

MASTER

Increasing team performance through temporal leadership

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Increasing team performance through temporal leadership

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Abstract

This research examined how temporal leadership can enhance the performance of project teams working in an innovative technical context. An intervention aimed at increasing temporal leadership behaviours was also performed. This research shows that temporal leadership positively relates to the amount of work teams manage to accomplish. Additionally, temporal leadership is shown to positively relate with the team processes of affective trust, temporal consensus and effort, which in turn positively relate to team performance.

Keywords: Temporal leadership, time pressure, pacing style diversity, team processes, effort, temporal consensus, trust, team performance.

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Introduction

Due to increasing international competition and the vast increase in the speed of computers and telecommunications, it is becoming increasingly more important for organisations to develop new products and services in short timeframes (Orlikowsky & Yates, 2002). It is however paradoxical that while new product development deadlines become ever more tight, the organizational impact of not meeting these deadlines is also growing. Following from this emerging trend, development teams are faced with a large amount of tightly scheduled projects. The coordination of the activities that are associated with these projects, forms a substantial challenge (Gevers & Rutte, 2014). Despite of their effort and good intentions, many teams do not meet project deadlines, resulting in project delays (Gevers & Rutte, 2014). This in turn results in firms failing to develop new products and services in short timeframes, thus decreasing their competitive position.

While all conscious human beings notice the passing of time, individuals can perceive this “ticking of the clock” in different ways (Ship et al., 2009). Personal perspectives on time have been determined to be a fundamental parameters of individual differences (Bluedorn & Denhardt, 1988). Within team time perspective diversity can result in conflicting temporal interests (Mohammed & Harrison, 2013). However, the performance of teams under time pressure depends on the interdependent actions of team members, for instance, the sequencing and synchronizing between tasks (Maruping et al., 2014). While successful teams “manage activities that facilitate the executions of interdependent tasks, in less successful teams, team members withdraw from task management activities under time pressure and focus on their own task assignments” (Maruping et al., 2014, p. 4).

Following from the above, time is a critical aspect in determining a leader’s effectiveness, and when trying to understand how leaders become effective in reaching their goals, it is important to understand how leaders “manage multiple time frames, synchronize member contributions, and coordinate work so that deadlines are met” (Mohammed & Alipour, 2014, p. 178). Through its organizing mechanisms time oriented (temporal) leadership may help to overcome interpersonal differences (Mohammed & Alipour, 2014). At the team level, temporal leadership has been indeed been shown to help team members with their mutual synchronisation of activities, through this, it supports teams in meeting deadlines (Mohammed & Nadkarni, 2014). Temporal leadership stimulates teams “to develop an integrated approach to time, better positioning them for higher levels of productivity” (Mohammed & Alipour, 2014, p. 180).

In addition to these productivity related effects on team performance, the work of Gevers and Demerouti (2013) has shown that temporal leadership positively relates to the task absorption of team members, which in turn was shown to positively relate to creativity. It is natural that in the development process of new products and services, commonly known as innovation, not only the timeliness of completion is important but also the creativity of the product or service. Creativity refers to the generation of ideas that are both novel and useful (Amabile, 1996), innovation also refers to the subsequent stage of implementing ideas that result in better products, procedures, or practices (Anderson et.al., 2014). The process of innovation is thus conceptualized to consist of two stages, the first being the generation of creative ideas and the second stage being their implementation (Anderson, et.al., 2014).

Following from the notion that temporal leadership should have an important influence on the performance of teams working on the development of new products or services, two questions are formulated which will be further examined in this research, these research questions are:

Research question 1: Through which mechanisms does temporal leadership relate to team performance?

Research question 2: Can temporal leadership be enhanced with the aim of increasing team performance?

In an attempt to answer these questions, I conducted an experimental study with 55 teams of engineering students performing a design project for their bachelor study in Mechatronics, Mechanics, or Electronics. The teams were randomly distributed over an experimental and a control condition. The team leaders of the teams in the experiment condition received an intervention to increase their temporal leadership skills. The team leaders in the control group received an alternative treatment. Team members of 36 teams filled out a questionnaire about personal and team characteristics, as well as temporal leadership behaviours and their expected outcomes. With this data I tested a model of how temporal leadership relates to team performance. Additionally I used post-test comparison to examine if the intervention yielded the desired results.

This research will add to existing literature by examining the relation between both relationship oriented and task oriented temporal leadership and team performance. Instead of only examining the relation between the teams' mean perceived time pressure, and team processes and performance, it also examines how the within team perceived time pressure diversity relates to a team's processes and performance. Furthermore an intervention will be designed aimed at increasing the temporal leadership behaviours of team leaders.

Chapter 1: Theoretical background

The goal of this chapter is to hypothesize through which mechanisms the performance of new product development teams is affected. This chapter will cover the relationship between team processes, time pressure, time related team member diversity, temporal leadership, and team performance. At the end of the chapter a model will be presented that is based on the hypotheses which are formulated.

The relation between team processes and team performance

According to Hoegl and Gemuenden (2001) “a team can be defined as a social system of three or more people, which is embedded in an organization (context), whose members perceive themselves as such and are perceived as members by others (identity), and who collaborate on a common task (teamwork)” (p. 436). The performance of teams under time pressure depends on the interdependent actions of these team members, such as the sequencing and synchronizing between tasks (Maruping et al., 2014). While successful teams “manage activities that facilitate the executions of interdependent tasks, in less successful teams, team members withdraw from task management activities under time pressure and focus on their own task assignments” (Maruping et al., 2014, p. 4). These findings supports the need for managing the interdependencies between team members in order for them to perform under time pressure. These team processes, that make the individual but interdepend tasks of team members come together, help the team to achieve its goal.

Multiple studies have shown that team processes have a positive relation with team performance (e.g. Mathieu et al., 2006, Hoegl & Gemuenden, 2001, Maruping et al., 2014, Gevers et al., 2009). Team processes consist out of many aspects. This research will focus on behavioural, affective, and cognitive processes in teams, which are likely to influence a team’s performance. Examining all these categories of processes provides a more complete view of a team’s effectiveness and viability (Pearsall et al., 2009).

Regarding behavioural processes, when team members are faced with a challenging situation, for instance a new project, their primary reaction will be to assess the situation and increase their effort accordingly to perform their individual duties (Pearsall et al., 2009). This research will include effort as the behavioural team process that will influence team performance. To what extend team members prioritize their tasks over other obligations and to what extend they are willing to take a share in the workload of the task, are important indicators for the effort they will exert (Campion et al. 1993). Mutually accepted norms within the team, regarding how much effort team members should invest in the project, is of particular importance to the quality of team processes (Hoegl & Gemuenden, 2001). A high level of exerted effort by all team members is crucial for achieving high quality collaboration (Hoegl & Gemuenden, 2001). Hackman (1987) showed that the effort that team members deliver while executing their tasks, had a positive influence on the success of the projects they were working on. Hoegl and Gemuenden (2001) argue that assuming that the level of effort which is exerted influences performance, is a fundamental assumption in team research. Indeed their work showed that the amount of effort that team members exerted positively relates to team performance.

Affective team processes describe the team's members "feelings and attitudes towards the team and its tasks" (Pearsall et al., 2009, p.20). The affective team process that is used in this study is trust, which has been shown to be an important aspect of teamwork (Webber, 2008). Additionally, trust has been proposed to play a critical role in the development of effective team processes and the successful performance of teams (Webber, 2008). Trust is conceptualized as a multidimensional construct. The first dimension of trust consists of cognitive trust, which reflects the believe in peer reliability, dependability and competence (Webber, 2008). The second dimension of trust is affective trust, which consists of close interpersonal relationships (Webber, 2008). "Trust has consistently been linked to effective performance (Dirks& Ferrin, 2002; Mayer et al., 1995; McAllister, 1995)" (Webber, 2008, p. 753). Webber (2008) showed that of both the dimensions of trust, affective trust has the greater influence on team performance.

Cognitive team processes are based on the knowledge that individual team member possess, as well as the collective awareness of who knows what (Pearsall et al., 2009). The cognitive dimension of team processes which is included in this research is temporal consensus. Temporal consensus reflects to what extent team members have a shared agreement on the temporal aspects of a task (Gevers et al., 2006). Temporal consensus has been shown to increase team effectiveness in meeting deadlines (Gevers et al., 2006). When team members have a high shared temporal consensus, they are more likely to execute their actions in a timely and synchronized manner, as they will be more aware of the effect their tasks have on the project and the work of others (Gevers et al., 2009). This synchronization between team members will in turn lead to less process losses and will enable the team "to reach an optimal production level and complete their work on time" (Gevers et al., 2009, p.304). Gevers et al. (2009) have indeed shown that temporal consensus positively influences a team's coordination and its ability to meet deadlines.

Based on the above rational, the first hypothesis reads:

H1: Team processes (i.e., effort, affective trust and temporal consensus) will have a positive relation with team performance.

The relation between time pressure, team processes and team performance

Time pressure can be defined as the perception that there is a scarcity of time available to complete the project at hand (Maruping et al., 2014). It is important to note here that time pressure is not an objective measure of activity in time, but a personal perception of the workload. There is a lack of consensus in scientific literature regarding the relation between perceived time pressure and team performance. While some researchers conclude that perceived time pressure increases team performance by allowing teams to optimize the speed of task execution to time constraints (e.g., Kelly & Karau, 1999; Kelly & Loving 2004; Kelly & McGrath, 1985; Waller et al., 2001), other researchers conclude that perceived time pressure negatively relates to performance by negatively affecting the willingness of team members to seek knowledge in order to support their decisions (Durham et al., 2000). Deadlines and perceived time pressure are believed to decrease instead of increase creativity (Gevers & Demerouti, 2013). Amabile et al. 2002 found that high time pressure perceptions decrease the likelihood that individuals engage in creative cognitive processing. Baer and Oldham (2006) found that high time pressure perceptions hold back creativity by increasing the focus on familiar tactics when approaching a problem, additionally they found that high perceived time pressure reduces exploratory thinking.

A third stream of research concludes that perceived time pressure has a non-linear effect on task performance (Baer & Oldham, 2006; Maruping et al., 2014). These authors have shown that perceived time pressure has an inverted U-shaped relation with team performance. This means that perceived time pressure can be motivational at low to intermediate levels by ensuring task engagement, while perceived time pressure can lower team performance at higher levels. Supporting this notion is the research by Chong et al. (2011) they indeed showed that perceived time pressure, when it is experienced as a motivator, can enhance teams' coordination and teams' performance. Baer and Oldham (2006) found that "intermediate levels of time pressure are optimal for facilitating the experience of activation—the stimulation or arousal that motivates individuals to engage with the task at hand (Gardner, 1990)" (Maruping et al., 2014, p. 8). Based on the research and literature regarding the relation between time pressure perception and team performance, the second hypothesis is formulated:

H2: Perceived time pressure will have a curve-linear relationship with team performance in such a way that low to moderate levels of perceived time pressure will relate positively with team performance, whereas high levels of perceived time pressure will relate negatively with team performance.

Several studies have shown that perceived time pressure relates to team performance through its impact in team members' interdependent actions (Maruping et al., 2014). When they experience time pressure, successful teams engage in management activities that synchronize the interdependent tasks which team members execute (Chong et al., 2011). The notion that team performance under time pressure follows from team processes, is supported by the work of Maruping et al. (2014). In addition to perceived time pressure influencing team performance, their work also shows that perceived time pressure has a curve-linear influence on team processes. In a similar fashion as on team performance, low to intermediate levels of time pressure increase the quality of team processes, while high levels of time pressure decrease the quality of team processes. Based on this rationale hypothesis 3 is formulated.

H3: Perceived time pressure will have a curve-linear relationship with team processes in such a way that low to moderate levels of perceived time pressure will relate positively with team processes, while high levels of perceived time pressure will relate negatively with team processes.

The relation between time-related team member diversity, and team processes and performance

The fact that individuals perceive time in different manners is a key premise underlying all research on temporality. Temporal parameters including time perspective have been determined to be fundamental parameters of individual differences (Bluedorn & Denhardt, 1988). As such the aspect of time perspective is also found in the type A and B personality classification (Edwards et al., 1990). Bluedorn (2002) argues that the distribution of ones labour over time is a fundamental process strategy. Temporal diversity within a team has been shown to relate to team performance (e.g. Mohammed & Nadkarni, 2011). Examples of intra-team diversity that have been shown to relate to team performance are polychronicity (the preference to multitask) diversity (Mohammed & Nakarni, 2014), pacing style diversity (Mohammed & Nadkarni, 2011), and time urgency diversity (Mohammed & Nadkarni, 2011).

The concept of pacing style represents how persons divide their effort over time when they are working towards a deadline (Gevers et al., 2013). There are 5 pacing styles conceptualized by Claessens (2004). Early action workers who begin tasks soon after they are assigned and finish long before the due date. Early and end term action workers spend more time in the beginning and end of a task with a period of little work in between. Constant action workers who spread their effort continuously over time. Midterm action workers who try to work as much as possible in the middle of the project. And finally deadline action workers who begin to work when the deadline is very close, they keep working until time runs out.

Claessens (2004) found that pacing styles relate to planning behaviours, focus on priority, the degree of perceived control over time, occupational self-efficacy, working overtime, and performance. Gevers et al. (2009) have shown that “the adoption of a specific pacing style gives rise to positive or negative experiences at work (e.g. experiences of task absorption or stress) that may subsequently affect employee health and well-being” (p. 4). Temporally diverse team members need to come together, and work with each other in harmony instead of raising conflict due to different temporal process strategies. Even if individual team members have a high individual performance, the team won’t perform if the team members cannot agree on temporal aspects regarding the task.

The work of Mohammed and Nadkarni (2011) researched the relation between pacing style diversity and team performance. Since the variety of pacing styles within a team influences how team members distribute their effort when they work to achieve a certain goal, “a mix of pacing styles may be well suited for coordinative complex tasks that allow team members with an early action style to start a project, those with a steady action style to maintain project momentum, and a deadline action style to finish” (Mohammed & Harrison, 2013, p. 150). However, temporal conflicts are also likely since early and steady action pacing style members may experience the deadline action pacing style as to being reckless, as it leaves little space for revision and improvement (Gevers et al., 2009). In line with this reasoning Mohammed and Nadkarni (2011) argue that deadline action workers are likely to be regarded as irresponsible procrastinators by team members with an early or deadline action pacing style. While on the other hand deadline workers might view their pacing style as more effective since they are able to adapt to last minute changes considering the demands which are set towards the task (Mohammed& Harrison, 2007). In their research Mohammed and Nadkarni (2011) found that team with a high temporal diversity on the deadline pacing style (early action vs. deadline pacing style) suffered from lower performance than more homogeneous teams.

In line with the previous rationale, the following hypotheses are formulated:

H4: Pacing style diversity will have a negative relationship with team processes.

H5: Pacing style diversity will have a negative relationship with team performance.

Most temporal diversity measures, including pacing style diversity, are all relatively stable personal characteristics, which when they are not carefully managed, have been shown to decrease team performance (e.g. Mohammed & Nadkarni, 2011). However, an individual's perception of time pressure is a personal evaluation of the task at hand. Diverse perceptions within a team regarding the time pressure associated with the task, may just like the other temporal diversity measures, result in conflict when they are not carefully managed. Since perceived time pressure diversity directly concerns the task at hand, it appears likely, that when differences emerge their impact on performance will be larger than those of underlying personal temporal beliefs and preferences. For instance, individuals with a higher level of perceived time pressure are likely to exert more effort for meeting the deadline than persons who perceive a lower level of time pressure. Based on this assumption the following hypothesis is formulated:

H6: Intra-team perceived time pressure diversity will relate negatively to team performance.

Since perceived time pressure is widely assumed to influence team performance by affecting team processes (Maruping et al. 2014). The hypothesis regarding the effect of perceived time pressure diversity on team performance, is formulated in a similar manner for team processes:

H7: Intra-team perceived time pressure diversity will relate negatively to team processes.

The relation between temporal leadership, team processes, team performance, and the effect of time pressure and time-related team member diversity on team processes and performance

One of the most important aspects of team leadership consists of managing multiple time frames, ensuring that team members their contributions are synchronized, and monitoring that deadlines are met. Labianca et al. (2005) found that teams are not naturally competent in managing their temporal resources. Morgeson and DeRue (2006) state that “team leaders, who have a high-level view of their teams tasks and objectives, are in an ideal position to draw team members attention to temporal issues as well as to provide guidance for efficacious responses under existing time constraints”.

Temporal leadership consist of “structuring, coordinating, managing the pacing of task accomplishment in a collective, reminding members of deadlines, building in time for contingencies and problems, and synchronizing the team so that deadlines are met” (Mohammed & Nadkarni, 2011, p. 492). By scheduling key milestones before the eventual deadline, synchronizing team members’ in and outputs, and allocating adequate temporal resources to tasks, team leaders can achieve the pacing of task accomplishment. These leadership behaviours enable teams to effectively use their resources in the limited amount of time which is available to them (Maruping et al., 2014). Temporal leadership provides teams with the guidance to deal with temporal complexities and as such leads teams to be motivated by time pressure (Maruping et al., 2014). Additionally, task oriented temporal leadership helps teams to manage performing interdependent tasks under time pressure. This synchronization of team members’ actions helps to ensure that their work is finished on time.

To summarize the above: the management of all time related aspects to which a team is subjected to, is referred to as temporal leadership. As such temporal leadership plays an important role in stimulating the team to focus on those team processes which are used within the team to deal with the interdependencies that exists between the multiple tasks for which the team is responsible (Maruping et al., 2014). Gevers and Demerouti (2013) define temporal leadership as a supervisor’s “awareness of temporal complexities in organizational settings” (p. 4). A study by Kane et al. (2002) showed that the monitoring of time by team leaders, which describes the temporal leadership aspects of requesting time checks and other coordinating functions, had the strongest predictive power in predicting group performance.

Based on rationale above, the following hypotheses are formulated.

H8: Temporal leadership will have a positive relationship with team processes.

H9: Temporal leadership will have a positive relationship with team performance.

The work of Maruping et al. (2014) showed that temporal leadership changed the relation between perceived time pressure and team processes. While high levels of perceived time pressure have been shown to negatively relate to team performance and team processes, Maruping et al. (2014) showed that temporal leadership let perceived time pressure to have a positive rather than negative relation with team processes. The synchronizing and scheduling activities associated with temporal leadership, are likely to reduce interpersonal problems under perceived time pressure and as such increase team processes. Based on this rationale the following hypothesis is formulated:

H10: Temporal leadership will moderate the relation between perceived time pressure and team processes, such that under high perceived time pressure the team processes will increase.

Temporal leadership is supposed to enhance the benefits of temporally diverse teams, while at the other hand trying to overcome any problems that are associated with this diversity (Ancona et al., 2001). Mohammed and Alipour (2014) argue that leaders “*who aid in scheduling and synchronizing activities as well as minimizing temporal conflicts may foster members coming to agreement on the importance of meeting milestones, the appropriate pacing of subtasks, and time allocation*” (p. 179). As such negative effects that are associated with temporal diversity are likely to be reduced. In their research Mohammed and Nadkarni (2011) found that teams with a high temporal diversity on the deadline pacing style (early action vs. deadline pacing style) suffered from lower performance than more homogeneous teams. Temporal leadership did however change this, in that teams with a high temporal diversity on the deadline pacing style performed better than more homogeneous team when temporal leadership was high. In line with these findings the following hypothesis is formulated:

H11: Temporal leadership will moderate the relationship between pacing style diversity and team processes, such that high pacing style diversity will positively relate to team processes when temporal leadership is high.

H12: Temporal leadership will have a moderating effect on the relationship between perceived time pressure diversity and team processes. Such that teams with a high perceived time pressure diversity will have higher team processes than homogenous teams when temporal leadership is high.

H13: Temporal leadership will have a moderating effect on the relationship between perceived time pressure diversity and team performance. Such that teams with a high perceived time pressure diversity will perform better than homogenous teams when temporal leadership is high.

Temporal consensus reflects the level of agreement team members have concerning the temporal aspects of the task at hand (Gevers et al., 2009). Gevers et al. (2006) suggest that shared temporal cognitions enable team members to adopt to more compatible work patterns, since they are more able to anticipate and understand each other's actions. As described in the previous section, temporal leadership revolves around synchronizing the work between team members, but also about actively discussing deadlines and the team's ability to meet them. It therefore seems likely that the shared temporal cognitions within the team will increase as temporal leadership is higher. As such the temporal diversity between the team members should decrease, and thus the perceived time pressure diversity. The following hypothesis follows from the rationale above:

H14: Temporal leadership will have a negative relationship with the difference in perceived time pressure by the team members.

Increasing temporal leadership

As mentioned before a main goal of this research is to answer if temporal leadership can be enhanced, with the aim of increasing team performance. Following from the previous hypotheses it is expected that when temporal leadership is increased, team processes and through this team performance also will increase. An intervention aimed at increasing the temporal leadership behaviours of team leaders, should thus also increase team processes and team performance. In line with this rational the following hypotheses are formulated:

H15: Team leaders who are subjected to an intervention aimed at increasing temporal leadership, will have higher temporal leadership behaviours than team leaders who have not been subjected to this intervention.

H16: Project teams of which the team leaders have been subjected to an intervention aimed at increasing temporal leadership, have higher team processes than teams of which the team leaders have not been subjected to this intervention.

H17: Project teams of which the team leaders have been subjected to an intervention aimed at increasing temporal leadership, have a higher team performance than teams of which the team leaders have not been subjected to this intervention.

The research model

Based on the formulated hypotheses a research model is made, this model is depicted in Figure 1 below.

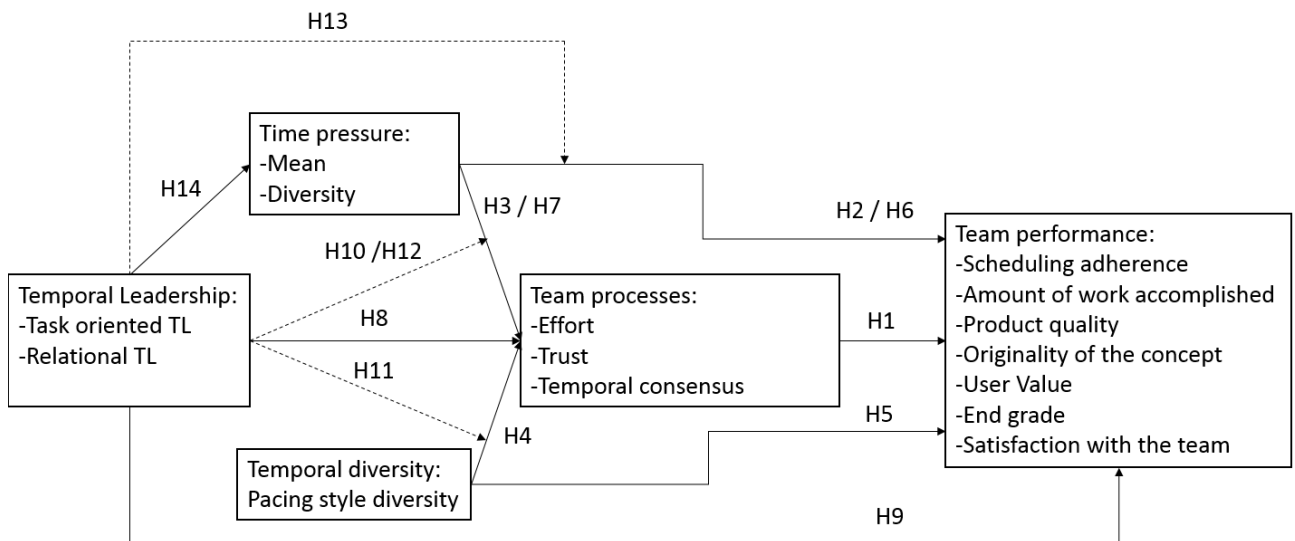


Figure 1. The research model.

Chapter 2: Method

This chapter will explain how the hypotheses which were formulated in the previous chapter will be tested. It will cover the company context, the experiment design, the design of the intervention, the experiment ethics, and the measures that were used in order to test the hypotheses which were formulated in the previous chapter.

Company context

Both the model and intervention were tested at the engineering department of the Fontys University of Applied Science in Eindhoven, the Netherlands. This department specializes in the education of mechanical, electrical and mechatronic engineers. In their second year, students of these studies participate in a project that takes around 8 weeks. In this project they develop a prototype based on a technical problem that is brought forward by a regional company. The project is of an innovative nature, since the students are presented with new technical problems, and they are required to develop a new product. Since prototypes are developed, the workload over time is high, making it more likely that team members experience time pressure when working on a project. Most of the project teams are multidisciplinary; students from the different engineering streams are supposed to work together in a project group. Complex, multitask, multi-domain and interdependent environments strengthen the influence of temporal diversity (Mohammed & Nadkarni, 2014). When the influence of temporal diversity increases, the influence of temporal leadership is also likely to increase (Mohammed & Nadkarni, 2011). The student teams appoint their own project leader, who is responsible for managing the project. In addition they have a weekly meeting with a teacher who is responsible for grading the project group. Based on the above, the company context appears highly relevant for determining the effects of temporal leadership on teams' innovative performance.

The experiment design

In the new product development project, 28 of the project group work on their project on Tuesday and 27 of the project groups work on their project on Thursday. By subjecting the groups on Tuesday to an intervention that is aimed at increasing the temporal leadership behaviour of project leaders and treating the Thursday groups as a control group, the effect of the intervention can be measured. The control group will receive a “placebo” intervention, this placebo intervention will serve to overcome any Hawthorne effects resulting from an unequal distribution of attention between the groups (Wickström & Bendix, 2000). In order for the experiment to be successful the temporal leadership behaviours of the team leaders in the treatment group should be measurably higher than those in the control group.

The treatment and control group will receive an intervention at the beginning of the project and the effect of the intervention will be measured when they finish their project. These measures will also be used to verify the model which was presented in Chapter 1. The final measurement will take place by means of a questionnaire measuring the model of figure 1. By the comparison of means, an increase between the groups in temporal leadership, team processes, and team performance can be determined. The experiment will be a relative 2 group post-test comparison. The experiment is summarized in table 1 below. In Appendix 1 several requirements for the experiment can be found as well as risk factors surrounding the experiment.

Group	T1: Treatment	T2: Post-test measures
Treatment: n=160, 28 teams	X1: Temporal leadership intervention	Questionnaire Final grade
Control: n=164, 27 teams	X2: Control intervention	Questionnaire Final grade

Table 1 Experiment design.

The total sample consists of 160 students that work in 28 project teams in the treatment group and 164 students that work in 27 project teams in the control group. It should be noted here that during the project there are students that drop out of the project, or even out of their whole study. Therefore it is hard to describe how many students actually participate in the projects when they end. The students are assigned to either the treatment or control group based on the class they are in. Assignment to a class is random, therefore the distribution of students over the treatment and control group is random. The team size varies between 3 and 11 members. The vast majority of the students is male (+/- 95%). And the majority of the students have studied for 1.25 year at the engineering department when they start to work on this project.

The students were handed out their questionnaires in hard-copy during the end presentations of the project by their own tutors. Students could then fill in the questionnaire anonymously during the presentations and had to hand them back at the end of the presentations. In total 172 student filled in the questionnaire, leaving a response rate of at least 53% (not accounting for drop-out students) . In total, students from 36 out of 53 teams (two of the 55 original team were cancelled) filled in the questionnaire, meaning that students from 68% of the teams responded to the questionnaire. Out of the 172 respondents 161 were male (94%), age varied between 18 and 32 years (with a mean of 20.7 years), and 144 out of 172 respondents were Dutch (84%). Team size (as indicated by the team members) varied between 3 and 11 members with a mean of 6 members. The within team response rate (of the teams that filled in the questionnaire) varied between 36 and 100%, with an average intra team response rate of 88 percent. Of the 36 teams that filled in the questionnaire, there were only 2 teams with an intra-team response rate lower than 50%.

The actual intervention

Task oriented temporal leadership behaviours mainly concern planning behaviours that ensure that a task is completed on time (Myer, 2010). It was chosen to increase these planning behaviours by introducing the project leaders with the project management method known as SCRUM (Moe et al., 2010, Rising & Janoff, 2000). This introduction was done in a one hour class, in which the team leaders were informed about the key aspects of SCRUM. While traditional waterfall-model assume all project knowledge to be available at the start of a project, agile project management methods recognize the need for more flexibility when managing the project due to the uncertainty which is associated with new product development (Dybå & Dingsøy, 2008). Dingsøy et al. (2012) showed that SCRUM is the most widely used agile project management method. The work of Mann and Maurer (2005) has shown that the implementation of the SCRUM project management method can lead to substantial benefits for teams developing new products.

SCRUM contains a planning element that helps small teams to manage time in the uncertain environment of an innovative dynamic project (Rising & Janoff, 2000). In SCRUM the main project is divided into smaller work packages that are executed in a sequential manner by the team. At the end of each so-called "sprint", in which a work package is executed, the team will reflect on the execution of that package and name improvement points for the execution of the next sprint. Since the project groups have a weekly meeting with a teacher that serves as a supervisor meeting, they are presented with a natural opportunity for this reflective meeting, as well as an opportunity to decide what work must be done in the following week. As shown by Moe et al. (2010) SCRUM project management methods can increase the communication within a team and stimulate coordination. Although Moe et al. (2010) also conclude that decisions should be made by the team and not by only the project leader, the project leader could use these team meeting as an opportunity to stimulate the team in making these decisions.

Next to instructing the students on how to use SCRUM, they were also provided with an Excel-tool that contained a planning framework in which the students can specify work packages and the estimated and actual activity durations. The tool then calculates how much work still remains in the project, as well as an estimation if the project will be completed on time, should the team keep working at its average pace. In addition to the excel sheet, an instruction video on how to use the excel-sheet was provided to the students, as well as the slides that were used in the lecture about SCRUM. An overview of the Excel-tool can be found in figure 2 on the next page.

Relationship oriented temporal leadership focusses on overcoming difficulties that team members face when dealing with time related issues, while taking their temporal preferences into account (Myer, 2010). As for the relationship oriented aspect of temporal leadership, a more interactional session with the student team leaders was held by dr. J.M.P. (Josette) Gevers. In this session several topics were discussed among which the importance of joint decision making, motivating team members, how to deal with setbacks, to celebrate successes, etc. It should be noted here, that not only pre-determined topics were discussed, but that some of the topics were also contributed by the team leaders themselves. The idea here was to inspire the team leaders to convert the topics that were discussed into actual behaviours.

The control group intervention.

As discussed before it was desirable to have a placebo intervention aimed at preventing or reducing any Hawthorne effects. In the control group intervention, student team leaders were asked what they thought was the best ways to execute temporal leadership in their project. This discussion session turned towards a “complaining session” in which the students indicated what they thought should be improved in the project education system.

Experiment ethics

The main ethical problem with this two group post-test experiment design is the selective distributions of benefits. It can be argued that the treatment groups are provided with an advantage over the control groups, since it is expected that the performance of the treatment groups will increase. Additionally, the control groups could be put at an disadvantage since teachers that tutor both control and treatment groups might feel that the treatment groups perform better. Boruch (1997) however concludes that the distribution of benefit on the basis of chance to equally needy persons is ethically defensible, as long as insufficient resources are available to fully benefit every person. Since the students are randomly assigned to the treatment and control groups the experiment seems ethically defensible. Furthermore, the control groups will also receive an intervention, that could benefit their performance. Leaving the unequal distribution of benefits relative. If the intervention for the treatment group turns out to be effective it can be rolled out to the entire student population.

Measures

This section will explain which measures were used in order to confirm the hypotheses. It will cover the measurement scales for team performance, team processes, temporal leadership, time pressure, pacing style diversity, and several control variables. The total questionnaire, which was handed out to the students at the end of their project, can be found in Appendix 2.

Team performance

Team performance was measured with 6 items tapping in to different dimensions of performance. All items were scored by the team members, on a five-point Likert scale varying from strongly disagree (1) to strongly agree (5). In order to achieve minimal bias, team members were asked (where it was possible) to rate aspects of their performance relatively to other teams (Cantalone et al., 2006).

The first dimension of the teams' performance captured the product innovativeness, and consisted out of 3 items. The items were based on the work of Magnusson et al. (2016) as well as Cantalone et al. (2006). An example of such an item is: *"Compared to other teams the originality of this team's final product/concept is"*.

The second dimension of the teams' performance captured the teams' temporal performance, and consisted out of 2 items. The items were based on the work of Mohammed and Nadkarni (2014) as well as Huckman et al. (2009). An example of such an item is: *"Compared to other teams, the amount of work accomplished for this project by this team is"*.

As a third dimension of team performance the team members were asked to rate the end grade they felt they deserve for their project on a scale from 0-10.

The dimensions described above were combined into a single dimension named "Team Performance". Cronbach's alpha for this scale was 0.80. Support for the appropriateness of this dimension reduction can be found in Appendix 3.

Supervisor performance ratings

As an addition to team member ratings, the teachers that tutor the project groups were also asked to rate the teams' performance. These ratings can be regarded as the equivalent of supervisor ratings in a business context. The items were based on the work of Mohammed and Nadkarni (2014). They were as follows: *"The team's planning and scheduling of project tasks was"* and *"The team's technical quality of work on this project was"*. The supervisor ratings were not combined into one dimension but analysed separately.

Satisfaction with the team

In addition to team performance there was an additional scale for the team members' satisfaction with the team, it consisted out of 2 items. The items were based on the work of Gevers and Peeters (2009). The items that were used were: *"Taken as a whole, I was satisfied with the composition of our team"*, and *"If I ever had to participate in a similar project again, I would like to do it with this team."* Cronbach's Alpha for this scale was 0.84.

Team processes

The scale capturing effort was based on the work of Hoegl and Gemuenden (2001) and consisted out of 4 items. An example of such an item is: *“Every team members fully pushed the project”*. Cronbach’s alpha for this scale was 0.77.

The measurement scale concerning temporal consensus was adopted from the work of Gevers and Peeters (2009) and consisted out of 4 items. An example of such an item is: *“The members of this team had similar thoughts about the best way to use the time available”*. Cronbach’s alpha for this scale was 0.74.

The last scale regarding affective trust was based on the work of Webber (2008) and consisted out of 4 items. An example of such an item is: *“If I shared my ideas and project-related problems with the members of my team, I know they would respond constructively and caringly”*. Cronbach’s alpha for this scale was 0.80.

The dimensions described above were combined into a single dimension named “Team Processes”. Cronbach’s alpha for this scale was 0.86. Support for the appropriateness of this dimension reduction can be found in appendix 3.

Temporal leadership

The measurement scale for Task Oriented Temporal Leadership (TOTL) is adopted from the work of Mohammed & Nadkarni (2011) and consists of 5 items. An example of such an item is: *“To what extend does you team leader pace the team so that work is finished on time?”*. Cronbach’s alpha for this scale was 0.78.

Myer (2010) extends the original concept of temporal leadership by adding a second aspect of Relationship Oriented Temporal Leadership (ROTL). As such Myer (2010) defines temporal leadership as a multidimensional construct that consists of both a task oriented and a relationship oriented dimension. Relationship oriented temporal leadership focusses on overcoming difficulties that team members face when dealing with time related issues, while taking their temporal preferences into account.

The measurement scale for ROTL was adopted from the work of Myer (2010) and consisted of 5 items. An example of such an item is: *“To what extend does you team leader provide support to team members who fall behind in schedule?”*. Cronbach’s alpha for this scale was 0.82.

The dimensions described above were combined into a single dimension named “Temporal Leadership”. Cronbach’s alpha for this scale was 0.88. Support for the appropriateness of this dimension reduction can be found in appendix 3.

Perceived time pressure

The scale for determining perceived time pressure was based on the work of Maruping et al. (2014) and consisted out of 4 items. An example of such an item is: *“We were not afforded much time to complete our tasks”*. Cronbach’s alpha for this scale was 0.81.

Perceived time pressure diversity

The teams’ perceived time pressure diversity was determined by calculating by the standard deviation of the team members’ their perceived time pressure score. According to Mohammed and Nadkarni (2014) the standard deviation is appropriate the measurement “of separation diversity (Harrison & Klein, 2007), use with interval-level data (Harrison & Sin, 2006), and the prediction of interaction effects regarding dispersion (Roberson, Sturman, & Simons, 2007)”(p. 410).

Pacing style diversity

The measurement of the pacing styles was based on the work of Claessens (2004). Respondents are asked to rate their preference to use one of four pacing styles on a 5-point Likert-scale. The pacing styles are graphically depicted with a short additional explanation. The graphs representing the pacing styles and the additional explanations can be found in Appendix 2.

With the personal pacing style preferences of respondents known, the pacing style diversity within teams was determined by calculating the standard deviation of the team members' pacing style scores. The team's standard deviation per pacing style was then added into one total diversity measure.

Control variables

Team size and team member familiarity were included as a control variables in the analysis. Larger team compositions increase the complexity of team member interaction due to the vast increase of individual links between team members as the team grows (Hoegl & Prosperio, 2004). Team size has indeed been shown to be an important variable influencing the quality of a team's collaborative task process and project success (Hoegl & Prosperio, 2004). Team size was measured by asking the team members to fill in how many members were in their team. This way any drop-out students won't distort the measurement.

Team member familiarity has been shown to positively affect team communication and coordination (Gevers et al., 2009). Due to the limited length of the questionnaire team member familiarity was measured with only one item: *"How well did you know your fellow team members before the project started"*? This item was scored on a five-point Likert scale.

Data aggregation

Since all the data analysis will take place at the team level instead of on the individual level, the individual scores must be combined into team mean scores. In order to validate if this aggregation was appropriate, the ICC (1) value was calculated for the most important scales. These values can be found in table 2 below. The ICC (1) values were all above 0.4, which Fleiss (1986) defines as a fair value. Furthermore, the analysis of variance with ANOVA was highly significant for all measures. Based on these findings there is no apparent reason that makes aggregation of the data inappropriate.

Scale	ICC (1)	ANOVA F-value	ANOVA Sig.
Team Satisfaction	0.47	4.28	≤0.001
Team Performance	0.43	4.56	≤0.001
Team Processes	0.42	5.03	≤0.001
Temporal Leadership	0.52	3.23	≤0.001
Perceived Time Pressure (mean)	0.53	3.35	≤0.001
n= 172 respondents, divided over 36 teams			

Table 2 ICC(1) values for the most important measures.

Chapter 3: Results

The testing of the hypotheses will be covered in this chapter. This chapter includes the data description, the correlation analyses, the moderation analyses, the testing for the effect of the intervention, some additional data analyses, and finally an overview of the findings regarding all hypotheses.

Data description

In table 3 below the mean values, standard deviation, possible ranges, and the mean as a percentage of the maximum value of the variables' possible range can be found. What stands out is that the mean as a percentage of the maximum possible value in the range of the variable, tends to average around 70%. However, the teams' perceived time pressure seems to be low (60%), and their affective trust towards their peers seems to be high (80%). It should be noted that the Mean Perceived Time pressure is not normally distributed.

Variable descriptions at the team level				
Scale	Mean	Std. Dev.	Possible range	Mean as a percentage of the maximum possible range
Perceived time pressure (mean)	8.98	1.72	3-15	60%
Perceived time pressure (S.D.)	1.87	0.77		
Pacing Style Diversity	4.04	.97		
Temporal Leadership	33.90	4.51	10-50	68%
ROTL	17.17	2.46	5-25	69%
TOTL	16.73	2.25	5-25	67%
Team Processes	39.99	5.14	11-55	73%
Effort	13.38	2.35	4-20	67%
Temporal Consensus	14.31	1.82	4-20	72%
Affective Trust	12.26	1.56	3-15	82%
Team Performance	25.39	2.75	6-35	71%
Scheduling Adherence	3.41	0.56	1-5	68%
Amount of Work Accomplished	3.69	0.53	1-5	74%
Quality of Work	3.61	0.68	1-5	73%
Product/ Concept Originality	3.84	0.55	1-5	77%
User Value	3.54	0.58	1-5	71%
End Grade	7.36	0.60	1-10	74%
Supervisor Overall Performance	3.58	.92	1-5	71%
Supervisor Time Management Quality	3.35	.95	1-5	67%
n= 172 respondents, divided over 36 teams				

Table 3. Data description, values are taken over all the teams.

Correlation analyses

In order to confirm or reject the hypotheses predicting direct relationships between variables, the correlations between the constructs are calculated. In Table 4 the correlations between the variables of interest can be found. In addition to this the correlation table in Appendix 4 shows the more detailed correlations underlying the main constructs used in the hypotheses.

Hypothesis 1 suggested that team processes, consisting of effort, affective trust and temporal consensus, would relate positively with team performance. Table 4 shows a significant correlation between the combined team processes and team performance, its effect size of .39 can be regarded as medium to large (Cohen, 1992). All of the separate team processes were also found to correlate significantly with team performance (see Appendix 4), although trust has a borderline significance ($p=0.054$). The supervisors' ratings have no significant correlation with any of the teams' self-reported measures (see Appendix 4). There are however other unexpected results such as a positive relationship between the supervisors' overall performance measures and team size. Based on the lack of correlation and the unexpected / undesirable correlations of the supervisor ratings, they are disregarded in the data analysis. Based on the findings hypothesis 1 is confirmed.

Hypothesis 2 suggested that perceived time pressure would have a curve-linear relationship with team performance in such a way that low to moderate levels of perceived time pressure would relate positively with team performance, whereas high levels of perceived time pressure would relate negatively with team performance. Analysis of the data however revealed that there was no proof for a non-linear relationship between perceived time pressure and team performance. Table 4 shows that the mean perceived time pressure does not have a significant relationship with team performance. Hypothesis 3 stated that perceived time pressure would have the same curve-linear relationship with team processes. Similarly for team performance there was no evidence of a curve-linear relationship, and as shown in table 4 the mean perceived time pressure does not significantly correlate with team processes. Based on these findings, both hypothesis 2 and 3 are rejected.

Hypothesis 4 suggested that pacing style diversity would have a negative relationship with team processes. As Table 4 shows there is no significant correlation between pacing style diversity and team processes. As the correlation Table in Appendix 4 shows, pacing style diversity also has no significant correlation with any of the separate team processes. Based on these findings hypothesis 4 is rejected.

Hypothesis 5 suggested that pacing style diversity would have a negative relationship with team performance. As can be seen form table 4 pacing style diversity has a significant and positive correlation with team performance. The correlation table in appendix 4 shows that pacing style diversity significantly and positively correlates with the teams' scheduling adherence and the overall grade team members gave their project. Based on the finding that pacing style diversity has a positive, instead of the expected negative relation with team performance, hypothesis 5 is rejected.

Hypothesis 6 suggested that Intra-team perceived time pressure diversity would relate negatively to team performance. As can be seen in table 4, perceived time pressure diversity has a significant but positive relationship with team performance. Based on this finding it can be concluded that perceived time pressure diversity does relate to team performance in the opposite direction as was expected, therefore hypothesis 7 is rejected.

Hypothesis 7 suggested that intra-team perceived time pressure diversity would relate negatively to team processes. Table 4 shows that there is no significant correlation between perceived time pressure diversity and team processes. Based on this finding Hypothesis 7 is rejected.

Hypothesis 8 suggested that temporal leadership would have a positive relationship with team processes. Regarding the separate aspects of temporal leadership, the correlation table in appendix 4 shows that Relationship Oriented Temporal Leadership (ROTL) positively correlates with the overall quality of team processes ($p \leq 0.1$), this low significance can be explained by the fact that ROTL only significantly correlates with the team process of trust. However, Task Oriented Temporal Leadership correlates positively and highly significant ($p \leq 0.01$) with the overall quality of the team processes as well as all the separate team processes. Table 4 shows a positive and significant correlation between temporal leadership (ROTL and TOTL combined) and team processes, the effect size of 0.42 is also substantial. Based on these findings hypothesis 8 is confirmed.

Hypothesis 9 suggested that Temporal leadership would have a positive relationship with team performance. When looking at the table of correlates in Appendix 4 it is shown that Task Oriented Temporal leadership only has a positive and significant relationship with the amount of work which the groups managed to accomplish. Table 4 shows that temporal leadership does not significantly correlate with the overall team performance. Based on these findings hypothesis 9 is rejected.

Hypothesis 14 suggested that temporal leadership would have a negative relationship with the difference in perceived time pressure by the team members. As can be seen from Table 4, overall temporal leadership does not significantly correlate with the perceived time pressure diversity within the team. However, the correlation table in appendix 4 does show that the aspect of relationship oriented temporal leadership correlates borderline significantly ($p = 0.053$) and negatively with perceived time pressure diversity. Based on these findings hypothesis 14 is rejected.

Table of Correlations									
	1	2	3	4	5	6	7	8	9
1. Perceived time pressure (mean)	1								
2. Perceived time pressure (S.D.)	.08	1							
3. Pacing style diversity	-.10	.16	1						
4. Temporal leadership	.28	-.27	-.16	1					
5. Team processes	.05	.12	.14	.42*	1				
6. Team Performance	-.01	.37*	.37*	.17	.39*	1			
7. Satisfaction with the team	-.12	.10	.25	.34*	.83**	.46**	1		
8. Team size	-.01	.05	.14	-.07	-.30 [†]	-.14	-.12	1	
9. Member Familiarity	.12	.19	-.06	-.15	-.15	.08	-.19	-.03	1

*= $p \leq 0.05$, **= $p \leq 0.01$, [†]= $p \leq 0.1$. n= 172 respondents, divided over 36 teams. Pearson correlations at the aggregated team level, measures are aggregated team means unless they are diversity measures. The correlations for Mean Time Pressure, Team Size, and Member Familiarity are Spearman correlations due to non-normal distribution of those variables.

Table 4. Correlations between the main constructs.

Tests of Moderations

I analysed the moderating effects of temporal leadership with hierarchical regression analysis. The moderation effect is added as the multiplication of the mean centred variables of interest, for instance temporal leadership and pacing style diversity. It should be noted that the mean perceived time pressure is not normally distributed making test for moderation with hierarchical regression analysis doubtful. However, non-parametric correlation already showed no significant direct relations between the mean perceived time pressure, and team processes and performance.

Hypothesis 10 suggested that temporal leadership would moderate the influence of perceived time pressure on team processes, such that under high perceived time pressure the quality of team processes would increase. As can be seen in table 5, the moderating effect is not significant in the regression analysis, additionally the effect of perceived time pressure also does not become significant. Based on these findings hypothesis 10 is rejected.

Hypothesis 11 suggested that temporal leadership would moderate the relationship between pacing style diversity and team processes, such that high pacing style diversity would have a positive relationship with team processes, when temporal leadership was high. As can be seen from table 5 the interaction effect of temporal leadership and pacing style diversity is not significant. Based on these findings hypothesis 11 is rejected.

Hypothesis 12 suggested that temporal leadership would have a moderating effect on the relationship between perceived time pressure diversity and team processes. Such that teams with a high perceived time pressure diversity would have higher team processes than homogenous teams when temporal leadership was high. As can be seen from table 5 the interaction effect of temporal leadership and perceived time pressure diversity is not significant. Based on this finding hypothesis 12 is rejected.

Hypothesis 13 suggested that temporal leadership would have a moderating effect on the relationship between perceived time pressure diversity and team performance. Such that teams with a high perceived time pressure would perform better than homogenous teams when temporal leadership was high. As can be seen from table 5 the interaction effect of temporal leadership and perceived time pressure diversity is not significant. Based on this finding hypothesis 13 is rejected.

Dependent variable: Team Processes							
<u>Independent Variables</u>	<u>Beta Std.</u>	<u>Significance</u>	<u>F</u>	<u>R-square</u>	<u>Sig.</u>	<u>Tolerance</u>	<u>VIF</u>
constant		0.000	3.142	0.228	0.039		
Temporal Leadership	0.41	0.021				0.850	1.177
Mean Time Pressure	-0.24	0.219				0.639	1.564
Temporal leadership_X_Mean Time Pressure	0.25	0.213				0.620	1.613
Dependent variable: Team Performance							
<u>Independent Variables</u>	<u>Beta Std.</u>	<u>Significance</u>	<u>F</u>	<u>R-square</u>	<u>Sig.</u>	<u>Tolerance</u>	<u>VIF</u>
constant		0.000	2.935	0.216	0.048		
Temporal Leadership	0.30	0.083				0.901	1.110
Time Pressure Perception Diversity	0.43	0.047				0.568	1.761
Temporal leadership_X_Time Pressure Perception Diversity	-0.03	0.876				0.559	1.789
Dependent variable: Team Processes							
<u>Independent Variables</u>	<u>Beta Std.</u>	<u>Significance</u>	<u>F</u>	<u>R-square</u>	<u>Sig.</u>	<u>Tolerance</u>	<u>VIF</u>
constant		0.017	3.428	0.243	0.029		
Temporal Leadership	0.48	0.006				0.901	1.110
Time Pressure Perception Diversity	0.31	0.134				0.568	1.761
Temporal leadership_X_Time Pressure Perception Diversity	-0.09	0.656				0.559	1.789
Dependent variable: Team Performance							
<u>Independent Variables</u>	<u>Beta Std.</u>	<u>Significance</u>	<u>F</u>	<u>R-square</u>	<u>Sig.</u>	<u>Tolerance</u>	<u>VIF</u>
constant		0.001	3.166	0.229	0.038		
Temporal Leadership	0.19	0.111				0.958	1.044
Pacing Style Diversity	0.43	0.011				0.968	1.033
Temporal leadership_X_Pacing style diversity	0.26	0.238				0.981	1.020

n= 172 respondents, divided over 36 teams.

Table 5. Moderation analyses.

Testing for effect of the intervention

The goal of the intervention was to increase the temporal leadership behaviours of the team leaders and through this the performance of the teams. When the variables temporal leadership, team processes, and team performance are separated based on the treatment and control groups, they still pass the Shapiro-Wilk test for normality, therefore T-tests can be used to assess the difference in temporal leadership behaviours, team processes, and team performance. The Levene's tests are not significant, indicating an equal variance in the test and control group can be assumed (table 6 below).

Hypothesis 15 suggested that team leaders who would be subjected to an intervention aimed at increasing temporal leadership, would have higher temporal leadership behaviours than team leaders who would not have been subjected to this intervention. As table 6 shows the null hypothesis of the t-test, that the mean value of temporal leadership is different between the treatment and control group, is insignificant. Additionally there is also no significant difference between the treatment and control group in the mean values of relationship oriented temporal leadership and task based temporal leadership. Based on these findings hypothesis 15 is rejected.

Hypothesis 16 suggested project teams of which the team leaders had been subjected to an intervention aimed at increasing temporal leadership, would have higher team processes than those teams of which the team leaders had not been subjected to this intervention. As table 6 shows the null hypothesis of the t-test, that the mean value of the team processes is different between the treatment and control group, is insignificant. Based on this finding hypothesis 16 is rejected.

Hypothesis 17 suggested that project teams of which the team leaders had been subjected to an intervention aimed at increasing temporal leadership, would have a higher team performance than teams of which the team leaders had not been subjected to this intervention. As table 6 shows the null hypothesis of the t-test, that the mean value of the team performance is different between the treatment and control group, is insignificant. Based on this finding hypothesis 17 is rejected.

T-tests with equal variances assumed						
Variable	Levene's test sig.	t	df	Sig	Mean difference	Std. Error Difference
Temporal leadership	0.26	-1.42	34	0.16	-2.24	1.57
ROTL	0.46	-1.59	34	0.12	-1.35	0.85
TOTL	0.30	-1.13	34	0.27	-0.90	0.79
Team processes	0.77	0.24	34	0.81	0.44	1.84
Team performance	0.72	0.59	34	0.55	0.58	0.98

n= 172 respondents, divided over 36 teams. 12 teams in the treatment group and 24 in the control group.

Table 6. Testing for effect of the intervention

Additional data analyses

The correlation analysis revealed that pacing style diversity has a positive rather than the expected negative relation with team performance. A possible explanation for this positive relation could be found in the fact that the respondents' mean score for the deadline pacing style is highest (table 7). When looking at the correlations between the teams' mean score on specific pacing styles and team performance, it can be seen that a higher team preference for the deadline pacing style relates to lower team performance (table 8). From table 8 it can also be seen that a higher team member preference for the early start and steady action pacing style relates to higher team performance. Based on this, it could well be, that a higher pacing style diversity reflects that teams have less members with a high preference for the deadline pacing style, and that following from this, team performance is higher. This notion is partially supported by the correlations in table 8, here it can be seen that pacing style diversity has a negative relation ($p \leq 0.1$) with the teams' mean score on the deadline pacing style, which in turn negatively relates to team performance. Additionally, higher pacing style diversity, relates to a higher team preference for the steady action pacing style ($p \leq 0.1$), which in turn has a positive relation with team performance.

Means of the different pacing styles				
	Early start	U-shape	Steady Action	Deadline
Mean	2.23	3.20	3.05	3.33
Std. Dev.	0.99	1.14	1.18	1.17
n= 172 respondents				

Table 7 Mean scores for the deadline pacing styles.

Table of Correlations.						
	1	2	3	4	5	6
1. Team performance	1					
2 Early start pacing style	.28 [†]	1				
3 U-shaped pacing style	-.07	-.322 [†]	1			
4 Steady action pacing style	.44**	.47**	-.51**	1		
5 Deadline Pacing style	-.36*	-.55**	.30 [†]	-.48**	1	
6 Pacing style diversity	.37*	.25	-.43**	.30 [†]	-.29 [†]	1
†= $p \leq 0.1$, * = $p \leq 0.05$, ** = $p \leq 0.01$. n= 172 respondents, divided over 36 teams.						

Table 8. Correlations between the pacing styles and team performance.

Similarly to pacing style diversity, the within team perceived time pressure diversity also has a positive instead of the predicted negative relationship with team performance. From Table 3 it can be seen, that compared to other variables, the teams gave significantly lower scores for the amount of time pressure which they perceived. One explanation for the positive instead of negative relation between perceived time pressure diversity and team performance could be, that this diversity reflects that there were team members present who had a higher perception of time pressure, and that this higher individual perception of time pressure positively relates to team performance. Providing support for this notion, table 9 below indeed shows that the maximum within team perceived time pressure minus the within team mean perceived time pressure, positively and significantly correlates with team performance. Furthermore, the correlation size is almost equal to that of the total within team perceived time pressure diversity.

	1	2	3	4	5
1. Perceived time pressure (mean)	1				
2 Perceived time pressure (team max)	.81**	1			
3 Perceived time pressure (team max - mean)	-.20	.35*	1		
4 Perceived time pressure (S.D.)	.08	.57**	.81**	1	
5 Team performance	-.01	.223	.35*	.37*	1

[†]= p≤0.1, *= p≤0.05, **= p≤0.01. All correlations are Spearman correlations, except team performance – perceived time pressure (SD) is a Pearson correlation. n= 172 respondents, divided over 36 teams.

Table 9. Correlations between the pacing styles and team performance.

As discussed previously, the tutors’ supervisor ratings did not significantly relate to the self-reported measures of the teams. A lack of correlation could result from a large bias in the self-reported measures of the teams. The team members were asked which end grade they deserved for their project, the tutors were asked to rate the overall performance of the teams. Since both these ratings are closely related, a bias in the teams’ scores should mean that their mean rating is higher. The teams’ end grade scores were on a scale of 1-10, the tutors’ scores on a scale of 1-5. When multiplying the tutor scores by 2 a comparison of means can be executed. As can be seen from table 10 there is no significant difference in the mean teams’ rating and the mean tutors’ rating of overall team performance. From these findings it can be concluded that there is no evidence of a significant bias in the teams’ self-reported measures.

Variable	t	df	Sig	Mean difference	Std. Error Difference
Team overall performance	-.56	35.384	0.579	-0.194	.346

n=31 tutor team ratings

Table 10. Comparison of the teams’ and tutors’ overall project rating.

Overview of the results

A total overview of which hypotheses are confirmed and which are rejected can be found in table 11 below. It should be noted here that some of the hypotheses concerning temporal leadership are rejected, but that one of both aspects of which temporal leadership consists (R.O.T.L or T.O.T.L.) does have a significant effect on the dependent variable.

H1	<i>Team processes (i.e., effort, affective trust and temporal consensus) will have a positive relation with team performance.</i>	Confirmed
H2	<i>Perceived time pressure will have a curve-linear relationship with team performance in such a way that low to moderate levels of perceived time pressure will relate positively with team performance, whereas high levels of perceived time pressure will relate negatively with team performance.</i>	Rejected
H3	<i>Perceived time pressure will have a curve-linear relationship with team processes in such a way that low to moderate levels of perceived time pressure will relate positively with team processes, while high levels of perceived time pressure will relate negatively with team processes.</i>	Rejected
H4	<i>Pacing style diversity will have a negative relationship with team processes.</i>	Rejected
H5	<i>Pacing style diversity will have a negative relationship with team performance.</i>	Rejected. Pacing style diversity relates positively with team performance.
H6	<i>Intra-team perceived time pressure diversity will relate negatively to team performance.</i>	Rejected, intra-team time pressure perception diversity relates positively with team performance.
H7	<i>Intra-team perceived time pressure diversity will relate negatively to team processes.</i>	Rejected
H8	<i>Temporal leadership will have a positive relationship with team processes.</i>	Confirmed, R.O.T.L. has a positive relation with intra team affective trust, T.O.T.L. has a positive relation with affective trust, temporal consensus, and effort.
H9	<i>Temporal leadership will have a positive relationship with team performance.</i>	Rejected, T.O.T.L. does positively relate to the team members' satisfaction with the team and the amount of work the team has accomplished

H10	<i>Temporal leadership will moderate the relation between perceived time pressure and team processes, such that under high perceived time pressure the team processes will increase.</i>	Rejected
H11	<i>Temporal leadership will moderate the relationship between pacing style diversity and team processes, such that high pacing style diversity will positively relate to team processes, when temporal leadership is high.</i>	Rejected
H12	<i>Temporal leadership will have a moderating effect on the relationship between perceived time pressure diversity and team processes. Such that teams with a high perceived time pressure diversity will have higher team processes than homogenous teams when temporal leadership is high.</i>	Rejected.
H13	<i>Temporal leadership will have a moderating effect on the relationship between perceived time pressure diversity and team performance. Such that teams with a high perceived time pressure diversity will perform better than homogenous teams when temporal leadership is high.</i>	Rejected
H14	<i>Temporal leadership will have a negative relationship with the difference in perceived time pressure by the team members.</i>	Rejected. R.O.T.L does have a negative direct relation with intra-team time pressure perception diversity.
H15	<i>Team leaders who are subjected to an intervention aimed at increasing temporal leadership, will have higher temporal leadership behaviours than team leaders who have not been subjected to this intervention.</i>	Rejected.
H16	<i>Project teams of which the team leaders have been subjected to an intervention aimed at increasing temporal leadership, have higher team processes than teams of which the team leaders have not been subjected to this intervention.</i>	Rejected.
H17	<i>Project teams of which the team leaders have been subjected to an intervention aimed at increasing temporal leadership, have a higher team performance than teams of which the team leaders have not been subjected to this intervention.</i>	Rejected.

Table 11. Conclusions regarding the hypotheses.

Chapter 4: Conclusion and Discussion

This research's aim was to answer two research questions, the first question was to determine through which mechanisms temporal leadership relates to team performance, the second question was to determine whether temporal leadership could be enhanced with an intervention in order to increase team processes and team performance. With regard to the first question, the findings show that temporal leadership does not have a direct relationship with overall team performance. However, temporal leadership does have a direct positive relationship with team processes, meaning that when temporal leadership increases the team processes also increase. More specifically, I found that when temporal leadership increases, the temporal consensus and affective trust within the team increase, as well as the effort that the team members exert in their project. These team processes in turn positively relate to the teams' overall performance.

Moreover, task oriented temporal leadership also positively related to the performance aspects concerning the amount of work which teams accomplished, and the team members' satisfaction with the team. This means that when team leaders engage in more task oriented temporal leadership behaviours, the teams will accomplish more work and team members will gain more satisfaction from being part of the team. Team members' satisfaction with the team is regarded to be an essential aspect of team effectiveness (Gevers & Peeters, 2009). Overall it can be concluded that temporal leadership, through its positive relation with team processes, as well as its direct positive relation with the amount of work a team manages to accomplish and team member satisfaction, is an important factor influencing team performance.

With regard to the second research question, this research aimed at increasing the temporal leadership behaviours of the team leaders by having a session with them at the beginning of the project. In this session they were instructed to use SCRUM in order to stimulate task oriented temporal leadership behaviours. In order to stimulate relational oriented temporal leadership the team leaders engaged in a discussion session. After this intervention the team leaders were provided with a tool that assisted them with managing time in their project. The intervention that was implemented did not yield any measurable results between the treatment and control group. There was no measurable increase in temporal leadership, team processes, or team performance. Apparently, a single temporal leadership session at the beginning of a project and handing out tools, is not enough to actually increase the temporal leadership behaviours of the team leaders in this sample. A weakness of the intervention was that the teams could not be obligated to work according to the guidelines that were presented with during the intervention. Contact with the project group tutors indeed revealed that many groups did not use the tool that was handed to them during the intervention. Additionally there were project tutors that did not feel the need for their groups to work according to the method which was presented during the intervention. This lack of commitment offers a possible and likely explanation for the failure of the intervention. Furthermore, the internal validity of the experiment was under threat, since it could not be ensured that the treatment and control groups did not share any information with each other. Information sharing between the treatment and control groups may have led to the lack of measurable result from the intervention. This research leaves the second research question of how temporal leadership can be enhanced with the aim of increasing team performance unanswered.

In addition to examining the influence of temporal leadership on team processes and team performance, this research also examined how perceptions of time in teams influence a team's processes and performance. It was found that the overall perceived time pressure by the team members did not relate to both team performance and team processes. Many authors have however shown that time pressure influences both these aspects (e.g., Kelly & Karau, 1999; Kelly & Loving 2004; Kelly & McGrath, 1985; Waller et al., 2001; Baer & Oldham, 2006; Maruping et al., 2014). Chong et al. (2011) showed that time pressure, when it is experienced as a motivator, can enhance team coordination and performance. It could be the case that most of the team members do not experience time pressure as a motivator, since their perception of time pressure was found to be relatively low. This would explain why the mean perceived time pressure did not have a significant relationship with performance or team processes.

Contrary to the expectation, the within team perceived time pressure diversity had a positive instead of negative relation with team performance. The additional data analysis showed that this positive relation most likely originates from the fact that teams with a higher perceived time pressure diversity contain a member that has a higher perception of time pressure than the team's average perception of time pressure. These team members could experience the correct amount of time pressure to be motivated and as such positively influence the team's performance.

Similarly to perceived time pressure diversity, pacing style diversity also had a positive, instead of the expected negative effect on team performance. The notion regarding almost all diversity aspects, is that diversity within a team can have a positive effect on team performance since team members can complement each other. However, this diversity must be carefully managed since it also can result in conflict due to team members have different process strategies and priorities. As Mohammed and Harrison (2013) state regarding pacing styles: "a mix of pacing styles may be well suited for coordinative complex tasks that allow team members with an early action style to start a project, those with a steady action style to maintain project momentum, and a deadline action style to finish" (p. 150). However, Gevers et al. (2009) state that temporal conflicts are likely, since early and steady action pacing style members may experience the deadline action pacing style as to being reckless, as it leaves little space for revision and improvement. Supporting this notion of Gevers et al. (2009) this research indeed shows that when the within team preference for the deadline pacing style increases, the team's performance decreases. This research also shows that when the team members their preference for the steady action and early start pacing style increases, the team's performance increases. The additional data analysis showed that a possible explanation for the positive effect of pacing style diversity on team performance, can be found in the fact that a higher pacing style diversity reflects a lower within team preference for the deadline pacing style, which relates negatively to team performance.

Two important notions follow from the findings regarding the diversity measures. The first notion is that the positive relation between perceived time pressure diversity with team performance originates from teams being composed of less members that have lower time pressure perceptions. The second notion is that the positive relation of pacing style diversity with team performance originates from teams being composed of less members with a preference for the deadline pacing style. Both notions offer a contradicting view with existing literature that states that the positive relations between diversity and team performance originate from team members complementing each other. Instead both notions imply that team members with contradicting temporal preferences and perceptions compensate for other team members with temporal preferences and perceptions that lower team performance.

This study shows an increase in the within team member preference is for the deadline pacing style relates to a lower the team performance. This implies that in order to increase team performance, these team members should be stimulated to spread out their effort over time, instead to start with activities later on in the project. This study additionally showed that the performance of teams was also higher when they had team member which experienced more time pressure as the team did on average. It should be noted here that the teams on average did not seem to experience much time pressure. The findings of this study show that time pressure diversity is an important predictor of team performance, and they also indicate that it is beneficial to stimulate team members to experience time pressure when working on a task.

Theoretical implications

This research provides confirmation to previous work showing the positive relationship between temporal leadership, and team processes and performance (e.g. Mohammed & Nadkarni, 2011, Maruping et al., 2014, Gevers & Demerouti, 2013). By examining the effect of both relationship oriented and task oriented temporal leadership, this research provides insight in the specific relations between each dimension of temporal leadership, and team processes and performance. This research complements existing research by showing that temporal leadership has a direct positive relationship with team members' affective trust towards each other. Barczak et al. (2010) have shown trust positively relate to team creativity. Creativity is an important aspect of innovation (Anderson et.al., 2014), therefore the relation between temporal leadership and trust, should enhance a team's innovative performance.

The findings regarding diversity contradict with existing literature, that concludes that within team diversity is likely to result in team member conflict when it is not carefully managed (e.g. Mohammed & Nadkarni, 2014). The findings of this study indicate that within team diversity can be positive, as the team members which do not conform to the team norm, can exhibit behaviours that increase team performance. This finding indicates that the appropriateness of within team consensus is dependent on the team's mean preferences.

Practical implications

The findings of this research clearly show that temporal leadership has an important positive influence on team performance. This study has shown that higher temporal leadership results in the team's members exerting more effort. Furthermore this study has shown that higher temporal leadership also leads team members to have a higher agreement concerning important temporal aspects, such as the meeting of project milestones. Also it was found that higher temporal leadership matters for the intra team affective trust. Intra team trust has been shown to be related to higher team creativity (Barczak et al., 2010), team creativity in turn is an important part of innovation (Amabile, 1996). Through its findings this research confirms the relevance of attention to temporal leadership in organizational settings.

This research aimed to increase the temporal leadership behaviours of team leaders by attempting an intervention at the beginning of their projects. This did however not yield any measurable results. According to Hackman and Wageman (2005) coaching aimed at increasing skills is best to take place at the end of a process, since this phase offers the opportunity for reflection. However, according to Halbesleben et al. (2003) a leader's competence in managing temporal issues is a skill which evolves over time. The author feels that it is therefore more appropriate to undertake interventions that are aimed at increasing temporal leadership behaviours over longer time spans. Hackman and Wageman (2005) for instance conclude that coaching aimed at effort and motivation should take place at the beginning of a project. Indeed the start of a project would appear to be the most suited time for discussing within team temporal views, complexities, and expectations. The main phase of the project would appear to be the best time for training leaders at keeping their project on track and dealing with temporal complexities that may emerge. The end of the project would, in line with the findings of Hackman and Wageman (2005), appear to be the proper time for reflection and formulating concrete improvement point for future projects.

It should be noted that, despite the proven positive impact of temporal leadership, training entire teams in making decisions regarding temporal aspects of the project, could be more appropriate than only training team leaders in temporal leadership. According to De Drue and West (2001) group leaders often imply negative measures to ensure that individuals conform to the main values and norms of the group. Although this conformity has been shown to be functional for achieving coordination and performance, it might also lead to defective decision making (De Drue & West, 2001). The findings of DeDrue and West show that innovation benefits from team member participation in the decision making processes of the project. In line with this Moe et al. (2010) showed that innovative projects decisions are best made by the team and not only by the team leader. It would seem likely that relying on the expertise and experience that team members possess, in order to gain input for the temporal decisions that have to be made, would create a more diverse view of time related issues, and may even reveal issues which were not yet considered. Since there is a definite trend towards highly innovative and complex projects, temporal complexities are likely to become ever more difficult to oversee for the team leader as an individual.

With regards to future research I recommend attention for the design of coaching processes in order to aid team leaders with temporal leadership. I feel that this research should not only focus on task related aspects of temporal leadership but also on relational aspects. While the training of team leaders may be a first step, I also recommend research in the training of teams in temporal decision making. This research could evaluate the ability of teams to manage time related aspects in complex project environments relatively to the ability of team leaders.

Experiment Limitations

With regards to the external validity of the experiment it has to be taken into account that the project teams were solely composed of students. The inexperience of these second year students may mean that the experiment results are not directly interpretable to normal business settings. The sample that was used in this study consisted almost exclusively of males (94%), furthermore the age of the respondents was not very widely distributed (18-32 years). Furthermore the educational background of the respondents almost exclusively consists out of two groups (Senior General Secondary Education and Intermediate Vocational Education). The technical industry in the Netherlands is mainly dominated by males, only 18% of technical employees is female (Janssen & Pas, 2015), therefore the low percentage of females in the sample can be regarded as representative. However, the low age of the respondents and their uniform background is most likely not representative for industry. The groups however did operate in real business settings, they developed new products in a similar manner as in industry. Although the project took place in a school environment, the project teams experienced the same uncertainties that industry project groups are faced with when working on innovative projects. Therefore the results of this research would appear to be applicable to technical product teams working on new product development.

This research relied heavily on self-reported measures, which may have resulted in common method bias. The author however feels that self-reported measures are the most appropriate manner of assessing intra-personal perceptions and mental states. There is also some research that suggest that self-reported measures may not limit internal validity to a great extent (Wall et al., 2004). Due to the limited resources in this project, it was not possible to include extensive peer and supervisor ratings, this would have added the option of a more complete comparison between self-rated and external-rated measures. It should however be taken into account that supervisors may not know exactly what is going on within a group with regards to the actual division of labour etc. This perhaps also explains the lack of correlation between the supervisor and team ratings.

Regarding the scales in this research it should be noted that due to the large amount of variables of interest, and the limited number of questions that the questionnaire could possess, scales were not in their entirety adopted from other authors. The scales did however show a high internal validity. Furthermore, the items were selected in such a way they still clearly described the dimension of interest.

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Appendix 1: Requirements for the intervention and risk factors

Requirements for the intervention

There are several requirements to the intervention. The requirements that mainly follow from the organizational context in which the intervention is executed are summoned below:

- The students cannot spend a significant amount of their project time on the intervention or any activities surrounding the intervention. They should not spend more than 4 hours in total.
- Teachers don't have any time for actively participating in the intervention or any of its surrounding activities.
- Students cannot be directly graded based on their participation in the intervention, nor on the effort they exert in the intervention.
- Since students cannot be graded based on the intervention, there is also no real mean of forcing them to participate.
- The intervention is bound to the project span of approximately 8 weeks.

Next to these context requirements there are also several requirements regarding the goal for the intervention:

- The intervention must be aimed at increasing temporal leadership behaviours, to be more specific both relationship oriented and task oriented temporal leadership.
- The intervention must stimulate the student team leaders to make a consistent effort at exerting temporal leadership behaviours instead of only giving a short temporary boost to temporal leadership behaviours.
- The intervention must not require from the students that they have to do further research or "homework" in order to start with their temporal leadership behaviours.
- The students that will participate in the intervention are technical students, the intervention should match the perceptions of these students, and not be "too soft". Previous teacher experiences have shown that students tend to feel resistance when they have to participate in non-technical learning activities.

Experiment risk factors

There are some risk factors that can result in the failure of the experiment, the most like ones are:

- A low response rate to the questionnaire. It is not possible to make the response to the questionnaire mandatory. It has been known that incomplete member data creates distortion for within-team diversity, and also for other team-level variables (Mohammed & Nadkarni, 2014). In addition a limited response rate could also make it harder to determine a difference in performance between the groups. It will be tried to increase the response rate by offering rewards for teams that fill in the questionnaire, as well as having the teachers that tutor the project groups stimulate them to fill in the questionnaire.
- As it is not possible to keep the groups of students separated during the experiment, there is a possibility that the test and placebo groups share information among each other. As such the internal validity of the experiment could be threatened.

Groups / tutoring teachers may decide that participating to the invention is not necessary. The participation to the intervention is mandatory, it is however not feasible to control whether they actually put the information that was handed to them to practise. Besides this in the organizational context it is not possible to obligate them to act on the information that is provided to them. In addition to groups not wanting to act on the information provided to them, it can also be that the tutoring teachers might not wish their groups to comply, since the handed method does not fit their own preferences. All tutors will personally approached with the request to stimulate the groups to act on the information that was provided to them during the information.

Appendix 2: Survey Questions

Questionnaire EXPO

The following questions consist of 5 item scales. 1 stands for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree, and 5 for strongly agree.

Since you are all working on different projects the questions can not be specifically targeted to your specific project, please interpret them to your own project situation to the best of your ability.

De volgende vragen bestaan uit 5 keuze items. Waarbij 1 staat voor sterk oneens, 2 voor oneens, 3 voor neutraal, 4 voor mee eens, en 5 voor sterk mee eens.

Aangezien de projecten waar jullie aan hebben gewerkt zeer divers zijn, kunnen de vragen niet specifiek op je eigen project gericht worden, interpreteer ze zo goed als je kan naar je eigen project-situatie.

***Required**

1. Vul je projectgroepnummer hier in. *

Please fill in your projectgroupnumber.

2. Er was vaak veel haast om onze taken op tijd af te hebben.

We were often under a lot of pressure to complete our tasks on time.

Mark only one oval.

1 2 3 4 5

strongly disagree strongly agree

3. We hadden niet veel tijd om onze taken af te krijgen.

We were not afforded much time to complete our tasks.

Mark only one oval.

1 2 3 4 5

strongly disagree strongly agree

4. De beschikbare tijd om onze taken af te ronden was kort.

The amount of time provided to complete our tasks was short.

Mark only one oval.

1 2 3 4 5

strongly disagree strongly agree

5. **In mijn groep hebben we dezelfde meningen over het behalen van deadlines.**

In my group, we have the same opinions about meeting deadlines.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

6. **In mijn groep zijn we het met elkaar eens waaraan we de beschikbare tijd gaan besteden.**

In my group, we agree on how to allocate the time available.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

7. **In mijn groep zijn we het eens hoeveel tijd het uitvoeren van een bepaalde activiteit kost.**

In my group, we have similar ideas about the time it takes to perform certain tasks.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

8. **In mijn groep zijn we het eens hoe we het best onze tijd kunnen gebruiken.**

In my group, we have similar thoughts about the best way to use our time,
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

9. **In hoeverre gaf uw teamleider persoonlijke complimenten aan groepsleden die hun werk af hadden?**

To what extent does your teamleader pay personal compliments to team members who get their work done?
Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

10. **In hoeverre moedigde uw teamleider de groep aan wanneer de tijd beperkt was?**

To what extent does your teamleader provide encouragement to the team when time is limited?
Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

11. **In hoeverre gaf uw teamleider ondersteuning aan teamleden die achterliepen op schema?**

To what extent does your teamleader provide support to team members who fall behind in schedule?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

12. **In hoeverre loofde uw teamleider groepsleden die hun werk op tijd af hadden?**

To what extent does your teamleader praise team members for completing work in time?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

13. **In hoeverre luisterde uw teamleider naar de mening van u en uw groepsgenoten m.b.t. hoe de tijd in het project gebruikt moest worden?**

To what extent does your teamleader consider team members' opinions in decisions regarding the team's use of time?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

14. **In hoeverre zorgde uw teamleider ervoor dat uw team de vaart erin hield zodat het werk op tijd af was?**

To what extent does your teamleader pace the team so that work is finished on time?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

15. **In hoeverre spoorde uw teamleider groepsleden aan om hun werktempo aan te passen om beter aan te sluiten bij dat van anderen?**

To what extent does your teamleader urge team members to adjust their pace in order to coordinate their work?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

16. **In hoeverre plande heeft uw teamleider tijd in gepland zodat er voor omgegaan kom worden met problemen en, tegenslagen, of onverwachte gebeurtenissen tijdens het project?**

To what extend does your teamleader prepares and build in time for contingencies, problems, and emerging issues?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

17. **In hoeverre zorgde uw teamleider ervoor dat projectleden efficiënt omgingen met hun tijd?**

To what extend does your teamleader see to it that team members make efficient use of their time?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

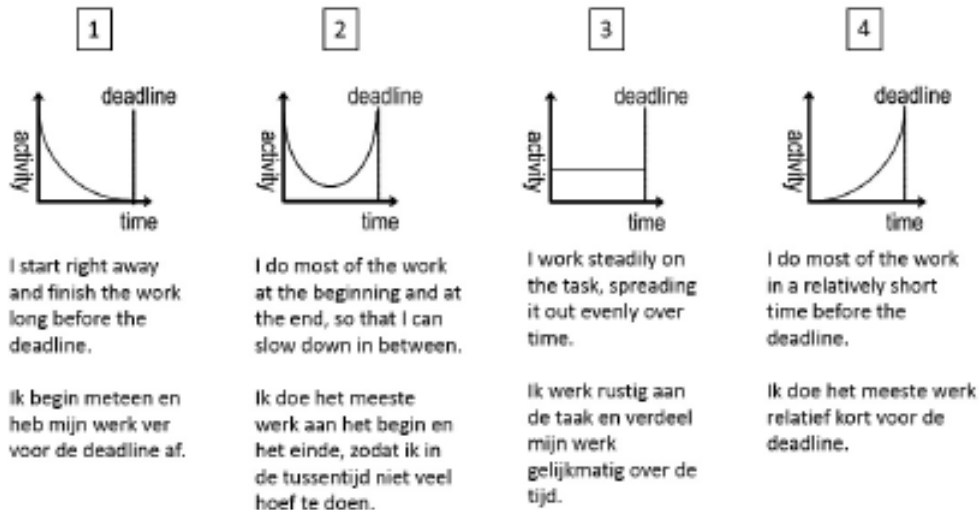
18. **In hoeverre spoorde uw teamleider projectleden aan om hun deeltaken op tijd af te hebben?**

To what extend does your teamleader urge team members to finish their subtasks on time?

Mark only one oval.

	1	2	3	4	5	
never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	a great deal

The following pictures show how one can distribute his labour over time when he is working on a task. E.g: starting at the last moment possible. Please rate how often you use a certain workload distribution scenario. 1 = never, 2= little, 3= somewhat, 4=much, 5= a great deal



19. Mark only one oval per row.

	1= never	2	3	4	5= a great deal
How much I use workload distribution scenario 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much I use workload distribution scenario 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much I use workload distribution scenario 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much I use workload distribution scenario 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. Ieder teamlid hielp het project voort te duwen.

Every team members fully pushed the project,
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

21. Ieder teamlid maakte het project zijn hoogste prioriteit.

Every team member made the project their highest priority.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

22. **Ons team heeft hard zijn best gedaan voor het project.**

Our team put much effort into the project.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

23. **Er waren conflicten over de inzet van teamleden voor het project.**

There were conflicts regarding the effort that team members put into the project [R].
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

24. **We hebben een open sfeer in ons team. We kunnen goed onze ideeën delen.**

We (the team) have a sharing relationship. We can openly share our ideas.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

25. **In ons team praten we vrijuit met elkaar over problemen die we hebben met het voltooien van ons project en we weten dat anderen zullen luisteren.**

We can talk freely to each other about difficulties we are having in completing the project and know that others will listen.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

26. **Als ik mijn ideeën en project-gerelateerde problemen in mijn team zou delen, dan weet ik dat mijn teamleden betrokken en constructief zouden reageren.**

If I shared my ideas and project-related problems with the members of my team, I know they would respond constructively and caringly.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

27. **Algeheel genomen was ik tevreden met de samenstelling van ons team.**

Taken as a whole, I was satisfied with the composition of our team.
Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

28. **Algeheel genomen verliepen de zaken prettig binnen ons team.**

Taken as a whole, things went pleasantly within our team.

Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

29. **Als ik eenzelfde soort project opnieuw zou moeten uitvoeren, zou ik dit graag met hetzelfde team doen.**

If I ever had to participate in a similar project again, I would like to do it with this team.

Mark only one oval.

	1	2	3	4	5	
strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strongly agree

30. **In hoeverre heeft dit team zich aan de planning gehouden?**

How was this team's adherence to scheduling?

Mark only one oval.

	1	2	3	4	5	
Very poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

31. **Hoe beoordeel je de hoeveelheid die dit team heeft verzet in vergelijking tot de andere teams:**

Compared to other teams, the amount of work accomplished for this project by this team is:

Mark only one oval.

	1	2	3	4	5	
Very poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

32. **Hoe beoordeel je de kwaliteit van het eindproduct/concept van dit team in vergelijking tot de andere teams:**

Compared to other teams, the quality of the team's end product/concept is:

Mark only one oval.

	1	2	3	4	5	
Very poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

33. **Hoe beoordeel je de originaliteit van het eindproduct/concept van dit team in vergelijking tot de andere teams:**

Compared to other teams the originality of this team's final product/concept is:

Mark only one oval.

	1	2	3	4	5	
Very poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

34. **Hoe beoordeel je de waarde voor de gebruiker van het eindproduct/concept van dit team in vergelijking tot de andere teams :**

Compared to other teams, the user value of this team's end product/concept :

Mark only one oval.

	1	2	3	4	5	
Very poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very good

35. **Welk eindcijfer vind je dat je groep verdient voor het project? (1-10)**

Which end grade do you think your group should get for this project? (1-10)

Mark only one oval.

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

36. **Uit hoeveel leden (inclusief uzelf) bestond uw team?**

Of how many members (including you) did your team consist?

37. **Hoe bekend was je met je mede-teamleden voordat het project startte?**

How well did you know your fellow team members before the project started?

Mark only one oval.

	1	2	3	4	5	
totally not familiar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	very familiar

38. **Leeftijd**

Age

39. **Geslacht**

Gender

Mark only one oval.

- Male
 Female

40. **Heb je de Nederlandse nationaliteit?**

Is your nationality Dutch?

Mark only one oval.

- yes
 no

Appendix 3: Data analysis

This chapter will discuss the steps that were undertaken with the data, before the actual analysis was conducted.

Step 1: Reversing the reverse scale variables

```
RECODE EFFORT4 (1=5) (2=4) (3=3) (4=2) (5=1) .  
EXECUTE.
```

Step 2: validation of scales

Scale name	Cronbach's Alpha
Time pressure	0.81
Temporal consensus	0.74
Relationship Oriented Temporal Leadership	0.82
Task Oriented Temporal Leadership	0.78
Effort	0.77
Trust	0.80
Satisfaction with the team	0.32 (if item 2 is removed 0.84)

Step 3: Adding scales for total measures.

It was examined if several scales can be added in order to make higher order dimensions. This was done by determining Cronbach's Alpha for the new scale and performing factor analysis.

Adding ROTL and TOTL, into temporal leadership. Concluded that they fit in the same dimension.

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	162	94,2
	Excluded ^a	10	5,8
	Total	172	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,875	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ROTL1	30,1420	30,259	,627	,861
ROTL2	30,1852	30,264	,681	,856
ROTL3	30,3519	30,788	,671	,857
ROTL4	30,1543	31,125	,630	,860
ROTL5	29,5988	32,739	,497	,870
TOTL1	30,0864	32,539	,562	,866
TOTL2	30,2716	31,367	,618	,861
TOTL3	30,1975	31,600	,526	,869
TOTL4	30,2840	32,068	,594	,863
TOTL5	30,0617	32,307	,567	,865

Component Matrix^a

	Component	
	1	2
ROTL1	,714	-,430
ROTL2	,758	-,287
ROTL3	,753	-,149
ROTL4	,717	-,222
ROTL5	,591	-,241
TOTL1	,655	,440
TOTL2	,712	,465
TOTL3	,617	-,070
TOTL4	,683	,116
TOTL5	,663	,426

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Adding all performance measures. Based on the analysis satisfaction with the team will be treated as a separate measure from the other performance measures. The other measures will be combined into team performance.

➔ **Reliability**

[DataSet1] C:\Users\Onno Puta\Desktop\thesis\data final questio:

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	158	91,9
	Excluded ^a	14	8,1
	Total	172	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,797	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SHED_ADHER	22,1203	9,712	,467	,787
WORK_ACCOM	21,8608	10,414	,449	,787
WORK_QUAL	21,9177	8,917	,657	,739
ORIGINALITY	21,6392	9,926	,522	,772
USER_VALUE	22,0127	9,325	,581	,758
END_GRADE	18,1709	9,353	,637	,745

Component Matrix^a

	Component
	1
SHED_ADHER	,619
WORK_ACCOM	,601
WORK_QUAL	,795
ORIGINALITY	,686
USER_VALUE	,736
END_GRADE	,783

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Adding all the team processes into team process quality:

Case Processing Summary

		N	%
Cases	Valid	167	97,1
	Excluded ^a	5	2,9
	Total	172	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,858	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TEMP_CON1	35,8084	40,047	,463	,853
TEMP_CON2	35,8084	39,686	,574	,845
TEMP_CON3	36,1617	39,715	,546	,847
TEMP_CON4	36,0599	38,984	,600	,843
EFFORT1	36,1257	35,954	,650	,838
EFFORT2	36,5988	36,700	,671	,836
EFFORT3	35,6287	40,331	,504	,850
EFFORT4	36,2635	38,123	,452	,857
TRUST1	35,2994	39,669	,583	,845
TRUST2	35,5150	39,071	,509	,849
TRUST3	35,6407	39,810	,558	,846

Component Matrix^a

	Component
	1
tempcon_tot	,859
effort_tot	,820
trust_tot	,784

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Step 4: Making the combined scales.

```
COMPUTE Time_pressure_tot=TIME_PRES1+TIME_PRES2+TIME_PRES3.
```

```
EXECUTE.
```

```
COMPUTE Temp_con_tot=TEMP_CON1+TEMP_CON2+TEMP_CON3+TEMP_CON4.
```

```
EXECUTE.
```

```
COMPUTE ROTL_tot=ROTL1+ROTL2+ROTL3+ROTL4+ROTL5.
```

```
EXECUTE.
```

```
COMPUTE TOTL_tot=TOTL1+TOTL2+TOTL3+TOTL4+TOTL5.
```

```
EXECUTE.
```

```
COMPUTE Temporal_leadership=ROTL_tot+TOTL_tot.
```

```
EXECUTE.
```

```
COMPUTE Effort_tot=EFFORT1+EFFORT2+EFFORT3+EFFORT4.
```

```
EXECUTE.
```

```
COMPUTE Trust_tot=TRUST1+TRUST2+TRUST3.
```

```
EXECUTE.
```

```
COMPUTE Teamwork_qual=Temp_con_tot+Effort_tot+Trust_tot.
```

```
EXECUTE.
```

```
COMPUTE Team_sat_tot=TEAM_SAT1+TEAM_SAT3.
```

```
EXECUTE.
```

```
COMPUTE Team_performace_tot= SHED_ADHER+WORK_ACCOM+WORK_QUAL+ORIGINALITY+  
USER_VALUE+END_GRADE.
```

```
EXECUTE.
```


Step 5: Team level measures

Temporal Leadership at the team level:

```
DATASET ACTIVATE DataSet1.
```

```
AGGREGATE
```

```
  /OUTFILE=* MODE=ADDVARIABLES
```

```
  /BREAK=TEAM_NR
```

```
  /Temporal_leadership_mean=MEAN(Temporal_leadership).
```

Experienced time pressure at the team level:

```
AGGREGATE
```

```
  /OUTFILE=* MODE=ADDVARIABLES
```

```
  /BREAK=TEAM_NR
```

```
  /Time_pressure_tot_mean=MEAN(Time_pressure_tot).
```

Team work quality at the team level:

```
AGGREGATE
```

```
  /OUTFILE=* MODE=ADDVARIABLES OVERWRITEVARS=YES
```

```
  /BREAK=TEAM_NR
```

```
  /teamwork_qual_mean=MEAN(teamwork_qual).
```

Performance at the team level:

```
DATASET ACTIVATE DataSet1.
```

```
AGGREGATE
```

```
  /OUTFILE=* MODE=ADDVARIABLES
```

```
  /BREAK=TEAM_NR
```

```
  /Team_performance_tot_mean=MEAN(Team_performance_tot).
```

Control variables: Age and member familiarity.

AGGREGATE

/OUTFILE=* MODE=ADDVARIABLES OVERWRITEVARS=YES

/BREAK=TEAM_NR

/MEMBER_FAM_mean=MEAN(MEMBER_FAM)

/AGE_mean=MEAN(AGE).

Step 6: Diversity measures

Pacing style diversity: Is the combined standard deviation within the team on the separate pacing styles.

```
AGGREGATE
```

```
/OUTFILE=* MODE=ADDVARIABLES
```

```
/BREAK=TEAM_NR
```

```
/PACING1_sd=SD(PACING1).
```

```
AGGREGATE
```

```
/OUTFILE=* MODE=ADDVARIABLES
```

```
/BREAK=TEAM_NR
```

```
/PACING2_sd=SD(PACING2).
```

```
AGGREGATE
```

```
/OUTFILE=* MODE=ADDVARIABLES
```

```
/BREAK=TEAM_NR
```

```
/PACING3_sd=SD(PACING3).
```

```
AGGREGATE
```

```
/OUTFILE=* MODE=ADDVARIABLES
```

```
/BREAK=TEAM_NR
```

```
/PACING4_sd=SD(PACING4).
```

```
COMPUTE Pacing_diversity=PACING1_sd+PACING2_sd+PACING3_sd+PACING4_sd.
```

```
EXECUTE.
```

Time pressure diversity: Is the combined standard deviation within the team on the total experienced time pressure.

```
AGGREGATE
```

```
/OUTFILE=* MODE=ADDVARIABLES OVERWRITEVARS=YES
```

```
/BREAK=TEAM_NR
```

```
/Time_pressure_tot_sd=SD(Time_pressure_tot).
```

Step 7: Tests of normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SHED_ADHER_mean_1	,128	36	,143	,961	36	,233
WORK_ACCOM_mean_1	,107	36	,200 [*]	,977	36	,634
WORK_QUAL_mean_1	,114	36	,200 [*]	,955	36	,148
ORIGINALITY_mean_1	,102	36	,200 [*]	,970	36	,416
USER_VALUE_mean_1	,109	36	,200 [*]	,965	36	,313
END_GRADE_mean_1	,141	36	,068	,972	36	,487
TEAM_SIZE_mean_1	,171	36	,009	,873	36	,001
MEMBER_FAM_mean_1	,152	36	,034	,934	36	,033
AGE_mean_1	,168	36	,012	,817	36	,000
timepress_tot_mean	,116	36	,200 [*]	,926	36	,018
tempcon_tot_mean	,154	36	,030	,947	36	,085
ROTL_tot_mean	,073	36	,200 [*]	,973	36	,504
TOTL_tot_mean	,067	36	,200 [*]	,990	36	,986
effort_tot_mean	,140	36	,073	,960	36	,214
trust_tot_mean	,075	36	,200 [*]	,975	36	,584
teamsat_tot_mean	,099	36	,200 [*]	,955	36	,155
temporal_leadership_mean	,106	36	,200 [*]	,978	36	,664
team_performance_mean	,089	36	,200 [*]	,959	36	,205
teamwork_qual_mean	,155	36	,028	,949	36	,100
timepress_tot_sd	,145	36	,054	,960	36	,213
pacing_div	,099	36	,200 [*]	,961	36	,229

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Except for time pressure, team size, member familiarity, and age all data can be assumed to be normally distributed (Shapiro-Wilk higher than 0.05).

Step 8: Making the interaction effects

```

AGGREGATE
  /OUTFILE=* MODE=ADDVARIABLES
  /BREAK=
  /Temporal_leadership_mean_mean=MEAN(Temporal_leadership_mean)
  /pacing_diversity_mean=MEAN(pacing_diversity)
  /Time_pressure_tot_mean_mean=MEAN(Time_pressure_tot_mean)
  /Time_pressure_tot_sd_mean=MEAN(Time_pressure_tot_sd).
COMPUTE pacing_diversity_meancen=pacing_diversity-pacing_diversity_mean.
EXECUTE.
COMPUTE temp_leader_meancen=Temporal_leadership_mean-Temporal_leadership_mean_mean.
EXECUTE.
COMPUTE time_pres_meancen=Time_pressure_tot_mean-Time_pressure_tot_mean_mean.
EXECUTE.
COMPUTE time_pres_SD_meancen=Time_pressure_tot_sd-Time_pressure_tot_sd_mean.
EXECUTE.
COMPUTE templeader_x_pacingdiv=temp_leader_meancen*pacing_diversity_meancen.
EXECUTE.
COMPUTE templeader_x_timepres=temp_leader_meancen*time_pres_meancen.
EXECUTE.
COMPUTE templeader_x_timepresSC=temp_leader_meancen*time_pres_SD_meancen.
EXECUTE.

```

Appendix 4: The complete correlation table

Table of Correlations																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Mean experienced Time Pressure	1																					
2. Time pressure perception diversity	.08	1																				
3. Pacing style diversity	-.10	.16	1																			
4. Temporal leadership	.28	-.27	-.16	1																		
5. R.O.T.L.	.33*	-.33 [†] (p=0.053)	-.13	.96**	1																	
6. T.O.T.L.	.14	-.19	-.18	.95**	.83*	1																
7. Team process quality	.05	.12	.14	.42**	.29 [†]	.54**	1															
8. Effort	-.10	0.03	.25	.37*	.22	.43**	.91**	1														
9. Affective trust	.14	.22	.03	.45**	.36*	.57**	.83**	.60**	1													
10. Temporal consensus	.04	.13	.04	.35*	.22	.47**	.93**	.77**	.72**	1												
11. Team Performance	-.01	.37*	.37*	.17	.12	.22	.39*	.37*	.32 [†] (p=0.054)	.36*	1											
12. Team satisfaction	-.12	.10	.25	.34*	.23	.43**	.83**	.73**	.76**	.70**	.46**	1										
13. Scheduling adherence	-.07	.17	.33*	.22	.17	.27	.51**	.64**	.16	.49**	.64**	.41**	1									
14. Amount of Work Accomplished	.12	.36*	.24	.35*	.30	.37*	.37*	.31 [†]	.33*	.32 [†]	.68**	.48**	.46**	1								
15. Quality of Work	-.20	.21	.18	-.00	-.06	.07	.29 [†]	.26	.21	.31 [†]	.84**	.36*	.41*	.43**	1							
16. Product / Concept Originality	.13	.37*	.25	.10	.07	.12	-.02	-.04	.09	-.04	.74**	.07	.25	.42*	.59**	1						
17. User Value	.09	.39*	.25	.10	.06	.14	.35*	.28	.32 [†]	.39*	.87**	.34*	.50**	.47**	.70**	.65**	1					
18. Overall Grade	-.07	.28 [†]	.48**	.10	.06	.12	.30 [†]	.30 [†]	.33*	.19	.84**	.47**	.38**	.55**	.70**	.56**	.68**	1				
19. Tutor Overall Performance	-.18	.06	.18	-.21	-.26	-.13	-.12	.10	-.04	-.21	.03	.04	-.22	-.08	.19	.14	-.010	.24	1			
20. Tutor Time Management Quality	-.13	.17	.36 [†]	-.03	-.11	.09	.14	.21	.08	.06	.28	.16	.22	.28	.28	.35 [†] (p=0.054)	0.07	.26	.40*	1		
21. Team size	-.01	.05	.14	-.07	-.10	-.07	-.30 [†]	-.34*	-.20	-.34*	-.14	-.12	-.35*	-.01	-.16	.26	-.24	-.01	.36*	.07	1	
22. Member Familiarity	.12	.19	-.06	-.15	-.07	-.14	-.15	-.28 [†]	-.02	-.13	.08	-.19	-.15	.04	.06	.11	.17	.03	-.03	-.13	-.03	1

Table 4. Correlations between the variables

