***Game of Thrones*: How leadership structures and cognitive schemas are related to team effectiveness in self-managing teams**

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In recent years, a growing number of teams in organizations have become self-managing entities, in which all team members formally have equal organizational power and responsibility for team outcomes, and the ability of these teams to be effective has become essential for organizational success. In these self-managing teams (SMTs), informal leadership structures are formed, varying from a single-leader structure to equally shared leadership. However, knowledge concerning the factors that enable these diverse leadership structures to contribute to team effectiveness is scarce.

In our study, we aim to address this gap in the literature, examining what causes SMTs with different informal leadership structures to achieve high effectiveness. To address this question, we will develop a research model based on aspects adopted from the implicit-leadership-network approach, suggesting that the congruence between the formed team leadership structure and the team-level leadership-structure schemas (i.e. cognitive schemas held by team members about how leadership should be structured in teams) will foster task-relevant information elaboration between members and reduce relationship conflicts, therefore leading to greater team effectiveness.

In order to test our model, we will conduct two studies. The first will be a field study in a large Israeli health-service organization. The study sample will include 2,000 members of 500 SMTs in community medical clinics. In these teams, all members will be managers of equal rank, from different functions, who share in the responsibility for clinical performance. In addition, we will conduct an experimental study that will include 120 student teams to support the congruence claims.

The significance of this research will be both theoretical and practical. We will suggest a theoretical model that explains the conditions in which any formed leadership structure can be related to SMT effectiveness. Our focus on team-level mechanisms will extend the theoretical scope of the implicit-leadership-network approach, which primarily focuses on individual-level outcomes. Practically, our results will reveal insights that will assist organizations in developing interventions to overcome incongruence between formed leadership structures and the leadership-structure schemas of team members in order to improve team processes and to enhance SMTs’ effectiveness. This represents a meaningful contribution to the success of organizations with a high proportion of SMTs, as is the case in healthcare organizations.

**Research Program**

# Scientific Background

During the last several decades, organizations have entered an era characterized by massive organizational growth and information-technology developments. As a result, the business environment has become increasingly competitive, complex, and dynamic (Mathieu et al., 2017). To achieve faster decision making and greater efficiency and flexibility, organizations have become less hierarchical and centralized, using a growing number of self-managing teams (SMTs), which are defined as “groups of interdependent employees who have the collective authority and responsibility of managing and performing relatively whole tasks” (De Jong et al., 2004, p.18). Nowadays, the proportion of SMTs within organizations is continuously increasing in various forms (e.g. cross-functional teams, knowledge-based teams), and their ability to achieve high effectiveness is essential for organizational success (Contractor et al., 2012; Ensley et al., 2006; Magpili & Pazos, 2018).

One of the main differences between SMTs and traditional work teams is in their leadership structure, particularly in the nature of the leadership position (formal/informal) and the number of possible leaders within the team. Traditional work teams have a vertical leadership structure, whereby the manager is positioned hierarchically above and external to the team, has formal authority over the team, and is responsible for the team’s processes and outcomes (Druskat & Wheeler, 2003; Pearce & Sims, 2002). In SMTs, leadership originates from within the team, and most such teams have no appointed leader (Carson et al., 2007; Manz & Sims, 1987). As a result, in some of these teams, one member may assume the team's informal leader position, resulting in a single-leader structure. In other teams, a decentralized leadership structure may emerge, were two or more members engage in the leadership of the team in an effort to influence and direct members to maximize team effectiveness, leading to “a set of interactive influence processes in which team leadership functions are voluntarily shared among internal team members in the pursuit of team goals” (Nicoladis et al., 2014, p.924). Hence, leadership structures in SMTs can vary on a continuum from a single informal leader to leadership shared equally by all members, characterized by their level of centralization, ranging from a centralized leadership structure (i.e. one member is the primary source of leadership acts) to a decentralized leadership structure in which multiple team members engage in acts of leading (Carson et al., 2017; DeRue et al., 2015; Paunova, 2015).

Studies that have explored the relation between SMT leadership structures and teams’ effectiveness show that diverse leadership structures can contribute positively in this regard but can also lead to processes that impede team effectiveness (Ensley et al., 2006; Fausing et al., 2013; Pearce & Sims, 2002). Some studies have indicated that decentralized leadership structures enable the utilization of internal resources, such as knowledge and expertise, thereby facilitating collective identity, team commitment, team creativity, and team effectiveness (Ali et al., 2020, Chiu et al., 2016, Day et al., 2004; Wang et al., 2014). On the other hand, costs associated with the increased need for communication and coordination are higher in decentralized leadership structures compared with centralized leadership structures and, over time, may lead to intragroup conflicts and decreased team effectiveness (Dust & Ziegert, 2016; Nicolaides et al., 2014). Centralized leadership structures may be functional in coordinating team effort and effectiveness, especially when team effort is hard to align (Pieterse et al., 2019) but may also increase sensitivity to power and status, leading to power struggles and conflicts that decrease effectiveness (Greer et al., 2018). These findings indicate that specific leadership structures alone do not account entirely for team effectiveness and that the contribution of these structures to SMT effectiveness is determined by additional factors (Carter et al., 2015). However, the literature on factors influencing the relation between SMTs structures and their effectiveness is limited.

In this study, we aim to address this gap to reveal how different leadership structures can contribute to SMT effectiveness. Specifically, to answer this question, we will develop a model that relies on aspects from the implicit-leadership-network approach, which integrates implicit leadership and followership theories with contemporary social-network perspectives of leadership in teams (DeRue & Ashford, 2010; DeRue et al., 2015; Scott et al., 2018). We suggest that a main concept in this approach, the leadership structure schema (LSS), influences the ability of SMTs to be effective within diverse leadership structures. These LSSs are cognitive schemas held by team members about how leadership should be structured in teams (i.e. whether the team should be led by a single member or by several members), which influence their decisions to assume leadership positions or to allow other members to do so (DeRue & Ashford, 2010; Scott et al., 2018).

Studies on LSS to date have focused mostly on the individual level, exploring questions related to individual leadership emergence in diverse work contexts, based on individuals’ claiming and granting of leadership activities (Carnabuci et al., 2018; Emery et al., 2011).

In the current study, we aim to add to this approach by examining LSS at the team level, considering how this team-level LSS can facilitate SMT effectiveness among the diverse formed leadership structures. We suggest that high congruence (i.e. fit) between the formed leadership structure and the joint effect of team members’ LSS leads to team effectiveness, as this congruence will facilitate the elaboration of task-related information and reduce relationship conflict between team members. Moreover, we suggest that team members’ diversity in LSS can mitigate these relationships (see Figure 1).

We intend to test our research model using two studies: the first being a field study in the Clalit Health Services organization, comprising 500 leading SMTs in community clinics; the second being an experimental study. In the remainder of this proposal, we will first elaborate on our research model and hypotheses, followed by an explanation of the expected significance and details of our study design.

**Figure 1- Research Model**

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## A1 Research model and hypotheses

A1.1 The congruence between formed leadership structure, LSS, and SMT effectiveness

Team effectiveness refers to two types of outcomes: products of team activity; and team-relationship quality (Mathieu et al., 2019). Hence, effective SMTs demonstrate high performance (i.e. produce outputs that meet the standards set by the organization; Rousseau & Aube, 2010) and their members perceive high satisfaction from their team relationships (Judge et al., 2017; Mierlo et al., 2005).

Studieson leadership in traditional work teams (with one appointed leader) have mostly focused on leadership quality as the main contributor to team effectiveness (Hogan & Kaisqer, 2005). However, research has shown that different leadership structures in SMTs can be related to team effectiveness (Ensley et al., 2006; Pearce & Sims, 2002; Pieterse et al., 2019), leading scholars to call for the exploration of additional factors that enable these teams to be effective in diverse leadership structures (Denis et al., 2012; Lindgren et al., 2010; Wageman et al., 2012), although such exploration has rarely been undertaken. In this study, we will focus on the question of how team-level LSS is related to the ability of SMTs with diverse leadership structures to be effective.

Individual LSSs are constructed based on teamwork experiences over time that involve the recognition of different leadership structures (DeRue, 2011; DeRue et al., 2015; Scott et al., 2014). Hence, although team members’ interactions in specific teams may have some impact on their LSS (DeRue, 2011), this LSS is crystalized in a longitudinal process, within specific contexts, and will not necessarily fit the leadership structures formed in specific SMTs (DeRue et al., 2015).

The formation of leadership structures in SMTs is also influenced by multiple factors. Some of these are external to team activates (e.g. organizational culture, the nature of the organizational task, team environment; Currie & Lockett, 2011; White et al., 2016). Other factors are related to team members’ relations, such as interpersonal perceptions of warmth and competence (Carson et al., 2007; DeRue et al., 2015; Serban & Roberts, 2016) and their decisions regarding claiming or granting leadership within their teams (Carnabuci et al., 2018; DeRue & Ashford, 2010). Hence, although there might be some mutual influence between team members’ LSS and the leadership structure formed in specific SMTs, the multiple influences on the formation of leadership structures and the creation of members’ LSS indicate that, in specific SMTs, members’ LSS may not necessarily fit the formed leadership structure (Scott et al., 2018).

High congruence between the formed leadership structure and the team-level LSS can be found where team members share a similar LSS perspective (i.e. there is agreement regarding whether teams should be led in a centralized or decentralized structure) and this perception fits the structure formed in their team (number of informal leaders within the team). When the structure formed is centralized (only one member is perceived as a leader) and team members share the perception of centralized LSS, they will tend to support these leaders and their leadership activities. When the structure formed is decentralized (a few/all members are perceived as leaders) and team members share a perception of decentralized LSS, team members will be willing to divide the leadership activities between these members (e.g. based on tasks or by shared leadership). In both situations, team members are not expected to dedicate time and effort to *Game of Thrones* activities, whereby they struggle for power, responsibility, or leadership positions, all of which are activities that can lead to a high level of relationship conflict and communication problems (Chun & Choi, 2014; Greer et al., 2011, 2017). In such a situation, team members will focus on task aspects and communicate effectively, achieving both high performance and satisfaction from team relationships (Acton et al., 2019; Aime et al., 2014; Muethel & Hoegl, 2013).

On the other hand, when team members have a similar LSS perception, but this perception contradicts the formed leadership structure, there will be low congruence between the two. A situation in which team members have a centralized LSS, but more than one member is perceived as a leader in the team, is expected to lead to conflicts based on the willingness of these members to “take the lead.” Struggling for power and control, members may not share essential information for the successful completion of team tasks, which will decrease both team members’ satisfaction and team performance. A situation in which members share a similar decentralized LSS perspective, but only one member is perceived as leader, can lead to dissatisfaction from work processes and work allocation within the team and, over time, lead to conflicts and decreased information sharing and communication, leading to lower performance and satisfaction. We will elaborate on the mediating role of relationship conflict and task-relevant information elaboration between team members (an essential aspect of communication) in the next sub-section.

An important aspect that can influence both performance and satisfaction is how diverse team members are in their LSS perception. When LSS diversity is high, some members will have a more centralized LSS, while others will have a decentralized LSS (DeRue & Ashford, 2010). In such a condition, members will not agree about the preferred leadership structure, and some team members, at any given time, will be not be satisfied with the leadership structure formed. Moreover, in any leadership structure, some team members may behave in a way the contradicts the formed leadership structure (i.e. seeking centralized leadership in the decentralized form or decentralized leadership in the centralized form), leading to conflicts and reduced communication, and, consequently, to lower performance and satisfaction. Hence, high LSS diversity between team members is expected to mitigate the congruence effect related to leadership structure and LSS:

*H1:* Greater alignment between the team-level LSS and the formed team leadership structure will lead to greater SMT effectiveness (team performance and satisfaction from team relationships).

*H2:* LSS diversity will mitigate the positive effect of alignment between the team-level LSS and the formed team-leadership structure.

### A1.2 The mediating role of task-relevant information elaboration and relationship conflict

To achieve high team performance, team members need to communicate regarding their task(s) through the elaboration of task-relevant information in the way that they exchange, discuss, and integrate ideas, knowledge, and insights (Homan et al., 2008; Kearney & Gebert, 2009; Meyer & Schermuly, 2012). When team members share their unique knowledge, are more familiar with the knowledge of others, and are invested in creating synergistic knowledge, this improves their quality of judgment and team decisions, leading to higher team performance (De Dreu et al., 2008; Mesmer-Magnus & DeChurch, 2009; Resick et al., 2014; Rico et al., 2012). Additionally, behaviors related to sharing and discussing knowledge have a positive effect on outcomes as interest and involvement contribute to job satisfaction (Kianto et al., 2016; Todorova et al., 2014; Trivellas et al., 2015). Formal leaders’ activities have a major influence on followers’ elaboration of task-relevant information (Kearney & Gebert, 2009; Lisak et al., 2016). In SMTs with no formal leaders and members having equal formal power, achieving task-relevant information elaboration is challenging (Resick et al., 2014). We suggest that high congruence between the formed leadership structures and LSS in these teams can facilitate task-relevant information elaboration, as the acceptance of the formed leadership structure leads to members’ support of their perceived leaders (Derue & Ashford, 2010) and a willingness to accept their guidance regarding more effective task-relevant information-elaboration processes (Aime et al., 2014). Moreover, when team members accept the formed leadership structures, leadership and power struggles are expected to be avoided, with members focusing more on collaboration and information-exchange processes in order to complete their missions (Muethel & Hoegl, 2013; Scott et al., 2014).

On the other hand, when there is low congruence between shared LSS and the formed structures, or when there is disagreement between team members about how leadership should be formed (high LSS diversity), members are expected to use information as part of their strategy in order to claim leadership or to gain power within their teams (DeRue & Ashford, 2010). In such a situation, members may not share essential information for the successful completion of team tasks if they think that this will serve their leadership aspirations or will impede other members’ aspirations. This lack of information sharing and elaboration negatively affects the ability of SMTs to work effectively on their missions (Van Knippenberg et al., 2004). Therefore, the following hypotheses are proposed:

*H3a:* Greater alignment between the SMT’s LSS and the formed leadership structure will lead to greater elaboration of task-relevant information.

*H3b:* Elaboration of task-relevant information will mediate the congruence effect of team LSS and the formed team-leadership structure on SMT effectiveness (team performance and satisfaction with team relationships). Greater congruence will lead to greater elaboration of task-relevant information and greater SMT effectiveness. LSS diversity will mitigate this relationship.

When there is no congruence between team-level LSS and the formed leadership structure, or when there is high diversity among members’ LSS, relationship conflicts among SMT members, defined as "tensions, annoyances, disagreements, and personal incompatibilities over matters such as beliefs, values, habits, and personalities” (Shaw et al., 2011 p.391), will escalate due to the adverse reactions of some team members to others (DeRue & Ashford, 2010). For example, if more than one member is perceived as a leader (i.e. decentralized leadership structure) and members have a centralized LSS, this might lead to relationship conflicts with other “potential” leaders in order to obtain a dominant position within the team. In such a situation, power struggles and conflicts will arise when members strive to take control over leadership functions and exert their power and influence (Acton et al., 2019; Chun & Choi, 2014; Greer et al., 2011).

High levels of relationship conflict reduce team performance, as these conflicts reduce team trust, cohesion, collaboration, and team members’ interdependence (De Dreu & Weingart, 2003; De Wit et al., 2012; Langfred 2007), distracting them from focusing on their tasks (De Dreu & Van Vianen, 2001; De Wit, Jehn & Scheepers, 2013). Relationship conflicts have also been found to generate negative emotions and attitudes, which may increase intra-team competition and reduce engagement with collective goals (Greer & Dannals, 2017; Maltarich et al., 2018; O'Neill et al., 2013), leading to lower job satisfaction (De Wit et al., 2012).

On the other hand, when a congruence exists between the formed leadership structure and team-level LSS, members’ acceptance of the formed structure is expected to reduce relationship conflicts and to enhance focus on team tasks. As a result, teams with lower relational conflicts perform better and their members report higher job satisfaction (Shaw et al., 2011). We therefore propose:

*H4a:* Greater alignment between team-level LSS and the formed leadership structure reduces the likelihood of relationship conflict.

*H4b:* Relationship conflict will mediate the congruence effect of team-level LSS and the formed team-leadership structure on SMT effectiveness (team performance and satisfaction with team relationships).Greater congruence will reduce the likelihood of relationship conflict and improve SMT effectiveness.LSS diversity will mitigate this relationship.

# Research Objectives & Expected Significance

The overall goal of the proposed study is to theoretically explain how diverse leadership structures can be related to SMTs effectiveness. The expected theoretical contributions are related to our efforts to avoid the common comparative perspective, which compares the performance of teams with diverse leadership structures (e.g. hierarchical vs. shared leadership). Proposing that SMTs’ effectiveness is a result of a congruence between the formed leadership structure and team-level LSS, we propose a theoretical model that explains the conditions in which any formed leadership structure can be related to SMT effectiveness. Our focus on team-level mechanisms extends the theoretical and empirical scope of the implicit-leadership-network approach, which is primarily focused on individual-level outcomes (e.g. leadership emergence and structure construction; DeRue & Ashford, 2010), enabling us to propose a model that explains team outcomes.

This study will also have practical significance as the proportion of SMTs within organizations, as well as their contribution to organizational effectiveness, is consistently growing (Magpili & Pazos, 2018). This is specifically true for the public healthcare sector and community clinics in health services, where SMTs are very common. Demonstrating that incongruence between team-level LSS and leadership structures can lead to high conflict and low communication and to reduced SMT effectiveness, our aim is to help organizations to develop intervention methods to overcome such incongruence and, subsequently, to enhance SMTs’ effectiveness.

# Detailed Description of the Proposed Research

## C1 Working hypotheses

See explanations and the description of the hypotheses in section B.

## C2 Research design & methods

### C2.1 Field study

#### C2.1.1 Participants

The field study will be conducted in the Clalit Health Services organization. Clalit is the largest health organization in Israel, with more than 42,000 employees. The sample will include 2,000 function managers who are members of 500 management teams in community clinics. These are SMTs and are each composed of four managers from different professional functions (physician, nurse, administrator, and pharmacist). Each function manager is responsible for the performance of his/her function, and they all share responsibility for the performance of the clinic.

Although the physician managers hold the title of “clinic manager” (due to an arbitrary organizational decision), they have no professional authority or administrative authority over the other function managers or their employees, and each of the function managers answers to the senior function manager in their district. As a result, each of them has the potential to be perceived as an informal leader by their peers.

#### C2.1.2 Procedure

**Preliminary procedure.** Four steps will be conducted to enhance participation in this study. First, the principal investigator (PI) and the research coordinator will present the study in monthly meetings to be held in each district for these SMTs. Second, the Clalit Human Resource Management (HRM) department will send a letter of support for this study to these members. Third, the HRM department will provide us with a file containing the names, professions, and organizational email addresses of the SMTs members, based on information held by the clinics. Based on this information, we will send a personal invitation (by organizational email) asking them to participate voluntarily in this study. In this email, we will clarify ethical issues and encourage members to seek any clarification required. Finally, to increase the response rate, we will notify the SMT members about lottery incentives. Participants who complete the web-based questionnaires in all data-collection phases will be entered in a lottery with a chance of winning a 600-NIS vacation voucher (a total of 10 vouchers will be awarded).

**Data-collection procedure.** To reduce common method bias (Podsakoff et al., 2003), we will collect data across three time points and from three different sources: (a) self-reports; (b) other team members’ reports; and (c) organizational data. Specifically, we will test our research model using a survey-based, longitudinal field study. The research design will consist of three phases, separated by four-month intervals (see Figure 1). To ensure confidentiality, we will produce a random four-digit code for each participant, which will be used exclusively in this data-collection process (the file linking participants’ personal information with their codes will be stored in a different secured computer in Ben-Gurion University).

**Phases 1–2.** We will collect data using the “NEMALA” web-based program, which has been certified by Clalit’s information security unit. "NEMALA" is a web-based program that enables the collection of survey data in a variety of display modes (both on PCs and mobile devices). Each participant will receive a link to the web-based questionnaire via organizational emails. Participants will dedicate 5–10 minutes in each phase to complete these questionnaires. Data collection will be continuously monitored. Late responders will receive an automatic reminder by email and, if necessary, the research team will contact them in person.

**Phase 3.** The data will be delivered by Clalit’s HRM department (see sub-section C2.1.3).

#### C2.1.3 Measures

The questionnaire will be delivered in Hebrew. Relevant scales will be translated into Hebrew, following the back-translation method (Brislin, 1980). All measures (except for leadership structure formed and team performance) will be aggregated to the team level. The level of agreement among SMT members will be assessed using intraclass correlation coefficients [ICC(1) and ICC(2); Bliese, 2000] and interrater agreement [rwg(j); James et al., 1984].

**The formed leadership structure (Phase 1).** The evaluation of the formed leadership structure will be a twofold process. First, the extent to which each team member is perceived as a leader by other team members will be measured using thefive-itemscale ofthe General Leadership Impression scale (Cronshaw & Lord, 1987). These items are rated on a seven-point Likert-type scale (1= “not at all” to 7=“to a great extent”; α=0.87) and include items such as “The amount of leadership that the \_\_\_\_\_ [e.g. administrator] exhibited.” In this process, each team member will rate all other members and will be rated by them. A total score for leader perception will be calculated for each member, using the average score given by other SMT members (DeRue et al., 2015). Members will be listed in the questionnaire according to their profession (e.g. administrator, nurse) rather than by name.

Next, to calculate the informal team-leadership structure, we will use the network centralization method, based on SMT members’ leadership perception scores. Centralization reflects the structure of leadership on a continuum between a highly centralized leadershipstructure (one member is perceived as leader) and a highly decentralized leadershipstructure (all members perceived as leaders equally) (DeRue et al., 2015). The level of centralization of the leadership structure will be calculated using Berdahl and Anderson’s (2005) index, which accounts for team size and ranges from 0 (completely decentralized: all members have the same leadership-perception score) to 1 (completely centralized: one member has a score of 7, and all others have a score of 1). The equation for this index is presented below:

|  |
| --- |
|  |
| (xpossible max - xpossible min) \* (*n*1) |

Example (*n*=4, highest possible score is 7; lowest possible score is 1); [(7–6)+(7–5)+(7–3)]/[(7–1)\*3]=0.39.

**Leadership structure schema (LSS) (Phase 1).** LSS will be measured using the five-item LSS scale (DeRue et al., 2015). This scale assesses the SMT members’ cognitive schema regarding how leadership should be structured within a team, with higher scores representing a more highly shared LSS (1=“strongly disagree”, 7=“strongly agree”; α=0.71); sample item: “Groups work best when leadership is shared among multiple group members.” We will use the aggregated LSS scores. Diversity in LSS will be used as moderator.

**Relationship conflict (Phase 2).** Relationship conflict will be measured on a seven-point Likert-type scale (1=“not at all, 7=“very much”) using a combination of two Relationship-Conflict scales: the three-item scale of Jehn and Mannix (2001) (sample item: “How much relationship tension is there in the team?”; α=0.94); and the four-item scale of Pelled et al.(1999) (sample item: “How much are personality clashes evident in your team?”; α=0.83).

**Elaboration of task-relevant information (Phase 2)**. This will be measured on a seven-point Likert-type scale (1=“strongly disagree”, 7=“strongly agree”; α=0.86) using the elaboration of Task-Relevant Information scale (Kearney & Gebert, 2009). This scale comprises four items (sample item: “The members of this team carefully consider all perspectives in an effort to generate optimal solutions”).

**Team effectiveness (Phase 3)**. We will measure team effectiveness using two categories: team performance; and team-relationship satisfaction. Both will be evaluated by Clalit’s research department. Team performance will be evaluated using the general performance score that each clinic receives. This score is an index, scored on 100-point scale, comprising the following eight indicators: medicine quality; patients’ experience; growth in number of patients; budget balance; human resource development; innovation; patients’ care activities; and district evaluation. Team-relationship satisfaction will be measured using a scale based on items from the Quality of Work Life questionnaire (<https://www.cdc.gov/niosh/topics/stress/qwlquest.html>), validated for Hebrew by Clalit’s research department. This scale comprises five items and is measured on a six-point Likert-type scale (1=“not at all”, 6=“very much”; α=0.83) (sample item: “The functions in our unit are well cooperate”).

#### C2.1.4 Control variables

We will control for profession, team tenure, clinic size, and geographic district.

#### C2.1.5 Analytic strategy

To test our research model, we will utilize mediated/moderated polynomial regression and response surface modeling (Edwards, 2002; Zhang et al., 2012) using the SAS 9.4 MIXED procedure and Mplus software.

To test *H1*, both team performance and satisfaction will regressed on five polynomial terms: formed leadership structure; team-level LSS; their squares; and their multiplication product. *H2* will be tested by entering the LSS diversity as an additional factor in the equation (three-way interaction). *H3a* and *H4a* will be tested in a similar procedure to *H1*, with relationship conflict and elaboration of task-relevant information as dependent variables. To test *H3b* and *H4b*, we will use the Monte Carlo method (Preacher & Selig, 2012) to assess the mediating effect of the elaboration of task-relevant information and relationship conflict on the relationship between the joint effect of the formed leadership structure and team-level LSS, both on team performance and satisfaction, for different levels of LSS diversity.

### C2.2. Experimental study

In healthcare organizations, teams may exist in which interactions between members may impact the relations between factors. In order to explore causal relationships in our model, we will conduct a laboratory experiment.

#### C2.2.1 Participants

Data will be collected from 480 undergraduate students, who will be recruited through an online recruiting system operated routinely by the Ben -Gurion University of the Negev. Each subject will receive 40 NIS (approximately 12 US$) for participating in a 45-minute laboratory experiment.

#### C2.2.2 Procedure

Three days before arrival at the laboratory, participants will first complete a survey to assess their LSS (this will be sent by organizational e-mail, using Qualtrics software). Based on their LSS score (above or below the median LSS score), participants will be divided to two different types of four-person teams, all with low LSS diversity: (1) teams in which all participants possess hierarchical LSS; and (2) teams in which all participants possess shared LSS (random allocation to specific teams). Each team will be randomly assigned to one of two conditions (participants will be informed at the beginning of team task): (1) hierarchical leadership structure (only one member will be defined, randomly, as the team leader; or (2) shared leadership (all members will be notified that they need to lead the team in shared form). Hence, the design of this study will include four treatment conditions: 2 (hierarchical/shared LSS) × 2 (hierarchical/shared leadership structure). In each condition, we will collect data from 30 teams (120 participants, four members in each team).

In the laboratory, teams will work on a 30-minute team task, in which the entire team needs to solve a serious of creative and analytic problems (Miron-Spektor et al., 2011). At the end of task, each team member will complete (separately) a survey that include scales for relationship conflict, elaboration of task-relevant information, satisfaction with team relationships, and demographics.

We anticipate that the teams that are congruent in their LSS and leadership structure (hierarchical LSS/hierarchical structure; shared LSS/shared structure) will demonstrate higher scores than those under incongruence conditions (hierarchical LSS/shared structure; shared LSS/hierarchical structure) for elaboration, team satisfaction, and team performance, and lower scores for relationship conflict.

#### C2.2.3 Measures

LSS, relationship conflict, and elaboration of task-relevant information will be measured as in the field study (with minor modifications for the experimental context). Satisfaction will be measured using the Satisfaction with Team Relationships scale (Wageman et al., 2005), comprising three items, and measured using a seven-point Likert-type scale (1=“not at all”, 7=“very much”; α=0.76) (sample item: “I very much enjoyed talking and working with my teammates”). The team-performance score will be calculated based both on the proportion of correct answers to total answers (Miron-Spektor et al., 2011) and on the number of correct answers.

#### C2.2.4 Analytic strategy

Data will be analyzed using analysis of variance (ANOVA) with post-hoc Tukey test.

## C3 Preliminary results

We have already conducted two preliminary studies, detailed in the following sub-sections.

### C3.1 Semi-structured-interview study

We conducted 28 semi-structured interviews (about 60 minutes each), with the 16 members of four community-clinic SMTs, and with an additional 12 SMT members from several other clinics. The goal of these interviews was to gain initial insights regarding two aspects related to our study: a) to explore whether leadership structures vary between SMTs; and b) to explore whether managers from different functions are perceived as leaders. These interviews indicated that informal leadership structures differed among SMTs. Referring to the four SMTs from which all members were interviewed, members reported in one team a single-leader structure (only one member perceived as leader by the other members), in two teams a two-leader structure, and in one team an equally shared leadership structure, with all members similarly perceived as leaders. The agreement between members regarding leadership perception was high in all these teams. It also appears that managers from different functions were perceived as leaders in both centralized and decentralized leadership structural forms. These results support the existence of diversity, both in team-leadership structures and in the perception of managers from different functions as leaders, allowing us to test our research models in this context.

#### C3.2.1 Technical pilot study

In order to test both the field-study design and the measurements, as well as the preliminary procedure, we conducted a small pilot study in eight Clalit community-clinic SMTs. Phase 1 and Phase 2 were tested with a three-week interval between them. The initial sample included 28 available participants, 19 of whom responded to all parts of the questionnaire (68% response rate). At the end of each phase, we asked the participants to provide feedback both on the data-collection procedure and the scales, and subsequently used these insights to modify our design and to improve the instructions. Although the sample is too small for statistical inference, we found some diversity in LSS within teams (range 0.40–1.60), indicating that the LSS of these team members was not identical. Additionally, we found that physicians and nurses in these teams were perceived similarly as leaders (5.98 and 5.88 on average, respectively), indicating that profession may not be the main criterion in the perception of leadership.

## C4 Research conditions and ethical issues

A doctoral student with research experience in healthcare systems will be the research coordinator of this study. A master's degree student will serve as an assistant research coordinator, and one undergraduate student will provide administrative and research support throughout the studies. Collected data will be stored on local computers and will be analyzed using statistical software (SPSS, SAS, AMOS, Mplus), which is available for purchase through Ben-Gurion University (BGU). For the experimental study, we will use the behavioral-laboratory facilities in BGU. We will also use the advisory services of the statistical lab at the Technion for the advanced statistical methods that are required for our model analyses (field study). The PI is experienced both in conducting leadership studies in large organizations, in student projects, and in quantitative methods required for this study (e.g. Lisak et al., 2016; Lisak & Erez, 2015). The CEO of Clalit has approved the field study (see Appendix 1). The organization will adhere to all required research ethics rules, as will be determined by the PI. Additionally, a focal employee from the HRM department will assist us with all administrative requests. The BGU Institutional Review Board Committee has approved the study (see Appendix 2).

## C5 Possible pitfalls

Our main study is a longitudinal field study. The main potential pitfall when conducting such a study is the withdrawal of participants. We believe that our research activities before collecting data (pilot study, preliminary participant-recruitment procedure) and during data collection (ongoing tracking and reminders during data-collection phases, 5–10-minute response time in each phase, lottery incentives), along with the expected support from Clalit, will significantly reduce withdrawal. Moreover, the initial sample of SMTs and, consequently, the number of participating team members is large. Meaningful results can be gained even if some participants and SMTs withdraw during the study.