Agile versus Lean: Differences and Similarities between Team Member's Verbal Behavior

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ABSTRACT,

Organizations are continuously looking for ways to create sustainable competitive advantage. The *agile* and *lean* approach are two management approaches that aim for such an advantage. Although these two approaches have the common goal to improve an organization's performance and effectiveness, there are many different views on the actual differences and similarities between them. In addition, works on these differences and similarities are largely limited to theory only, rather than taking into account the key element for the sustainability of agile and lean: behavior. Therefore, this research investigated the differences and similarities of team member's verbal behavior during regular agile and lean team meetings. The three different types of behavior that were taken into account are: *delegating* (task-oriented), *giving positive feedback* (relations-oriented) and *asking for ideas* (change-oriented). Within multiple organizations that have adopted either the agile or lean management approach, several regular meetings were video-taped and coded. Data was collected on $N = 23$ agile meetings and $N = 32$ lean meetings. A mixed-method approach was adopted. The quantitative analysis showed that lean team members showed all three behavior types more frequently than agile team members. In terms of duration, no significant difference was found. The qualitative findings revealed that behaviors in the agile teams were more multifaceted and extensive, whereas lean team members' behavior was displayed in a very direct, one-sided way. Despite their differences, both agile and lean teams aimed to enhance team cohesion and performance through personal stimulation and making use of the word '*we*'. From a theoretical perspective, these findings extend current works on agile and lean management by exploring observable verbal behavior rather than focusing on theory. Practically, by better knowing agile and lean's differences and similarities, these findings can help managers to choose the approach that fits their business environment and employees best.

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Keywords

Agile management, asking for ideas, delegation, giving positive feedback, lean management, verbal team member behavior

1. INTRODUCTION

Today, we are living in a fast-changing world with an extremely dynamic business environment. Because of this, organizations are constantly looking for ways to create sustainable competitive advantages and methods to enhance their continuous improvement (Browaeys & Fisser, 2012). The available methods and concepts are endless, but two well-known approaches are the agile and lean management approach (Powell & Strandhagen, 2012).

An increased number of scholars started advancing the idea that these two approaches overlap to a certain extent (Hallgren & Olhager, 2009; Naylor, Naim & Berry, 1999). An even more radical strand of scholars suggested that these approaches could be combined into a *leagile* approach (Aitken, Christopher & Towill, 2002; Duman, Topgül & Avni, 2015; Goldsby, Griffis & Roath, 2006; Naylor et al., 1999). Although there are certain differences, some concepts are the same, including: 5S, continuous improvement, setup time reduction and waste elimination (Hallgren et al., 2009). In addition, both approaches have the common goal to improve an organization's performance and effectiveness, in which teamwork plays a vital role (Browaeys et al., 2012). This thesis aims to further explore the differences and similarities in verbal behavior between agile and lean team members.

Since agile is a rather new and upcoming approach, the available studies are limited. A comparison between the agile and lean approach is thus challenging as there is hardly any literature available to explore it. Furthermore, when research on this topic is available, it is mostly of theoretical nature rather than based on empirical findings. In addition, in organizational behavior literature, studies on behavior within the lean approach have mainly focused on the leader's behavior (e.g. Tortorella, Fetterman, Anzanello & Shawhney, 2017; Gelei, A., Losonci, D. & Matyusz, Z., 2015), largely neglecting behavior of regular team members.

Exploring the differences and similarities in verbal behavior of the team members within both approaches can contribute to a deeper understanding of verbal behavior. This can eventually lead to better team performance as it extends current knowledge on team dynamics. As for practical implications, this will be particularly useful for managers who are planning to introduce either one of the two approaches, or even a combination of the two. Learning more about the approaches at a behavioral level will help them to make a thoughtful choice of the best approach within their specific (business) environment.

This research thus aims to explore the differences and similarities in verbal behavior of agile and lean team members. This specific topic and the structure of this thesis stems from the work by Van Dun, Hicks and Wilderom (2017). Within the work of Van Dun et al. (2017), effective values and behaviors in lean management have been explored. This research was based on a codebook, of which the newest version will also be used for this thesis: the CMOB Verbal Behaviour Codebook (Wilderom et al., 2020). This codebook provides an extensive, structured explanation for effective observations and the coding of video-taped meetings. This method will be further explained in the methodological chapter. The combination of the work of Van Dun et al. (2017) and the CMOB Verbal Behaviour Codebook (2020) offered the possibility to compare behavioral categories that are task-, relations- and change-oriented. Taking into account all three orientations was considered as most interesting, simply because it offers the broadest overview of displayed verbal behavior. Following Van Dun et al. (2017), this thesis thus takes into account all three orientations: on a task-oriented level, this research focused on *delegating* behavior, whereas, on a relations-oriented level, the focus was on the behavior type *giving positive feedback*. Lastly, change-oriented behavior was studied by looking at *asking for ideas* behavior. All factors stated above have led to the following research question:

What are the differences and similarities in verbal behavior (i.e. delegating, giving positive feedback *and* asking for ideas*) between agile and lean team members during their regular team meetings?*

Since this question takes into account three separate behavior types, this research question can be separated into three sub-questions that also present the structure of this thesis:

1. What are the differences and similarities in verbal delegating *behavior between agile and lean team members during their regular team meetings?*

2. What are the differences and similarities in verbal giving positive feedback *behavior between agile and lean team members during their regular team meetings?*

3. What are the differences and similarities in verbal asking for ideas *behavior between agile and lean team members during their regular team meetings?*

The sub-questions will be leading throughout the structure of this thesis, after which the overall results will provide an answer to the main research question. In the following chapters, the theoretical framework and methodology are presented. Then, the results are reported, followed by a discussion of the gained insights. This thesis will end with the limitations of the research, recommendations for future research and an overall conclusion.

2. THEORETICAL FRAMEWORK

The literature that was explored to conduct this research is a combination of papers on agile management, lean management, their differences and employee behavior within the two approaches. First, the two concepts are briefly introduced and defined. Then, the behavioral framework that has been used will be further explained. Lastly, the three chosen behavior types will be compared between the two approaches.

2.1 Agile and Lean Management

2.1.1 Agile

Since the agile approach is able to quickly respond to changes in the environment (e.g. fluctuating market conditions and the emergence of new technologies (Hoda & Murugesan, 2016)), this approach is mostly adopted in a volatile business environment. Albeit being around and being discussed in several papers since the early 90s (Measy, 2015), the term *agile* was firstly named and defined in the 'Agile Manifesto for Software Development' by Fowler and Highsmith in 2001 (Measy, 2015). Since that time, the approach has been developed into what agile is now. Although the manifesto's name suggests that this approach is mainly used for software development only, it can be implemented in many different sectors (Measy, 2015). In the manifesto, Fowler and Highsmith (2001) stated that "facilitating change is more effective than attempting to prevent it" (p. 28) and as an addition to describe the agile approach, they came up with four agile statements (Fowler et al., 2001):

1. Individuals and interactions *over* processes and tools
2. Working software *over* comprehensive documentation
3. Customer collaboration *over* contract negotiation
4. Responding to change *over* following a plan

In line with these statements, agile teams are self-managing teams, meaning that there is a high level of autonomy for its members (Hoda, Noble & Marshall, 2013). Autonomy is defined by Moe, Dingsøyr and Kvangardsnes (2009) as "the degree to which the task provides substantial freedom, independence, and

discretion in scheduling the work and in determining the procedures to be used in carrying it out" (p. 2). Works have shown that autonomous teams have a positive influence on an individual's involvement and participation, not only with their teams but also with the organization as a whole (Moe et al., 2009). This eventually leads to more commitment, motivation and responsibility (Moe et al., 2009). To aim for the best results, these teams should be self-organizing, use face-to-face communication rather than documentation, and regularly reflect on how to become more effective and act upon that (Fowler et al., 2001).

The role of an agile team is usually first to decide the way in which the work is done. When the team has been given a project, it is assigned to the team as a whole, rather than it being assigned to one single individual (Tessem, 2014). In other words, the agile team members are thus liable for their own project and are therewith also responsible for how the project tasks are delegated among the individuals within the team (Agarwal, Maruping & Venkatesh, 2009). When the work is established for the team, the work will be broken down into smaller tasks. These smaller tasks are then distributed among and/or delegated to team members. Task distribution commonly takes place during the first so-called *sprint* planning. In agile management, a sprint is a short development cycle, also known as an iteration (Albero, Calvo-Manzano, Caballero & Arcilla-Cobián, 2014). These tasks are then listed on the backlog, which will usually be updated every sprint. Team members actively pull the tasks from the backlog and herewith distribute/delegate them among themselves, rather than the tasks being delegated to individuals by a leader (Stettina & Hörz, 2015). Next, the duration of the sprints is estimated, so that all team members know the time period in which tasks must be completed. This is followed by a discussion on which person performs what task. The final role of the agile project team is to deliver the product to the customer (Measy, 2015).

Typically, an agile team is cross-functional (Pinto, Pinto & Prescott, 1993) and made up of several specialists that each have their own knowledge field and their own types of tasks (Measy, 2015). This allows for and results in shared leadership, wherein teams (and organizations as a whole) need to change from command-and-control management to leadership-and-collaboration (Moe et al., 2009). In this sense, leadership is a collective process that switches from member to member rather than being centralized within one individual (Moe et al., 2009). The decision authority alternates: the individual who possesses the most knowledge and skills for any occurring issue gets the authority to make decisions and thus lead the team through the situation (Moe et al., 2009). From here, it is logical that cross-functional teams exist, because it is highly impossible that an individual possesses all the knowledge that is needed to successfully complete a project (Scott-Young, Georgy & Grisinger, 2019).

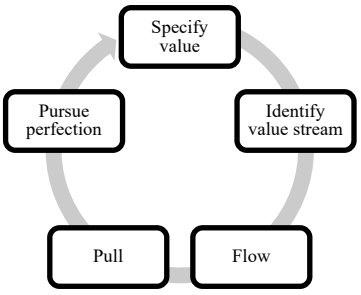
To conclude, agile is typically known for being able to quickly respond to changes in the environment, its autonomous and cross-functional teams, its sprints and its shared leadership.

2.1.2 Lean

The lean management approach stems from the Toyota Production System (TPS), developed by Toyota Motor Corporation between 1948 and 1975 (Black, 2007). The TPS principles uncovered that only a small amount of effort and time originally put into production actually created value for the end customer (Melton, 2005). Consequently, Toyota started producing cars on the basis of customer demand, and therewith stopped mass production of highly standardized products (Melton, 2005). Since then, TPS has been further developed into lean as it is now, and this approach is most commonly used in environments where the demand is relatively stable (Browaeys et al., 2012).

In this research, lean management is defined as an approach to management that aims at maximizing customer value by eliminating waste while building upon employee's ideas for improvement (Shah & Ward, 2003). More specifically, Womack and Jones (1996) provided five key lean principles (Figure 1). These principles explain that value is first specified by the ultimate customer, after which all actions that have to be taken in order to create this value have to be identified. Then, these steps must flow, and herein waste must be eliminated. After that, the customer must pull the product from you. This process must be constantly perfected and therefore, it is seen as a continuous process improvement principle, being essential to lean management (Holtskog, 2013).

Figure 1. The ongoing process of lean principles



Lean initially became popular in the manufacturing industry. However, nowadays, more and more industries are embracing the approach (Danese, Manfè & Romano, 2018), particularly because its 'doing more with less' approach is very helpful in the current business environment where companies are getting back on track after the 'Great Recession' (Van Dun et al., 2017).

While agile teams lack the presence of a leader, the early descriptions of the TPS already explained the crucial importance of leadership (Monden, 1998) and identified leaders as essential to lean teams (Dombrowski & Mielke, 2013). More specifically, having a team leader that is able to support and empower his/her members is seen as crucial for a successful lean team (Carroll, 2001). Especially within the implementation of lean, commitment of leaders is very important, as this commitment contributes to motivating others. The role of a lean team leader is to decide upon the team's strategy and to help team members to acquire and further develop their skills (Liker & Convis, 2012).

Although having a leader, it is supported that lean organization are often flatter than traditional organizations (Alavi, 2003). Like agile management, Toyota/lean stepped away from command-and-control, switching to an approach where control is local (Seddon, 2005). Albeit having a leader, control within lean is used where the work is done (Seddon, 2005). This organizational structure, containing multi-skilled employees, is constructed to be able to identify factors that could contribute to gaining sustainable competitive advantages (Alavi, 2003).

In conclusion, lean is typically known for being commonly used in relatively stable business environments, having a centralized leader, having a flatter organizational structure than traditional organizations and having multi-skilled employees.

2.2 Behavior in Regular Team Meetings

Within this thesis, the focus is on verbal behavior, following the behavioral codes provided in the CMOB Verbal Behaviour Codebook (Wilderom et al., 2020). However, to fully grasp the results of this research, it is important to provide a clear definition

as to what is understood by the concept of verbal behavior. Among behavior analysts, B. F. Skinner's definition is the most well-known (Leigland, 1997). In his book *Verbal Behavior*, Skinner (1957) firstly defined verbal behavior as "behavior reinforced through the mediation of other persons" (p. 2). Later on, he clarifies and rewrites his first definition as "behavior reinforced through the mediation of other persons who must be responding in ways which have been conditioned precisely in order to reinforce the behavior of the speaker" (p. 225). However, since the book received lots of criticism and this definition is seen as incomplete and unclear according to many analysts (Passos, 2012), it was decided to use the work of Van Dun et al. (2017) in providing a workable definition. Van Dun et al. (2017, p. 175) defines (leader) behavior as 'specific observable verbal and nonverbal actions of managers "in interaction with their followers in an organizational setting"' (Szabo, Reber, Weibler, Brodbeck & Wunderer, 2001, p. 225). Nonetheless, this definition is limited to leaders/managers and is focused on both verbal and non-verbal behavior. Therefore, for this thesis, this definition is rewritten as: *specific observable verbal actions of team members / individuals "in interaction with other team members in an organizational setting"* (based on Szabo et al., 2001, p. 225 and Van Dun et al., 2017, p. 175). In this way, the focus of the research lies specifically on verbal behavior and on team members in agile and lean workplaces.

Behavior of effective lean managers was studied by Van Dun et al. (2017), based on Yukl, Gordon and Taber's (2002) seminal behavioral taxonomy. Yukl et al. (2002) defined three meta categories in the primary objective of behavior: task, relations and change. Firstly, task behavior is identified as "high efficiency in the use of resources and personnel, and high reliability of operations, products and services" (Yukl et al., 2002, p. 17). Secondly, relations behavior includes "strong commitment to the unit and its mission, and a high level of mutual trust and cooperation among members" (Yukl et al., 2002, p. 17). Lastly, change behavior includes major innovative improvements (in processes, products, or services), and adaptation to external changes" (Yukl et al., 2002, p. 17). Although Yukl et al.'s (2002) seminal behavioral taxonomy is limited to leadership, it has been found useful to use this taxonomy also for agile team members within this thesis. Indeed, within agile teams, every team member can be considered as a 'leader' (Moe et al., 2009). This is in line with the concept of shared leadership, according to which team responsibilities are evenly distributed across team members, so that there is influence and engagement in activities among all members of a team (Yukl, 1989). For this reason, the taxonomy could be extended to team members of agile teams. Additionally, given the fact that the goal of this thesis is a clear comparison between agile and lean management, Yukl et al.'s (2002) taxonomy has also been applied to study team member's behavior in lean.

2.3 Typical Behaviors in Agile and Lean

From each of the three meta categories (Yukl et al., 2002), one specific behavior component has been selected for analysis: *delegating* (task-oriented), *giving positive feedback* (relations-oriented) and *asking for ideas* (change-oriented). Within the following sub-sections, a comparison between lean and agile behavior will be drawn, leading to corresponding hypotheses. Two hypotheses per behavior type will be tested, as both *frequency* (hypotheses indicated with H_{xF}) and *duration* (hypotheses indicated with H_{xD}) will be analyzed.

2.3.1 Delegating

Tasks within agile teams are distributed among team members from the backlog within each sprint, rather than assigned to individuals by a leader (Stettina et al., 2015). Looking at *delegating* behavior and addressing the research question, it can thus be argued that there is a tendency to rely on individual *delegating* behavior within an agile team.

Within lean management, it was discovered that leaders are often selected on the basis of a set of skills, of which *delegation* is one (Liker & Meier, 2006). However, this thesis aims at adding clarification to the verbal behavior of non-leaders, rather than leaders. Therefore, since lean teams are led by leaders who delegate the tasks, it is expected that *delegating* behavior among the non-leading team members is minimal.

To see whether lean team members indeed show less *delegating* behavior, the two following (alternative) hypotheses have been tested:

> **H_{1F}:** Lean team members show less *delegating* behavior than agile team members during regular team meetings in terms of frequency.
>
> **H_{1D}:** Lean team members show less *delegating* behavior than agile team members during regular team meetings in terms of duration.

2.3.2 Giving positive feedback

Looking further into *giving positive feedback* behavior in agile teams, it is important to know that providing feedback and subtle direction in autonomous teams is of great importance (Hoda, Noble & Marshall, 2010). This has been supported by Moe et al. (2009), who stated that feedback is an important factor in achieving overall team effectiveness. Therefore, feedback is considered to be of great essence within autonomous teams and it can thus be expected that *giving positive feedback* behavior will thus be regularly observable among agile team members.

Within lean teams, researchers found that team performance is positively affected by giving and seeking feedback (Van Dun & Wilderom, 2012). More specifically, following Herzberg's job enrichment theories, Liker (2004) states that lean team members need feedback on their performance when doing their work. This statement seems to assume that team members get feedback by their team leaders, which can possibly lead into regular lean team members showing a minimal amount of *giving positive feedback* behavior.

To see whether lean team members indeed show less *giving positive feedback* behavior, the two following (alternative) hypotheses have been tested:

> **H_{2F}:** Lean team members show less *giving positive feedback* behavior than agile team members during regular team meetings in terms of frequency.
>
> **H_{2D}:** Lean team members show less *giving positive feedback* behavior than agile team members during regular team meetings in terms of duration.

2.3.3 Asking for ideas

Lastly, *asking for ideas* behavior has been taken into account. Agile teams typically collaborate intensively, and works have shown that agile teams with good communication are able to operate on a higher level, having good and effective brainstorming and problem-solving sessions (Cockburn & Highsmith, 2001). Because of this, it is assumed that *asking for ideas* will be observed regularly.

As for lean teams, to keep improving on lean practices and thus on customer value, worker ideas are regularly implemented (Van Dun & Wilderom, 2016). In a case study by Losonci, Demeter and Jenei (2011), it was seen that, when implementing lean, employees were more active in creating new ideas when they could really contribute to the success of lean manufacturing. This commitment was partly achieved by letting managers

continuously ask the worker's opinion about certain ideas and also by *asking for ideas*. However, *asking for ideas* is highly dependent on the values of lean team leaders, and it is stated that lean practices within a company can be improved by having employees voicing their ideas (Van Dun et al., 2016). Nonetheless, it might be necessary for lean team leaders to first set this example (Van Dun et al., 2016), in which *asking for ideas* might be necessary as well. This suggests that *asking for ideas* is thus mostly done by lean team leaders, rather than team members themselves, which proposes that regular lean team members will not frequently show *asking for ideas* behavior.

To see whether lean team members indeed show less *asking for ideas* behavior, the two following (alternative) hypotheses have been tested:

> **H_{3F}:** Lean team members show less *asking for ideas* behavior than agile team members during regular team meetings in terms of frequency.
>
> **H_{3D}:** Lean team members show less *asking for ideas* behavior than agile team members during regular team meetings in terms of duration.

3. METHODOLOGY

The research was conducted through coding video observations of both regular agile and lean team meetings, focusing on individual team members and basing the results (i.e. similarities and differences) on a mix of both the quantitative and the qualitative research method. Combining these methods into a mixed-method approach helped to provide more robust and clearer answers to the research question leading this thesis. The adoption of mixed methods allowed increasing the reliability of the research findings through a triangulation of the different results (Fetters, Curry, & Creswell, 2013).

3.1 Sample and Data

The sample is twofold. The agile organization that participated in this research is a large financial organization located in the Netherlands. This organization has been working according to the agile approach since 2015 and employees are divided among several self-managed teams (called *squads*) consisting of five to ten team members. All squads have a fair distribution of skills, knowledge, nationality, experience etc. These squads work according to sprints in which three specific meetings take place: *planning*, *refinement* and *retrospective*. The coding results stem from 2019 and 2020 and the three meetings types were taken together to get the broadest result with the most data. Later, the results also have been taken separately to see whether other patterns occurred. In total, 23 regular agile meetings have been observed. A more extensive sample descriptive can be found in the "*Results*" chapter.

Secondly, the lean data used in this research stems from multiple organizations that are active in various sectors. Five already previously coded teams were assessed: the meetings of these teams were observed and coded twice: in 2010 and 2012. In addition, another group of 7 teams were observed and coded more recently in 2019 and 2020. Since this thesis' aim is to look at regular team members only, team leader behavior has been left out of the analyses. This was done to get the closest comparison with agile teams, since they do not have an established team leader. The lean meetings recorded were all regular scheduled meetings, resulting in a total of 32 meetings. A more extensive sample descriptive can be found in the "*Results*" chapter.

The video tapes that were coded and used were thus already previously recorded by the Faculty of Behavioural, Management and Social Sciences (*BMS*) at the University of Twente in the years 2010, 2012, 2019 and 2020. This secondary data represents the main source for this thesis. Since video tapes can be watched multiple times, they can easily be reproduced when coding behavior (Haidet, Tate, Divirgilio-Thomas, Kolanowski & Happ, 2009). Since videos were shot from multiple angles, contextual data is secured. All individuals' verbal behavior performed in the video tapes were minutely coded using the 23 codes as explained in the CMOB Verbal Behavior Codebook (Wilderom et al., 2020). The three codes that gained specific attention were *delegating* (task-oriented), *giving positive feedback* (relation-oriented) and *asking for ideas* (change-oriented), and these were based on relevant literature (Van Dun et al., 2017; Wilderom et al., 2020; Yukl et al., 2002) (Table 1). Within the CMOB Verbal Behaviour Codebook (Wilderom et al., 2020), a definition is provided for each of the behaviors, supplemented with an example. Delegating is defined as '*delegating tasks*', giving positive feedback is defined as '*positive rewards*', '*evaluate or reward team member's behaviour positively*' and '*giving compliments, for example about completed tasks*', and asking for ideas as '*asking for ideas*', '*stimulating team members to think*' and '*stimulating team member development*'. These definitions allow for a clear identification of an individual's (verbal) behavior, which is why it has been adopted in this thesis.

Table 1. Specific behaviors and their category

Wilderom et al., 2020		Van Dun et al., 2017; Yukl et al., 2002	
Behavior	Category	Behavior	Category
Delegating (*Governing*)	Steering	Delegating	Task-oriented
Giving positive feedback	Supporting	Providing positive feedback	Relations-oriented
Asking for ideas (*Professional challenging*)	Supporting	Asking for ideas	Change-oriented

3.2 Quantitative Data

The quantitative part of this research represents the main part of this thesis; quantitative research aims to evaluate relationships between variables, giving statistical and empirical values to the *corpus* of data under examination (Saunders, Thornhill & Lewis, 2009). This research allowed for reaching statistical inferences and conclusions based on the sample that has been analyzed.

The appearance of verbal behavior among individual team members were compared with one another. As suggested in the theoretical framework, both *frequency* and *duration* of shown behavior has been tested. First, the *frequency* of verbal behavior has been counted for each individual to get an answer to how often the three types of behavior are shown. This number of occurrences is thus counted in numbers. However, it appeared that, for example, *delegating* is done multiple times, but that the duration of this behavior only lasts for a very short amount of time. Therefore, the *duration* of performed verbal behavior has been taken into account as well, which offered the chance to analyze the differences and similarities between the frequency and durations as well. This duration was counted in seconds for each of the three behavior types.

So, two different types of numerical data were collected: frequency and duration. However, since every meeting is different in terms of both the overall number of behaviors occurring in the meeting and the number of specific behaviors, e.g. *delegating*, the data has been standardized. Hence, to control for the fact that one meeting could have had more (or less) overall and specific behaviors than another meeting, the *frequency* has been standardized by dividing the frequencies of the types of behavior this thesis focuses on, by the total number of behaviors shown within the meeting (excluding behavior shown by team

leaders). Similarly, to account for the fact that one meeting could have been longer (or shorter) than other meetings, the *duration* of shown behavior has been standardized by dividing the durations of the three specific behaviors by the total duration of the meeting.

The differences in duration and frequency within *delegating*, *giving positive feedback* and *asking for ideas* behavior were tested by conducting an independent t-test. The t-test compares the difference in means (Saunders et al., 2009) and was used to test the hypothesized difference in occurrence of verbal behavior between agile and lean team members during their regular meetings. The significance level (p) that has been primarily used during testing is $p = 0.05$. However, a marginal approach using $p = 0.1$ has also been taken into account.

The agile organization in the sample works with three different meeting types: *planning*, *refinement* and *retrospective*. As the goal of these three meetings are different, the behavior types shown within these meetings might also differ. Therefore, after the general quantitative analysis, this thesis also shortly reflected on the differences within these meetings. The *planning*, *refinement* and *retrospective* meetings have been taken separately to compare them to lean meetings. Independent t-tests were also conducted among these three separate samples.

3.3 Qualitative Data

After the quantitative investigation, a shorter qualitative analysis was conducted; qualitative research (i.e. video coding and generally comparing behavior) is based on meanings that are expressed through words (Saunders et al., 2009) and allowed for an in-depth understanding of verbal behavior through video observations. Qualitative analysis helps with elaborating on the situations in which the three verbal behaviors occurred, so: *how* member's behavior differs or overlaps and further looking into the context of this difference (Saunders et al., 2009). This was done through thematic analysis, broadly following Braun and Clarke's (2006) six steps. In their seminal article, thematic analysis is defined as "a method for identifying, analysing and reporting patterns (themes) within data" (Braun et al., 2006, p. 79). One of the advantages of thematic analysis is that it can identify both differences and similarities within the data (Braun et al., 2006), which fits the purpose of this thesis entirely. Braun and Clarke's (2006, p. 87) six steps consist of:

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report

By first looking at the video recordings, all moments in which *delegating*, *giving positive feedback* and *asking for ideas* behavior occurred were noted down. These occurrences were tracked within the meeting transcripts and so a list was created with all situations/sentences in which these behaviors were shown. These sentences were studied intensively and then deductively coded, since these quotes were already linked to certain types (themes) of behavior. Hereafter, themes were checked and reviewed, as they were previously defined and named. Finally, the conclusion was written down. Some examples are reported in Appendix 5 to illustrate the extent to which there were differences and similarities.

4. RESULTS

This section starts by presenting the descriptive statistics of the sample. Then, the results of the aforementioned quantitative and qualitative analyses are shown and explained. For the quantitative analysis, the results will be discussed per behavior; first on *frequency*, then on *duration.* The results of taking the three different agile meeting types separately will also be presented. Finally, this analysis will be supplemented by the qualitative findings.

4.1 Descriptive Statistics

Descriptive statistics of the full sample were generated in order to see the differences and overlaps between the agile and lean sample. These statistics contain the average age of the sample, the gender and the educational level of the participants, as well as information on the effectiveness and duration of the meetings that were used.

4.1.1 Agile

The agile sample consisted of 23 meetings and 67 individuals. However, not all individuals were unique. The average age of these individuals was 39, ranging from 22 to 65 years old. Of this sample, 79.4% consisted of male participants and thus 20.6% was female. Only one participant had an educational degree that was lower than a University of Applied Sciences bachelor's degree. 64.4% of the participants obtained a degree that was either a University bachelor, University master or PhD. Overall, team members on average 'slightly agreed' or 'agreed' to the statement stating that their meeting was effective.

The total duration of all agile videotaped meetings in this research was 1190 minutes and 56 seconds. The shortest meeting was 20 minutes and 25 seconds, the longest meeting was 102 minutes. On average, the meetings took 51 minutes and 47 seconds, with a standard deviation of 20 minutes and 20 seconds.

4.1.2 Lean

For the lean sample, 32 meetings have been used. The average age of these participants was 44, ranging from 36 to 53 years old. Within this sample, 60.3% consisted of male participants, and thus 39.7% was female. Only one lean participant obtained a University degree, the others ranged widely from secondary education to a University of Applied Sciences degree. Looking at the lean teams from 2010 and 2012, 4 teams experienced a growth in their KPI's, whereas 6 teams were neutral or even declined.

The total duration of all lean meetings that have been taken into account is 210 minutes and 16 seconds. The shortest meeting was only 3 seconds, whereas the longest meeting was 39 minutes and 7 seconds. On average, the meetings took only 5 minutes and 41 seconds, with a standard deviation of 8 minutes and 41 seconds.

4.2 Quantitative Results

In this chapter, all quantitative results are reported. These results will be interpreted later in the discussion. All results together can be found in Appendix 1. The results of taking *planning*, *refinement* and *retrospective* meetings separately can be found in Appendix 2, 3 and 4, respectively.

4.2.1 Delegating

The t-test for *delegating* frequency showed a significance level of 0.039. Therefore, the null hypothesis could be rejected in favor of the hypothesis stated earlier. This means that a significant difference has been found in the means of the frequency of *delegating* behavior between agile and lean meetings. In terms of frequency, looking at the mean, lean team members show this type of behavior more often than agile team members.

The t-test for *delegating* duration showed a significance level of 0.115. Therefore, the null hypothesis cannot be rejected. A significant difference has thus not been found in the means of the duration of *delegating* behavior between agile and lean meetings.

Looking at the three agile meeting types separately, a marginal significant difference was found in terms of *frequency* within the

refinement and *retrospective* meetings (0.079 and 0.056, respectively). Thus, in those meetings, agile team members showed slightly fewer *delegating* behavior than lean team members during their meetings.

4.2.2 Giving positive feedback

The t-test for *giving positive feedback* frequency resulted in a significance level of 0.068. The null hypothesis thus cannot be rejected, meaning that no significant difference has been found in the means of the frequency of *giving positive feedback* between agile and lean meetings. However, if a more lenient approach is considered, meaning that a marginal significant alpha level of 0.1 is used, this result ends up being significant ($p < 0.1$). This results in the conclusion that lean team members show this type of behavior more often than agile team members.

The t-test for *giving positive feedback* duration showed a significance level of 0.617. There is thus not enough evidence to reject the null hypothesis. No clear significant difference was found in the means of the duration of the behavior *giving positive feedback* between agile and lean meetings.

A marginal significant difference was found in terms of *duration* in *retrospective* meetings when looking at the agile meeting types separately (0.070). During these meetings, agile team members showed significantly longer *giving positive feedback* behavior than lean team members.

4.2.3 Asking for ideas

The t-test for *asking for ideas* frequency showed a significance level of 0.002. It can thus be concluded that not enough evidence has been found to reject the null hypothesis. A significant difference was found in the means of the frequency of the behavior *asking for ideas* between agile and lean meetings. In terms of frequency, looking at the mean, lean team members show this type of behavior more often than agile team members.

The t-test for *asking for ideas* duration showed a significance level of 0.767. It can be concluded that not enough evidence was found to reject the null hypothesis. Hence, no significant difference was found in the means of duration of the behavior *asking for ideas* between agile and lean meetings.

Taking into account the three agile meeting types separately, all meeting types showed at least a marginal significant difference in *asking for ideas* behavior in terms of *frequency* (0.100, 0.085 and 0.044, respectively). This suggests that, overall, lean team members show *asking for ideas* behavior more often than agile team members, regardless of the meeting type.

4.3 Qualitative Results

In this section, the findings from the qualitative analysis are reported to support and corroborate the results obtained from the quantitative analysis. For this analysis, a few illustrative quotes have been taken from the transcripts of real meeting situations to clearly show the differences and similarities between agile and lean teams. This section will start with the differences and similarities within *delegating*, *giving positive feedback* and finishing with *asking for ideas*. The actual quotes can all be found in Appendix 5.

4.3.1 Delegating

Starting with agile teams, there was no clear 'one way of delegating'; the quotes that were found within this research showed a balanced mixture of either directly imposing a task on someone or asking it nicely. The direct impositions were delegated in a '*do this, do that*' kind of way, showing that there was clearly no room for discussion or negotiation and that the task had to be done one way or another.

However, looking at the more gently imposed delegations, it can be seen that the 'strict' way of delegating was mitigated by using positive buffers (e.g. "*I would appreciate it if…*"). Within these situations, a task was delegated by proposing it as a question, or taking into account a person's other tasks, or by using words as '*it would be nice*' and '*please*'. In contrast to the more imposing ways of delegating, this showed that there was indeed room for discussion or negotiation. Herein, heartfelt appreciation was often shown too: it was appreciated when a team member assigned him/herself to the delegated task.

Seeing these differences within agile teams, it can be concluded that the way as to *how* a task is delegated clearly depends on the situation. Sometimes a task just had to be done no matter what and sometimes there was room for the team member's own input.

Whereas agile was really a mixture of two kinds of delegation, lean seemed to be mostly showing one-sided and direct ways. When regular team members showed *delegating* behavior, it was clearly done in a '*do this, do that*' kind of way. There was no room for discussion and it just had to be done, no matter the (individual's) circumstances.

Thus, for *delegating* behavior, it can be concluded that to a certain extent there are some overlaps between the agile and lean approaches, but also that they do differ from one another.

4.3.2 Giving positive feedback

Within agile teams and their *giving positive feedback* behavior, the qualitative pattern clearly showed that most of the quotes consisted of positively stated opinions. Of these quotes, the vast majority was related to emphasizing team performance.

Comparing these positively stated opinions from the agile teams with quotes from lean teams, one striking difference emerged. This difference was that almost none of the team members within the lean sample gave extensive positive feedback that related to performance to other team members. This behavior of providing extensive compliments to the team or to individuals (based on performance) was limited to lean leaders only, who are not included and analyzed in this thesis. Although lean team members gave no extensive, elaborated and opinionated feedback, in both agile and lean teams, still team members seemed to positively stimulate each other when one of their colleagues came up with a good question, idea or potential solution. Indeed, even in lean teams, there were some personal compliments, but they were all very short and to the point. When such a question, idea or solution was proposed, this was often positively assessed using short sentences, such as: '*good idea*', '*good point*', and '*that's a good one*'. In addition, within both approaches, team members' actions were often shortly recognized by using words as: '*good*' and '*great*', enhancing team cohesion.

To conclude, within this type of behavior, both differences and similarities were found.

4.3.3 Asking for ideas

Last but not least, quotes from *asking for ideas* behavior were collected. Within agile teams, this behavior type was very much related to either underlying team performance or planning of the sprint. Team members would regularly ask their colleagues for ideas, comments and insights as to how to enhance team performance or the atmosphere within the team.

The other majority of *asking for ideas* quotes were directly related to the planning of the sprint. Often, opinions were offered as to what tasks should be finished within the upcoming sprint or what could be placed on the team's backlog.

Within lean teams, most *asking for ideas* behavior occurred when great emphasis was put on the team as a whole. This was done

by consistently using the word '*we*', wherein each team member was stimulated to think and make suggestions.

In conclusion, it could be said that, on the one hand, the above-mentioned situations clearly differ. On the other hand, there were also some overlaps, especially within the types of *asking for ideas*, since in both cases they were mostly related to creating team feeling: by trying to improve team effectiveness (agile) and making use of the word '*we*' (lean).

4.4 Overview

The results reported in this chapter have been separated by behavior type (i.e. *delegating*, *giving positive feedback* and *asking for ideas*) and by type of research method (i.e. *qualitative* and *quantitative*). However, since the research question seeks to find an answer to the differences and similarities in *verbal behavior* of agile and lean team members in general, these results have to be merged. Therefore, this section will shortly sum up all results combined, in order to get a clearer overview. Interesting to notice is that within every behavior and within both the quantitative and qualitative research, differences as well as similarities have been found.

The main difference discovered in this research has been the frequency of shown behavior: if choosing the more lenient (or marginal) approach, a significant difference has been found within all three behavior types. More specifically, lean team members showed the behavior in all three categories (i.e. task-oriented, relations-oriented and change-oriented) more frequently than agile team members. Another difference was that lean members clearly showed *delegating* and *giving positive feedback* in a more direct, one-sided way than agile team members (e.g. stricter ways of *delegating* and shorter ways of *giving positive feedback*). Indeed, for agile teams, it can be concluded that their behavior was more dialogical and multifaceted in terms of style.

Despite their differences, this research has shown that there were also clear similarities, one of them being that no statistically significant difference was found within the duration of shown behavior, apart from the *retrospective*. Therefore, the duration of these verbal behavior types could be seen as a similarity, since not enough evidence was found to suggest otherwise. A similarity was found in the way in which agile and lean team members show *delegating* and *giving positive feedback* behavior. Although agile team members displayed a more multifaceted approach, both agile and lean team members have shown the stricter way of *delegating* behavior, as well as the short, positive recognition of good ideas coming from their colleagues. The last similarity that has been recognized was the fact that, even if manifested in different ways, both approaches seemed to find ways to enhance team cohesion.

5. DISCUSSION

This thesis studied the differences and similarities of agile and lean team members behaviors using both quantitative and qualitative methods. Three of the six main hypotheses of this thesis have been supported. Taking the meetings separately, six of the eighteen tested sub-hypotheses showed a significant difference. Interestingly enough, when only looking at the means, lean team members showed all three behavior types more frequently, whereas agile team members showed all three behavior types longer (although only being significantly different in the *retrospective*). The qualitative analysis showed clear differences, being the way in which agile and lean teams communicate with one another, and the lack of giving extensive feedback in lean teams. Similarities have also been found, the most striking one being that both teams actively try to enhance team cohesion. In the section below, three main theoretical implications that have been considered as most interesting are highlighted.

5.1 Main Theoretical Implications

5.1.1 Frequency vs. Duration

Looking at the means, it was concluded that lean team members show task-oriented, relations-oriented and change-oriented behaviors more frequently than agile team members. This difference also proved to be statistically significant. However, it is interesting to notice that, in terms of duration, it is the other way around (although only being significant in *retrospective* meetings). In other words, agile team members engage in the researched behavior types longer than lean team members. The results of this thesis thus seem to suggest a different pattern than what assumed within the theoretical framework. This different pattern can be due to the lack of empirical studies on agile and lean management able to support the hypotheses development of this thesis. Indeed, works on verbal behavior within the agile and lean approach are still remarkably scarce and the majority of them are mostly theoretical.

Possible reasons can still be proposed as to why this difference has occurred within this research. Looking back at the literature, having one central leader is essential to lean teams (Dombrowski et al., 2013). A more hierarchical structure is thus in place within the lean approach, in which leaders simply tend to (or have to) take the lead within regular team meetings. This may reduce the time available for other team members to speak their mind and discuss, hence influencing their verbal behavior in terms of duration.

According to the theoretical framework, the agile teams are self-managing, meaning that there is a high level of autonomy (Hoda et al., 2013). Next to that, they are typically cross-functional as well (Pinto et al., 1993) and make up of members that each have their own knowledge field (Measy, 2015). This allows for shared leadership wherein leadership switches from member to member rather than being centralized in only one person (Moe et al., 2009). Therefore, an explanation for the less frequent behaviors considered in this thesis (e.g. *asking for ideas* behavior) could be that in agile, all team members can be seen as a leader. This might cause agile team members not to show a lot of *asking for ideas* behavior because they might feel more confident given the absence of a centralized leader that has 'control' over them. Furthermore, within shared leadership, the roles within agile teams might differ from meeting to meeting (Moe et al., 2009), resulting in the possibility that sometimes the roles might not be completely clear. This confusion could thus lead to some behavior being shown less frequently.

Furthermore, on average, lean meetings in the sample were overall way shorter than agile meetings (05:41 minutes and 51:47 minutes, respectively). Of course, the data has been standardized to limit the influence of differing frequencies and durations per meeting. However, despite this fact, there might just not have been enough time for the regular team members to speak freely in terms of time.

5.1.2 Multifaceted vs. One-Sided

One striking insight that came forward when carrying out this research was the fact that the agile way of showing behavior was multifaceted and more dialogical and extensive, whereas lean team members showed behavior in a very direct, one-sided way. Especially within *delegating* and *giving positive feedback* behavior, this difference was noticeable. Interestingly, this difference has also been supported by the first insight that was presented within this chapter, i.e. "*Frequency vs. Duration*"; agile proved to be multifaceted and extensive, resulting in showing behavior longer in terms of duration, whereas lean was

more direct, short and one-sided, resulting in a shorter average duration.

Regular lean team members do show *delegating* behavior often and the action is performed through very sharp and direct verbal behavior. However, this behavioral pattern differs from the agile approach in which *delegating* behaviors varied more and were multifaceted in terms of style. There simply was more of a dialogue, which is essential to stimulate and allow the team to think further and expand team member's knowledge, eventually leading to more ideas, more improvements and overall a higher quality (Kylén & Shani, 2002).

Looking at *giving positive feedback* in lean team members, this behavior type appeared more frequently but was way shorter in comparison to agile team members. Agile team members do support one another by regularly delivering the same kind of compliments as lean team members, but not as often and alternated with other ways of delivering feedback. These other ways of delivering feedback often consisted of extensive, opinionated compliments to the performance of colleagues or the team as a whole.

There are several possible reasons that could explain this difference. One of these reasons overlaps with the reason that was addressed within the previously discussed insight: the time and opportunity to talk. Given the essentiality of having one centralized leader (Dombrowski et al., 2013), it is logical to assume that leaders tend to take the lead and talk more compared to followers (i.e. the other team members). In addition, considering the fact that lean team meetings in this sample were much shorter, there is less time for regular team members to speak. Therefore, when these team members do get the chance and time to speak, they have to do it in a direct and short way. If they do not, the possibility and opportunity to talk might already have passed.

Another reason that could explain this insight has to do with the more hierarchical structure within the lean approach. The fact that lean teams have a centralized leader might cause rivalry among the members of the team. As "competition is a fact of life" (Kilduff, Elfenbein & Staw, 2010, p. 943), team members may want to be the favorite in the eye of the leader. By complimenting other team members with sharp, quick and one-sided comments, the team member who delivered the feedback could show his/her positive attitude in boosting team cohesion. Still, at the same time, he/she would not allow the leader to have the opportunity and time to focus on the complimented team member. Hence, providing such short positive comments could actually be seen as a way to enhance one's own position within a hierarchical team, rather than a genuine compliment towards a team member.

Moreover, educational level of the employees could have an impact on this matter as well. As seen in the descriptive statistics of the sample, agile team members within this research were higher educated than lean team members. Sternberg (1987) stated that "vocabulary is probably the single indicator of a person's overall level of intelligence" (p. 90). Following this statement, intelligence leads to a more extensive vocabulary, which eventually might lead to more extensive and multifaceted conversations as seen within agile squads.

5.1.3 Team Cohesion

The third and last insight was based on a similarity: the goal to enhance team cohesion and team performance. Both approaches aim to improve the performance and effectiveness of an organization, in which teamwork tends to play a crucial role (Browaeys et al., 2012). A study by Beal, Cohen, Burke and McLendon (2003) showed that cohesion correlates with performance and effectiveness, which is exactly what both approaches aim at. This research thus clearly brought forward the importance of teamwork in both agile and lean teams. The results on *giving positive feedback* and *asking for ideas* clearly showed this.

From *giving positive feedback* behavior, it could be concluded that agile team members provided extensive opinionated compliments to colleagues or the team as a whole. The greater part of these quotes was related to emphasizing team performance, which was in line with the accessed literature in the theoretical framework of this thesis; hence, providing feedback can be considered as very important (Hoda et al., 2010). In addition, the provision of feedback is regarded as a key factor in order to achieve team effectiveness (Moe et al., 2009). This was confirmed by the shown behavior, as it seemed to create an atmosphere in which every team member was responsible for the team's performance and thus actively and effectively contributing to team successes. The compliments that were provided felt natural and team members genuinely tried to stimulate one another to keep performing on this high level.

Albeit perhaps not as obvious as within *giving positive feedback* behavior, team cohesion in lean teams was really evident though *asking for ideas* behavior. In lean teams, in order to enhance team cohesion, the word '*we*' was used consistently. So, although their styles are quite different, both approaches seemed to find ways to enhance team cohesion through these two types of behavior.

5.2 Implications

As verbal behavior within agile and lean teams is quite a new topic to explore, the results of this research are important and beneficial for both theory and practice. Research and practical implications are now discussed in this section, based on the relevance for this thesis.

Firstly, a radical strand of scholars who suggested that the agile and lean approach could be combined in an approach called the *leagile* approach (Aitken et al., 2002; Goldsby et al., 2006). As previous works on this topic were remarkably scarce, the results of this thesis offer the opportunity to further explore how this combined approach could be implemented, by looking at the differences and similarities in agile and lean discovered in this research.

As for the practical implication of these results, managers who are planning on introducing one of these two approaches (or their combination) now have better insights of typical behaviors within agile and lean teams. By seeing a clear comparison on agile and lean and seeing the corresponding behavioral patterns, managers are better able to choose the approach which fits their business environment and types of employees best. In addition, agile and lean coaches can use this research to get to know the general behavior types of their 'students' better, which leads to a better understanding and thus better coordinated guidance. Agile and lean coaches are then also able to better anticipate on the dynamics among team members. Focusing specifically on lean behavior, the results of this thesis also illuminate how regular team members, rather than leaders, behave during regular team meetings, which is crucial to gather new knowledge on team members dynamics.

Lastly, works up until now have mostly discussed the theoretical comparison of the agile and lean approach. The results of this thesis show that the interpretations of the accessed literature are partly supported, but also partly rejected. Consequently, the insights of this research as presented in the discussion, offer a wide range of opportunities and recommendations for further research to get to know more details about this specific topic. These recommendations are further elaborated in the next chapter.

6. LIMITATIONS AND FUTURE RESEARCH

There are some limitations to this thesis that have to be taken into account. One of the limitations was the absence of possibilities to expand the sample size due to the COVID-19 pandemic. The initial planning was to record and code more meetings during the continuation of this thesis. However, this data collection was put to a halt due to the spread of the virus. Therefore, the sample size remained smaller than initially planned. However, the current sample size was thought to be sufficient for the analyses carried out in this thesis, since both a t-test and qualitative analysis do not require a larger sample size. Although not being a problem within this research, future research might think of including more meetings, behaviors and sectors to see whether a different (or more) significant result can be obtained.

Furthermore, looking specifically at the qualitative analysis performed within this research, one limitation could be that a deductive approach has been used in the exploration of the team member's behavior. This thesis did not strictly follow the six steps as proposed by Braun and Clarke (2006), as the themes associated with the quotes were already previously defined and named. Hence, future research could think of implementing a more inductive approach of thematic analysis to see whether novel behavioral nuances can emerge, especially from evaluating contextual factors. Thus, future research could strictly implement Braun and Clarke's (2006) six steps to see whether other themes can be discovered.

Since secondary data from multiple (separate) researches have been used, it was difficult to measure to what extent the studied teams are truly effective and high-performing teams. In addition, the effectiveness of agile meetings presented in the "*Descriptive Statistics*" shows a perceived level of effectiveness, rather than facts. Of course, the extent to which a team is actually effective and performing well, might also influence the results of this research, possibly leading to different frequencies and durations of shown behavior. For future research, it is recommended to score the effectiveness and performance of both the agile and lean teams on a same level so that these factors can be compared. This might even lead to further insight in some typical behavioral patterns within better performing teams.

Moreover, lean team meetings were around ten times shorter than agile meetings (05:41 minutes and 51:47 minutes, respectively). Although the data has been standardized to overcome the limitation of time, it is a fact that meetings of 51 minutes allow for more opportunities for team members to show behavior than 5-minute meetings. A recommendation for further research might thus be to focus on longer lean meetings where team members have more opportunities to express themselves, herewith possibly leaving the shorter meetings out of the research.

As the results based on frequency are against the expectations stated in the theoretical framework, this investigation raises the question whether the literature had enough support from real-life situations and thus real-life meetings. Next to that, this thesis only focuses on three behavioral types from the CMOB Verbal Behaviour Codebook (Wilderom et al., 2020): one per orientation as stated by Yukl et al. (2002). However, the CMOB Verbal Behaviour Codebook (Wilderom et al., 2020) counts 23 codes that could also be classified according to Yukl et al.'s (2002) taxonomy. Therefore, further research may take into account more than three behavior types, and more than one behavior type per orientation. It could then be investigated whether other types of behavior show other kinds of differences and similarities that might be supported by the literature.

7. CONCLUSION

The agile and lean management approaches are often implemented, aiming to enhance an organization's performance and effectiveness (Browaeys et al., 2012). Numbers of scholars disagreed with the idea that these approaches are completely different, as some say that there are certain overlaps (Hallgren & Olhager, 2009; Naylor, Naim & Berry, 1999). Another group of scholars even suggested the *leagile* approach, herewith combining both approaches (Aitken, Christopher & Towill, 2002; Duman, Topgül & Avni, 2015; Goldsby, Griffis & Roath, 2006; Naylor et al., 1999). Within the literature on this topic, little attention has been paid to the main element of being successful when implementing agile or lean: behavior. Literature on verbal behavior within agile and lean, as well as non-leader behavior in lean, is scarce. Therefore, this research has thus been conducted to get clarification on the differences and similarities in verbal behavior between agile and lean team members during their regular meetings. The three behavior types, together with their corresponding orientations, that have been taken into account were: *delegating* for task-orientation, *giving positive feedback* for relation-orientation and *asking for ideas* for change-orientation.

The research question has been answered by conducting a quantitative analysis, as well as a qualitative analysis. From a quantitative point of view, taking a marginal approach, three of the six proposed main hypotheses have been supported. All results on the frequency of the three behavior types were significant, showing that lean team members display the three behavior types more frequently. For duration, none of the three main hypotheses were significantly different, but agile team members showed *giving positive feedback* behavior longer in *retrospective* meetings. For the qualitative analysis, both differences and similarities have been found for all three behavior types. The three most important findings were related to the differences in frequency and duration, the differences in the way in which behavior was shown (i.e. multifaceted or one-sided) and the resemblance that both approaches try to enhance team cohesion during their regular meetings.

Above mentioned insights have not only further stretched the knowledge on agile and lean verbal team member behavior but could also help managers to choose the best approach that fits their business environment, as well as their employees, best. Last but not least, the insights of this research are just a small step into comparing these approaches, and it offers a wide range of opportunities and recommendations for further research.

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10. APPENDIX

Appendix 1. T-tests per behavior type

		Agile		Lean		
		M	SD	M	SD	p
Frequency	Delegating	0.0015	0.0016	0.0016	0.0031	**0.039**
	Giving positive feedback	0.0038	0.0029	0.0104	0.0381	**0.068**
	Asking for ideas	0.0019	0.0021	0.0047	0.0098	**0.002**
Duration	Delegating	0.0065	0.0078	0.0024	0.0078	0.115
	Giving positive feedback	0.0152	0.0201	0.0064	0.0249	0.617
	Asking for ideas	0.0108	0.0099	0.0058	0.0109	0.767

Note: $p < 0.05$ and $p < 0.10$ (two-tailed).

Appendix 2. T-tests per behavior type, agile *planning* vs lean

		Agile (*planning*)		Lean		
		M	SD	M	SD	p
Frequency	Delegating	0.0024	0.0020	0.0016	0.0031	0.422
	Giving positive feedback	0.0034	0.0023	0.0104	0.0381	0.235
	Asking for ideas	0.0023	0.0030	0.0047	0.0098	**0.100**
Duration	Delegating	0.0090	0.0094	0.0024	0.0078	0.175
	Giving positive feedback	0.0075	0.0047	0.0064	0.0249	0.480
	Asking for ideas	0.0116	0.0130	0.0058	0.0109	0.298

Note: $p < 0.05$ and $p < 0.10$ (two-tailed).

Appendix 3. T-tests per behavior type, agile *refinement* vs lean

		Agile (*refinement*)		Lean		
		M	SD	M	SD	p
Frequency	Delegating	0.0010	0.0011	0.0016	0.0031	**0.079**
	Giving positive feedback	0.0026	0.0022	0.0104	0.0381	0.338
	Asking for ideas	0.0015	0.0013	0.0047	0.0098	**0.085**
Duration	Delegating	0.0049	0.0061	0.0024	0.0078	0.884
	Giving positive feedback	0.0082	0.0049	0.0064	0.0249	0.548
	Asking for ideas	0.0063	0.0046	0.0058	0.0109	0.156

Note: $p < 0.05$ and $p < 0.10$ (two-tailed).

Appendix 4. T-tests per behavior type, agile *retrospective* vs lean

		Agile (*retrospective*)		Lean		
		M	SD	M	SD	p
Frequency	Delegating	0.0008	0.0012	0.0016	0.0031	**0.056**
	Giving positive feedback	0.0051	0.0037	0.0104	0.0381	0.311
	Asking for ideas	0.0016	0.0012	0.0047	0.0098	**0.044**
Duration	Delegating	0.0050	0.0071	0.0024	0.0078	0.353
	Giving positive feedback	0.0291	0.0297	0.0064	0.0249	**0.070**
	Asking for ideas	0.0133	0.0067	0.0058	0.0109	0.458

Note: $p < 0.05$ and $p < 0.10$ (two-tailed).

Appendix 5. Agile and lean quotes per behavior type

Behavior	Style	Agile	Style	Lean
Delegating	Strict	▪ "You have to send it to me." ▪ "You have to give me the scenario, then I would say whether it's working or not." ▪ "Well, of course that also applies to <*name*>, so you are going to do it as well."	Strict	▪ "Grab that one." ▪ "Just talk to people about it." ▪ "We have to assign this action to you."
	Nice	▪ "I would appreciate it if someone would take a serious look at this." ▪ "Can you two figure out what's going on?" ▪ "If anybody has the time and knows how to do that, then pick up that one."		
Giving positive feedback	Short	▪ "Good point." ▪ "That's a good one."	Short	▪ "Good idea." ▪ "Good point."
	Extensive	▪ "I think it's great that we picked that up as a team." ▪ "I think it is very positive that we are steadily continuing, despite all the problems we faced." ▪ "I think the numbers in your team, in comparison to other teams, are really high. I really like that."		
Asking for ideas	Team cohesion	▪ "Do you have any ideas on how to improve as a team?" ▪ "What would it take to do this in a quicker way?" ▪ "Are there things, or actions, in our team that we can embed to make the customer even happier with what we do?"	Team cohesion	▪ "Is there any more information we would like to share?" ▪ "Do we want to process that in < > or do we want to add several detailed questions?"