	Disagreeing (TM)	Negative counteractive behaviours (TM)	Negative procedural behaviour (TM)	Postive procedural behaviour (TM)	Mental support (TM)
Clarifying (TM)	**3,08 (84)**	-0,19 (2)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	**3,95 (106)**	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Planning (TM)	**4,55 (2)**	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	**2,14 (1)**	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Structuring meetings (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (TM)	**4,62 (106)**	-0,21 (1)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	**2,00 (49)**	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Delegating (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Agreeing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 351.

Frequencies of behavioural sequences are presented in parentheses.

Table 6. Results of sequential analysis of the team members for coded behaviours at Lag 1 for the non-routine scenario (Z-scores) (continuation of previous page)

	Target behaviours													
Criterion behaviours	Work related personal development planning (TM)	Recognizing (TM)	Empowering intellectual stimulation (TM)	Negative relation-oriented behaviour (TM)	Neutral relation-oriented behaviour (TM)	Advocating change (TM)	Envisioning change (TM)	Encouraging innovation (TM)	Facilitating collective learning (TM)	Networking (TM)	Additional codes/fillers (TM)	Inquiry (TM)	Answer (TM)	Non-work/social (TM)
Clarifying (TM)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)	-0,27 (0)
Planning (TM)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Structuring meetings (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Monitoring (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Correcting (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Problem solving (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Informing (TM)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)	-0,26 (0)
Delegating (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Agreeing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Disagreeing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative counteractive behaviours (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Postive procedural behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Mental support (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Work related personal development planning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Recognizing (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Empowering intellectual stimulation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Negative relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Neutral relation-oriented behaviour (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Advocating change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Envisioning change (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Encouraging innovation (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Facilitating collective learning (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Networking (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Additional codes/fillers (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Inquiry (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Answer (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)
Non-work/social (TM)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)	0,00 (0)

Notes.

In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members without the informal leader (TM).

A z-score larger than 1.96 or smaller than -1.96 indicates that a behavioural sequence occurred above or below chance ($p < .05$).

A z-score larger than 2.58 or smaller than -2.58 indicates that a behavioural sequence occurred above or below chance ($p < .01$).

Significant z-scores are displayed in bold.

The total frequency of behavioural sequences is N = 351.

Frequencies of behavioural sequences are presented in parentheses.

5. Discussion

To gain more insight into the role of the informal leader in an MTS context the aim of this study is to examine what behavioural dynamics triggered by an informal leader look like in an MTS context. This is important as the informal leader could have an influence on the behavioural dynamics in an MTS and therefore play an important role in the functioning of an MTS. Moreover, the difference between a routine or a non-routine task-context could have an influence on the behaviour that an informal leader shows in an MTS. Therefore, teams of an MTS were studied in routine and non-routine task-contexts to capture differences in behavioural dynamics triggered by the informal leader in routine and non-routine task-context in an MTS. To give a quick overview of the results: Table 1 and 2 present the main results and post hoc results of the significant behavioural sequences (which represent the behavioural dynamics) for the informal leader and team members in routine and non-routine task-contexts in an MTS. After the tables, a short explanation is given of the most outstanding results of this study.

Table 1. Significant behavioural sequences between the informal leader and the team members in both a routine and a non-routine task-context; Z-scores are indicated in parentheses

Routine task-context	Clarifying (IL) → Clarifying (TM) (+2.56)
	Clarifying (IL) → Informing (TM) (+4.32)
	Informing (IL) → Clarifying (TM) (+3.65)
	Informing (IL) → Informing (TM) (+3.42)
	Delegating (IL) → Clarifying (TM) (+3.54)
	Delegating (IL) → Informing (TM) (+3.54)
Non-routine task-context	Clarifying (IL) → Clarifying (TM) (+3.42)
	Clarifying (IL) → Informing (TM) (+3.65)
	Informing (IL) → Clarifying (TM) (+4.14)
	Informing (IL) → Informing (TM) (+2.82)

Notes.
The first behaviour is the criterion behaviour and the second behaviour is the target behaviour of a behavioural sequence.
In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members (TM).
Only significant Z-scores (+/-1.96) are displayed.
Bold text indicates differences between the routine task-context and non-routine task-context.

Table 2. Post hoc results of significant behavioural sequences between the team members in both a routine and a non-routine task-context; Z-scores are indicated in parentheses

Routine task-context	Clarifying (TM) → Clarifying (+3.29) (TM)
	Clarifying (TM) → Informing (+3.77) (TM)
	Informing (TM) → Clarifying (+4.03) (TM)
	Informing (TM) → Informing (+2.97) (TM)
	Delegating (TM) → Clarifying (+3.54) (TM)
	Delegating (TM) → Informing (+3.54) (TM)
	Agreeing (TM) → Clarifying (+5.10) (TM)
	Disagreeing (TM) → Informing (+4.95) (TM)
	Inquiry (TM) → Clarifying (+3.32) (TM)
	Inquiry (TM) → Answer (+3.32) (TM)
	Answer (TM) → Informing (+4.83) (TM)
	Non-work/social (TM) → Non-work/social (+3.54) (TM)
	Non-work/social (TM) → Informing (+3.54) (TM)
Non-routine task-context	Clarifying (TM) → Clarifying (+3.08) (TM)
	Clarifying (TM) → Informing (+3.95) (TM)
	Planning (TM) → Clarifying (+4.55) (TM)
	Planning (TM) → Informing (+2.14) (TM)
	Informing (TM) → Clarifying (+4.62) (TM)
	Informing (TM) → Informing (+2.00) (TM)

Notes.
The first behaviour is the criterion behaviour and the second behaviour is the target behaviour of a behavioural sequence.
In the parentheses behind the behaviours is indicated who performed the behaviour, the informal leader (IL) or the team members (TM).
Only significant Z-scores (+/-1.96) are displayed.
Bold text indicates differences between the behavioural sequences of the informal leader and the team members in the routine task-context and non-routine task-context.

From the results, two findings stand out. First, our findings show that the informal leader only performs task-oriented behaviour (e.g., clarifying, monitoring and planning behaviour), regardless of the routine or non-routine task-context. Thus, the results suggest that an informal leader in an MTS mostly performs task-oriented behaviour. Second, our findings also showed that routine and non-routine task-context influence the behavioural dynamics that the informal leader triggers (i.e., the informal leader showed delegating behaviour followed by clarifying and informing behaviour of the team members in the routine task-context and not in the non-routine task-context). These findings are in line with the expectation that the behavioural dynamics triggered by an informal leader in a routine and non-routine task-context would differ. Moreover, it can be seen that the informal leader shows

different and less behaviour than the team members show. In the routine scenario, the informal leader shows only three different types of behaviour (i.e., clarifying, informing and delegating) while the team members show eight different types of behaviour (i.e., clarifying, informing, delegating, agreeing, disagreeing, inquiry, answer and non-work/social). This would suggest that an informal leader does have a different role in an MTS compared to the other team members. In the next section, the theoretical and practical implications of the results of this study are explained, and limitations of this study and recommendations for future research are outlined.

5.1. Theoretical implications

5.1.1. Meta-analytic behaviour of informal leader in routine and non-routine task-contexts

Our findings show that the informal leader only performs task-oriented behaviour (e.g., clarifying, monitoring and planning behaviour), regardless of the routine or non-routine task-context. Literature on leaders in general shows that leaders often display behaviours of all meta-analytic categories (e.g., behaviours of relation-oriented and change-oriented meta-analytic categories) (Yukl, 2012). Therefore, when the coding scheme was made, behaviours of different meta-analytic categories were put in the coding scheme. As such, it was expected that the informal leader would also show behaviour of different meta-analytical categories, but the results showed that the informal leader only performed behaviour of the task-oriented meta-analytical category. However, an explanation of this result can be found when looking at the difference of behaviours that leaders show in regular teams and in MTSs. Namely, previous research from DeChurch et al. (2011) shows that the leadership tasks they found to be core leadership tasks in MTSs, are all tasks that reflect the behaviours of the task-oriented meta-analytic category. The leadership tasks they found to be core leadership tasks are: analysing the situation, gathering information, understanding the bigger picture, establishing roles and responsibilities, planning, taking initiative, being a reactionary unity of command, orchestrating actions, and managing the flow of information (DeChurch et al., 2011). Moreover, the primary purpose of those tasks is to accomplish the goals of the MTS. As such, these tasks fit with the definition of task-oriented behaviours, which is: “the primary purpose of task-oriented behaviours is to ensure that people, equipment, and other resources are used in an efficient way to accomplish the mission of a group or organization” (Yukl, 2012). Hence, this suggests that leaders in MTSs are often performing task-oriented behaviour, and thus our results are in line with the research of DeChurch et al. (2011).

In addition, when comparing the tasks that DeChurch et al. (2011) mentions with the behaviour that the informal leader mostly performed in this study, it can be seen that the informal leader is mostly performing behaviour that falls under the tasks ‘analysing the situation’ and ‘orchestrating actions’. This is interesting because this could tell something about the role of an informal leader in an MTS. It would namely suggest that especially informal leaders in an MTS perform behaviours that fall under the tasks ‘analysing the situation’ and ‘orchestrating actions’

instead of performing behaviours that fall under all tasks that DeChurch et al. (2011) mentions. Hence, when comparing the results of this study with the study of DeChurch et al. (2011), our results suggest that specifically informal leaders perform behaviour that fall under the tasks 'analysing the situation' and 'orchestrating actions'. This suggests that the role of informal leaders in MTSs really is different than the role of leaders in general in MTSs, as leaders in general are found to perform all of the tasks that DeChurch et al. (2011) found. All in all, these results enhance our understanding of the specific role of informal leaders in MTSs.

5.1.2. Behaviour of informal leader in routine and non-routine task-contexts

Our findings also show that routine and non-routine task-context influence the behavioural dynamics that the informal leader triggers (i.e., the informal leader shows delegating behaviour followed by clarifying and informing behaviour of the team members in the routine task-context and not in the non-routine task-context). This is in line with the expectation that the behavioural dynamics that an informal leader triggers would differ in routine and non-routine task-contexts. Previous research on the influence of routine and non-routine task-contexts on leadership shows that within non-routine task-contexts teams should adopt norms and role structures that are most fitting to the dynamic circumstances. This means that leaders should become more receptive to everyone's input (Burke et al., 2006; Driskell & Salas, 1991). This could be a reason for the informal leader not showing delegating behaviour anymore in the non-routine task-context. Moreover, this is also in line with the expectation that the informal leader in the non-routine task-context would become more receptive to the input of other team members. Another explanation for this difference could be that because the informal leader is the most central person in the network (Lo & Meijer, 2019), he knows best who can do what and therefore delegates tasks to other team members in the routine situation. In the non-routine task-context the informal leader and team members have to follow a new procedure. Because of the new procedure, the informal leader has a reduced overview and therefore does not know exactly who can do what. As a result, the informal leader shows no delegating behaviour anymore and is thus more receptive to the input of others in effectively coping with the non-routine task.

When comparing the results of the behaviours that the informal leader shows in the routine and non-routine scenario with the results of the post hoc analysis of the behaviours that the team members show in the routine and non-routine scenario, it can be seen that the informal leader shows different and less behaviour than the team members show. In the routine scenario, the informal leader shows three different types of behaviour (i.e., clarifying, informing and delegating) while the team members show eight different types of behaviour (i.e., clarifying, informing, delegating, agreeing, disagreeing, inquiry, answer and non-work/social). A reason for this could be that because of the centrality of the informal leader, the informal leader is most in contact with other team members and therefore has the best overview of the situation at hand. Thus, the informal leader clarifies, informs and delegates a lot to other team members. In turn, the team members do not have to think about what

needs to be done, instead they can focus more on the practical implementation of tasks and therefore show more different behaviour when working on those tasks.

In the non-routine scenario, the informal leader shows two different behaviours (i.e., clarifying and informing) while the team members show three different behaviours (i.e., clarifying, planning and informing). This is interesting, because the informal leader does not show delegating behaviour anymore and the team members show less different behaviours but start to show planning behaviour. The reason for the informal leader to not show delegating behaviour anymore could be, as explained before, that because of the non-routine scenario the informal leader does not have an overview of the situation anymore. This could in turn influence the team members, because when the team members do not get directions anymore on what to do, they may start planning with other team members what to do instead.

These results show that it is interesting to take the post hoc results into account as well, because the results show two things. First, the behaviour that an informal leader shows in MTSs differs from the behaviour that team members show, thus an informal leader does have a different role than the team members in an MTS. Hence, this gives more insight into what informal leadership looks like in an MTS and how the behaviour of the informal leader differs from the behaviours of team members in an MTS. Second, it shows that the informal leader influences the behaviour of the rest of the team members (i.e., when the informal leader stops with delegating tasks, the team members start to show planning behaviour). Therefore, this could have an influence on the functioning of the MTS, thus these results underline our expectations and previous research of Johannessen et al. (2015), Jonassen and Hollnagel, (2019), Nesse, (2017) and Zaccaro et al. (2020) in that informal leadership can influence the functioning of an MTS.

5.2. Limitations and recommendations for future research

This study has, despite careful design, some limitations, which leads to several recommendations for future research. First of all, this study is a case study, so only one MTS is studied in one organization. Moreover, despite designing the simulations in a way that is close to reality (Lo & Meijer, 2019), there is a difference between the setup of the simulation and the normal way in which the MTS of ProRail functions. The difference is that in the simulation only 4 teams of the MTS are included while the whole MTS of ProRail exists of 19 teams. Hence, this case is not fully representative of the real functioning of the MTS of ProRail. This difference could have affected our findings (e.g., the informal leader could have shown different behaviour than the behaviour the informal leader normally shows when all 19 teams of the MTS are present, or the informal leader normally does show behaviour from meta-analytics categories such as relation-oriented behaviour, but in the simulation the informal leader only showed task-oriented behaviour). Therefore, the generalizability of the results is limited (Tsang, 2014). The generalizability of the results can be improved by studying the whole MTS of ProRail and by examining MTSs in more organizations. Hence, future research on multiple whole MTSs is needed

to generalize the findings on behavioural dynamics triggered by the informal leader in both a routine and non-routine task-context.

Second, the data of this study was collected during two simulations on one day, but this could have had an influence on the behaviour of the informal leader that is studied. The informal leader might have showed for instance more behaviour of other meta-analytic categories at other moments in time, on other days. Therefore, it would be interesting to study the same MTS but then in a longitudinal study, so that can be studied whether the informal leader also shows other behaviour and if the behaviour of the informal leader for instance changes over time. This would help with gaining a better understanding of the role and behaviour of the informal leader in this particular type of MTS.

Third, the method used in this study to code the data is somewhat different when compared to traditional coding methods. The traditional coding method is namely that when the coders have coded the data, they do not consult with each other about their coding and do not change anything in their coding. In this study the coders consulted one another about their coding and changed some things in their coding, because of difficulty experienced by the coders in determining when a code should be assigned. This resulted in having a higher inter-rater reliability. However, this might have resulted in a less reliable results of the coded videos as well, because the two coders consulted with each other on some parts of the coding instead of making their own and independent decision on whether to appoint a certain code to a certain verbal behaviour. A reason for the difficulty in determining when a code should be assigned is that when using software like 'The observer XT' from Noldus, it is almost impossible to cut the video at exactly the same time as the other coder cuts the video (Lehmann-Willenbrock & Allen, 2017). Hence, for future research it is recommended to use the coding method that Lehmann-Willenbrock and Allen (2017) mentioned. In this method first clear unitizing rules have to be constructed and then only one person should be appointed to identify the different coding units. Then another trained coder can assign behavioural codes to the different units. After the videos are coded a third trained coder can then check whether they think the videos are coded appropriately (Lehmann-Willenbrock & Allen, 2017). This would be an easier procedure for the coders and difficulty with when to code could be prevented.

Fourth, another limitation that made it difficult to code the videos is that due to sometimes chaotic communication within the teams, it was at certain points difficult to hear what everybody was saying and to hear who was saying what. This could have resulted in sometimes coding wrong or not coding something at all. This has an impact on the reliability of the results. However, in the coding scheme that is used, the code 'additional codes/fillers' was also used for these kinds of situations. During the coding of the videos the coders did not assign this code, they did not code the parts that they could not hear instead, or they might have coded these parts wrong. Moreover, if one of the two independent coders codes something wrong and the other coder codes it well, this results in a lower inter-rater reliability. Thus, for future research, coders have to keep in mind that this code can be used, and is better to use than guessing who said what, because then there is a chance of wrong coding.

Furthermore, if everybody who needs to be heard for research purposes would be given a microphone, it would be clear at all times who is saying what. This will result in better coding and therefore a better reliability of the results.

Lastly, in this study, behavioural dynamics triggered by an informal leader are studied in a routine and non-routine task-context in an MTS. However, it was beyond the scope of this study to also look at differences in characteristics of MTSs (i.e., boundary status, component team distance (CTD) and goal type). This study focused on an MTS that had the following characteristics: it was external, had a high CTD and had a physical goal type. It would be interesting to examine whether the outcomes of this study would be the same in an MTS with different characteristics. It might be the case that for instance the role of informal leader would change when the characteristics of the MTS are different. For example, looking at the physical goal type (i.e., "a core task, physical skills, a linear work-flow, applying existing knowledge, and a tangible product." (Devine, 2002)), this could be fitting with task-oriented behaviours and not so much with relation-oriented behaviours. Thus, it would be interesting to analyse whether an informal leader in an MTS with an intellectual goal type would perform more relation-oriented behaviours. This would help with gaining a deeper understanding of informal leadership in MTSs. Therefore, a recommendation for future research is to look at informal leadership in MTSs with different characteristics.

5.3. Practical implications

The results of this study show that an informal leader performs different behaviour than the other team members in an MTS. Therefore, the informal leader has a different role in an MTS. Furthermore, an informal leader is very central in the network of the MTS. It would be good if organizations that make use of an MTS context would be aware of the important role an informal leader has in an MTS context, because an informal leader can influence the functioning of an MTS (Shuffler et al., 2015). Moreover, this study shows that because an informal leader performs different behaviour than other team members and an informal leader is very central in the network of an MTS, an informal leader is easy to identify. Hence, a practical implication of this study is that other organizations with an MTS context can easily identify informal leaders in their MTS with the help of the coding scheme that is made for this study. If organizations would identify informal leaders in their MTS, those organizations could also watch the informal leaders and help informal leaders develop themselves. For example, a leadership training could be helpful to learn the informal leaders of the MTS how to lead. In this way, organizations could improve leadership skills in their MTSs and this could in turn benefit the whole MTS (Lacerenza et al., 2018; Zaccaro et al., 2020).

Moreover, another practical implication of this study is that organizations that make use of an MTS context can use the coding scheme that is made for this study to analyse their MTS context. This will help organizations to get a better understanding of their MTS context. If organizations have more

understanding about their MTS contexts, they might also more easily find ways to improve the functioning of their MTS.

6. Conclusion

The research question of this study was: 'What do behavioural dynamics triggered by an informal leader look like in a routine and non-routine task-context in an MTS context?'. The results show that regardless of routine or non-routine task-context, the informal leader shows only task-oriented behaviour, and that the informal leader shows delegating behaviour in the routine task-context and not in the non-routine task-context. Moreover, post hoc analysis shows that the informal leader shows less different behaviours in the routine and non-routine task-context than the team members.

With these findings, this study gives insight into what informal leadership looks like in an MTS context. Our results show that because of the differences in behaviour that the informal leader and the team members show, the informal leader really has a different role than the other team members in an MTS. This is important to take into account, because informal leaders can influence the functioning of an MTS. Moreover, this could be a first step in examining for instance the effectiveness of informal leaders in MTSs, because before being able to say something about effectiveness, first there has to be understanding about what informal leadership looks like in an MTS and this study provides this information. Furthermore, the research points out that the difference between a routine or a non-routine task-context is important to take into account when looking at the behavioural dynamics triggered by an informal leader in an MTS, because the behavioural dynamics that an informal leader triggers are different in a routine and non-routine task-context. Practical implications of this study are that organizations can more easily indicate who the informal leader is in their MTS because of the distinct role of the informal leader. In addition, organizations can get a better understanding of the MTS context of their organization by analysing the MTS context with the coding scheme that is made for this study. This could potentially help organizations to find ways to improve the functioning of their MTS.

To deepen the understanding of informal leadership in a routine and non-routine task-context in an MTS context and to get more generalizability of the findings of this study, it is recommended to study behavioural dynamics triggered by an informal leader in routine and non-routine task-contexts in more MTSs. Furthermore, to broaden the knowledge of behavioural dynamics triggered by an informal leader in routine and non-routine task-context, it is also recommended to study what behavioural dynamics triggered by an informal leader in routine and non-routine task-context look like in MTSs with different characteristics. Lastly, it is recommended to study behavioural dynamics triggered by an informal leader in a routine and non-routine task-context in the same MTS, but then in a longitudinal study to analyse whether the behavioural dynamics triggered by an informal leader will change over time.

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8. Appendices

8.1. Appendix A

Table 1. Coding scheme with all the different codes of five different articles

Yukl (2012)	Bienefeld & Grote (2014)	Hoogeboom & Wilderom (2019)	Zijlstra, Waller & Phillips (2012)	Meinecke, Lehmann-Willenbrock & Kaufeld (2017)	Behrendt, Matz & Göritz (2016)
Clarifying clearly explains task assignments and member responsibilities; sets specific goals and deadlines for important aspects of the work; explains priorities for different objectives; explains rules, policies, and standard procedures.	**Clarifying** Somebody proactively acquires, organizes, and evaluates information to gain an overview, identify the causes, or elaborate solutions and requirements for problem solving. **Coaching** Somebody instructs others on how a task or procedure should be done or provides clarification about decisions or plans.		**Suggestion** Recommendation for action. **Inquiry** Request for information.	**Positive procedural behaviors** For example, goal orientation, procedural suggestions, procedural question, clarifying, reading out loud.	**Fostering coordination** (1) communicating the procedure explicitly and maintaining the structure of communication, (2) ensuring and communicating decisions, (3) employing standardized processes and (4) conveying personal competence and certainty while doing the above. **Enhancing understanding** (1) evaluating prior actions and their results, (2) attributing the results to causes, (3) providing information and (4) inferring beliefs regarding the situation at hand, the situation's supporting and hindering factors and actors, and their contingencies **Facilitating implementation** (1) forming implementation plans and plans for overcoming obstacles, (2) acquiring resources and gaining support, (3) developing skills, (4) identifying opportunities for implementation and (5) activating, focusing and guiding implementation.
Planning develops short-term plans for the work; determines	**Planning and organizing** Somebody plans and communicates next steps,	**Structuring**		**Positive procedural behaviors**	**Fostering coordination** (1) communicating the procedure explicitly and maintaining the structure of

how to schedule and coordinate activities to use people and resources efficiently; determines the action steps and resources needed to accomplish a project or activity.	determines the sequence of actions, or coordinates the pace and timing of activities.	Structuring the meetings; changing the topic; shifting towards the next.		For example, goal orientation, procedural suggestions, procedural question, clarifying, reading out loud. **Positive proactive behaviors** For example, expressing positivity, taking responsibility, action planning.	communication, (2) ensuring and communicating decisions, (3) employing standardized processes and (4) conveying personal competence and certainty while doing the above. **Facilitating implementation** (1) forming implementation plans and plans for overcoming obstacles, (2) acquiring resources and gaining support, (3) developing skills, (4) identifying opportunities for implementation and (5) activating, focusing and guiding implementation.
Monitoring checks on the progress and quality of the work; examines relevant sources of information to determine how well important tasks are being performed; evaluates the performance of members in a systematic way.	**Monitoring** Somebody monitors needs and requirements and controls the actions of others. **Correcting** Somebody speaks up, intervenes, or corrects faulty actions or decisions made by others.	**Task monitoring** Asking team members for and confirmation about (the progress on) their tasks clarification. **Correcting** Imposing of disciplinary actions; Presenting team members with a “fait accompli”.	**Observation** Recognizing or noting a fact or occurrence.		
Problem solving identifies work-related problems that can disrupt operations, makes a systematic but rapid diagnosis, and takes action to resolve the problems in a decisive and confident way.	**Informing** Somebody verbalizes a problem, provides interpretation of a problem, or suggests a solution to a problem with the intention to influence others.	**Informing** Giving factual information. **Giving own opinion** Giving one’s own opinion about what course of action needs to be followed for the organization, department or the team.	**Answer** Supplying information for an inquiry.	**Knowledge management** That is, sharing organizational information, questions about knowledge. **Problem solving** For example, identifying a (partial) problem or solution, illustrating a problem or solution.	**Facilitating implementation** (1) forming implementation plans and plans for overcoming obstacles, (2) acquiring resources and gaining support, (3) developing skills, (4) identifying opportunities for implementation and (5) activating, focusing and guiding implementation.

Positive proactive behaviors
For example, expressing positivity, taking responsibility, action planning.

Supporting
shows concern for the needs and feelings of individual members; provides support and encouragement when there is a difficult or stressful task, and expresses confidence members can successfully complete it.

Positive relation-oriented behaviors
For example, encouraging participation, providing support, offering praise, expressing feelings.

Promoting cooperation
(1) encouraging individual contributions to the group's progress, (2) underlining these individual contributions and their uniqueness and indispensability to and effect on collective progress, (3) encouraging and offering social support, (4) delegating individual tasks based on comprehensive work-role-fit regarding interests, competence, and values and (5) permitting autonomy in tasks to allow for self-determination.

Activating resources
(1) suggesting or instructing self-efficacy, (2) highlighting positive experiences, past successes, and feasible future accomplishments, (3) focusing positive attributes of individuals and the group as a whole, (4) fostering the expectation to collectively divert impending power losses or to achieve power gains and (5) rewarding and recognizing to call forth and shape future valuable contributions.

Developing
provides helpful feedback and coaching for members who need it; provides helpful career advice; encourages members to take advantage of

Individualized consideration
Paying attention to each individual’s need for achievement and growth by acting as a coach or mentor and creating a supporting climate.

Development planning
For example, direction of development, action planning of development.

Performance evaluation
For example, providing performance evaluation

opportunities for skill development.			(on a scale), describing performance evaluation.	
		Providing positive feedback Positively evaluating and rewarding the behavior and actions of team members.		
		Providing negative feedback Criticizing the behaviors or actions of other team members.		
Recognizing praises effective performance by members; provides recognition for member achievements and contributions to the organization; recommends appropriate re- wards for members with high performance.	**Recognizing others** Somebody gives feedback to others.	**Providing positive feedback** Positively evaluating and rewarding the behavior and actions of team members.	**Positive relation-oriented behaviors** For example, encouraging participation, providing support, offering praise, expressing feelings.	**Activating resources** (1) suggesting or instructing self-efficacy, (2) highlighting positive experiences, past successes, and feasible future accomplishments, (3) focusing positive attributes of individuals and the group as a whole, (4) fostering the expectation to collectively divert impending power losses or to achieve power gains and (5) rewarding and recognizing to call forth and shape future valuable contributions. **Promoting cooperation** (1) encouraging individual contributions to the group's progress, (2) underlining these individual contributions and their uniqueness and indispensability to and effect on collective progress, (3) encouraging and offering social support, (4) delegating individual tasks based on comprehensive work-role-fit regarding interests, competence, and values and (5) permitting autonomy in tasks to allow for self-determination.

Empowering
involves members in making important work-related decisions and considers their suggestions and concerns; delegates responsibility and authority to members for important tasks and allows them to resolve work-related problems without prior approval.

Delegating/ Decision-making
Somebody delegates tasks or roles to somebody else.

Consulting
Somebody asks others for their opinion.

Directing
Dividing tasks among team members (without enforcing them); Determining the current direction.

Intellectual stimulation
Asking for ideas, stimulating team members to critically think about team tasks, opportunities and so on, including the questioning of assumptions; thinking about old situations in new ways.

Command
Specific request or demand for action.

Advocating change
explains an emerging threat or opportunity; explains why a policy or procedure is no longer

Promoting cooperation
(1) encouraging individual contributions to the group's progress, (2) underlining these individual contributions and their uniqueness and indispensability to and effect on collective progress, (3) encouraging and offering social support, (4) delegating individual tasks based on comprehensive work-role-fit regarding interests, competence, and values and (5) permitting autonomy in tasks to allow for self-determination.

Activating resources
(1) suggesting or instructing self-efficacy, (2) highlighting positive experiences, past successes, and feasible future accomplishments, (3) focusing positive attributes of individuals and the group as a whole, (4) fostering the expectation to collectively divert impending power losses or to achieve power gains and (5) rewarding and recognizing to call forth and shape future valuable contributions.

Fostering coordination
(1) communicating the procedure explicitly and maintaining the structure of communication, (2) ensuring and communicating decisions, (3) employing standardized processes and (4) conveying personal competence and certainty while doing the above.

Strengthening motivation
(1) deliberating possible objectives and their consequences, (2) weighing the desirability of the alternative objectives, (3) deriving concrete intentions and (4) strengthening the

appropriate and should be changed; proposes desirable changes; takes personal risks to push for approval of essential but difficult changes.

Envisioning change
communicates a clear, appealing vision of what could be accomplished; links the vision to member values and ideals; describes a proposed change or new initiative with enthusiasm and optimism.

Encouraging innovation
talks about the importance of innovation and flexibility; encourages innovative thinking and new approaches for solving problems; encourages and supports efforts to develop innovative new products, services, or processes.

Facilitating collective learning

Giving own opinion
Giving one's own opinion about what course of action needs to be followed for the organization, department or the team.

Idealized influence behavior
Talking about an important collective sense of vision; Talking about important values and beliefs.

motivation to pursue shared goals and individual goals that support the shared goals by focusing on the value of positive consequences, approval by relevant others and the motivation to comply with these relevant others.

Strengthening motivation
(1) deliberating possible objectives and their consequences, (2) weighing the desirability of the alternative objectives, (3) deriving concrete intentions and (4) strengthening the motivation to pursue shared goals and individual goals that support the shared goals by focusing on the value of positive consequences, approval by relevant others and the motivation to comply with these relevant others.

uses systematic procedures for learning how to improve work unit performance; helps members understand causes of work unit performance; encourages members to share new knowledge with each other.

Networking
attends meetings or events; joins professional associations or social clubs; uses social networks to build and maintain favorable relationships with peers, superiors, and outsiders who can provide useful information or assistance.

External monitoring
analyzes information about events, trends, and changes in the external environment to identify threats, opportunities, and other implications for the work unit.

Representing
lobbies for essential funding or resources; promotes and defends the reputation of the work unit or organization; negotiates agreements and

coordinates related activities with other parts of the organization or with outsiders.

Humor
Making jokes or funny statements.

Laughing
Laughter or clearly humorous remark.

Additional codes/fillers
Laughter, pause (> 5 seconds), non-comprehensible, interrupted sentences, external disturbance (e.g. phone rings).

Showing disinterest
Not taking any action (when expected).

Negative counteractive behaviors
For example, showing no interest in change, complaining, denying responsibility.

Negative procedural behaviors
That is, running off-topic/losing the train of thoughts in details and examples.

Defending one's own position
Emphasizing one's leadership position; Emphasizing self-importance.

Negative relation-oriented behaviors
That is, criticizing, interrupting, self-promotion.

Interrupting
Interfering or disturbing when other team members are talking.

Agreeing

Agreeing with something; consenting with something.		
Disagreeing Contradicting with team members.	**Disagreeing** Response not in agreement with a previous statement.	
	Anger Comment beyond mere disagreement, or a ridiculing remark.	
Giving personal information Sharing personal information (e.g. about the family situation).		
Active listening Active listening.		**Neutral relation-oriented behaviors** That is, listening.
	Apologies Remark expressing sorrow or regret for prior action.	
	Non-work Social non-task communication.	
		Negative procedural behaviors That is, running off-topic/losing the train of thoughts in details and examples.

8.2. Appendix B

Table 2. Coding scheme with meta-analytic categories, codes and descriptions

Meta-analytic category	Code	Description
Task-oriented	Clarifying	Somebody proactively acquires, organizes, and evaluates information to gain an overview, identify the causes, or elaborate solutions and requirements for problem solving
	Planning	Determining the current direction; develops short-term plans for the work; determines how to schedule and coordinate activities to use people and resources efficiently; coordinates the pace and timing of activities; determines the action steps and resources needed to accomplish a project or activity
	Structuring meetings	Structuring the meetings; changing the topic; shifting towards the next
	Monitoring	Checks on the progress and quality of the work; asking team members for, and confirmation about (the progress on) their tasks; (examines relevant sources of information to determine how well important tasks are being performed; evaluates the performance of members in a systematic way: Yukl, 2012).
	Correcting	Somebody intervenes, or corrects faulty actions or decisions made by others; criticizing
	Problem solving	Identifies work-related problems that can disrupt operations, illustrates a solution makes a systematic but rapid diagnosis, and takes action to resolve the problems in a decisive and confident way.
	Informing	Giving factual information
	Delegating	Dividing tasks among team members (without enforcing them); delegates responsibility and authority to members for important tasks
	Agreeing	Agreeing with something; consenting with something
	Disagreeing	Contradicting with team members
Action-oriented	Negative counteractive behaviors	Showing no interest in change, complaining, denying
Procedural behavior	Negative procedural behaviors	That is, running off-topic/losing the train of thoughts in details and examples
	Positive procedural behaviors	Somebody instructs others on how a task or procedure should be done
Relation-oriented	Mental support	Shows concern for the needs and feelings of individual members; provides support and encouragement when there is a difficult or stressful task, and expresses confidence members can successfully complete it.

	Work related personal development planning	Paying attention to each individual's need for achievement and growth by acting as a coach or mentor and creating a supporting climate; direction of personal development, action planning of development; provides helpful feedback and coaching for members who need it; provides helpful career advice; encourages members to take advantage of opportunities for skill development.
	Recognizing	praises effective performance by members; provides recognition for member achievements and contributions to the organization; recommends appropriate re- wards for members with high performance.
	Empowering intellectual stimulation	Somebody asks others for their opinion; involves members in making important work- related decisions and considers their suggestions and concerns; allows team members to resolve work-related problems without prior approval; asking for ideas, stimulating team members to critically think about team tasks, opportunities and so on, including the questioning of assumptions; thinking about old situations in new ways
	Negative relation-oriented behaviors	That is, interrupting, self-promotion
	Neutral relation-oriented behaviors	That is, listening
Change-oriented	Advocating change	explains an emerging threat or opportunity; explains why a policy or procedure is no longer appropriate and should be changed; proposes desirable changes; takes personal risks to push for approval of essential but difficult changes.
	Envisioning change	communicates a clear, appealing vision of what could be accomplished; links the vision to member values and ideals; describes a proposed change or new initiative with enthusiasm and optimism.
	Encouraging innovation	talks about the importance of innovation and flexibility; encourages innovative thinking and new approaches for solving problems; encourages and supports efforts to develop innovative new products, services, or processes.
	Facilitating collective learning	uses systematic procedures for learning how to improve work unit performance; helps members understand causes of work unit performance; encourages members to share new knowledge with each other.
External	Networking	attends meetings or events; joins professional associations or social clubs; uses social networks to build and maintain favorable relationships with peers, superiors, and outsiders who can provide useful information or assistance.
Additional	Additional codes/fillers	Pause (>5 seconds), non-comprehensible, interrupted sentence, external disturbance (e.g., phone rings)
Unclassified	Inquiry	Request for information
	Answer	Supplying information for an inquiry
	Non-work/social	Social non-task communication