

Product owner emotional intelligence related to agile team processes and effectiveness: A qualitative case study

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## **Abstract**

Currently, the role of leader emotional intelligence (EI) within agile teams is a relatively uncharted theory. Therefore, the purpose of this study was to explore the role of product owner EI in the agile team dynamic, investigated through affective, behavioral, and cognitive (ABC) agile team processes, and its effect on agile team effectiveness. Henceforth, this study is exploratory, performing an extreme case analysis of two agile teams. The extreme cases were selected on leader EI levels, with one high and low EI leader. Furthermore, this is a mixed methods study, utilizing quantitative survey data in support of qualitative video observations. The results imply that leader EI was indeed positively related to agile team ABC processes. Interestingly, findings imply that processes regarding team social interactions, like team cohesion and conflict management, seemed to have the strongest positive relation to leader EI. Moreover, these agile team processes also seemed to have a stronger relation to agile team effectiveness than individual effectiveness. These findings provide interesting theoretical and practical implications. For example, this study fills a gap in the theory regarding the importance of agile leader EI within agile team dynamics. Moreover, findings imply that agile team functioning and performance have a stronger correlation to leader EI than individual agile performance, contributing fresh insights to agile team theory. Finally, this case study provides unique practical insights and illustrations of the role of EI within agile teams, which can be used by agile practitioners to apply and learn from.

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# 1. Introduction

Teamwork is as old as time. Ever since humans have existed people have had to work together to get things done that require more than one person. Until recently, the philosophy around teamwork represented a leader that had the authority over a team, deciding what and how they proceeded with their tasks and goals. However, over time the world has evolved into a very complex, global society where everything is intertwined. With this comes a changing work environment, containing more complex, volatile tasks and dynamic environments which require a different approach when it comes to work and specifically, teamwork (van Solingen, 2020). In response, one of the prevailing methodologies that emerged is Agile (Highsmith & Highsmith, 2002). The agile methodology is a mindset for handling projects through a focus on flexibility to thrive in fast-changing environments (Layton et al., 2020). Agile is meant to break a project down into smaller tasks to have more deliverables instead of one large project. This allows Agile teams to work closely together with customers by integrating their feedback and desires concerning the product (Layton et al., 2020). Since the emergence of agile in the context of manufacturing over 50 years ago, more than 40 different agile methodologies have been developed for different applications, with Kanban, Scrum, and XP being the most popular (Shastri et al., 2021). This study investigates agile teams that deploy the Scrum methodology, which is also the most frequently used agile methodology for project management (Shastri et al., 2021). Specifically, Scrum teams work in sprints that often last for four weeks. All the tasks and events that belong to the goal or product of that sprint should be completed within this “time-box” (Layton et al., 2020). Therefore, Scrum teams are expected to provide a deliverable after each sprint (Hoda et al., 2010), meaning the customer has a constant flow of deliverables, which should motivate both parties involved and upgrade the efficiency and effectiveness of teams.

An agile way of working like Scrum involves frequent meetings and more interactions between team members, as the short delivery time of a product requires more intensive cooperation between experts. Due to this more intensive and frequent interaction between team members, the functioning and dynamic of a team are increasingly interesting and important to look at (Moe et al., 2010). Hence, contributing to knowledge on team functioning in agile teams and the role of EI can be valuable in improving the effectiveness of agile practitioners. With team effectiveness possibly being more dependent on teamwork quality in agile, compared to traditional team approaches (Lindsjørn et al., 2016), scrum teams are prone to failure if team processes and dynamics are not functioning well. According to Moe, Dingsøy, and Dybå (2010), the implementation of Scrum can form problems regarding team orientation, team

leadership, and coordination, which in turn affects the team's effectiveness. For example, members that are used to working autonomously suddenly have to cooperate and consult with colleagues more often, which might lead to insufficient coordination and disjointed projects. Moreover, leadership is less clearly defined, which can lead to a lack of leadership distribution (Moe et al., 2010). Therefore, it is crucial to address team functioning when assessing agile teams and their effectiveness. A potential and popular framework to address team processes is the affective, behavioral, cognitive (ABC) model of Kozlowski and Ilgen (2006), which categorizes team processes and emergent states into affective, behavioral, and cognitive variables. The implementation of this model will be thoroughly discussed along with the research design.

The aforementioned ABC model shows the social, emotional aspects of the team and the importance of team dynamics. In particular, agile teams require constant adaptation and change due to the nature of their tasks. Moreover, team members need to take responsibility due to the high autonomy within these teams. As the study of Luong et al. (2021) mentions, these 'human-related challenges' occurring in an agile team can result in increased feelings and emotions coming from these social interactions. In the context of agile, Emotional intelligence (EI) is mentioned as a positive influence on these human-related challenges in teams (Luong et al., 2021), as well as developing emotionally intelligent team leaders (Liepold et al., 2013). Therefore, a potentially very interesting subject to investigate in this context is EI. EI can be defined as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). This set of emotional skills allows team members to perceive and regulate their own and other members' emotions, being able to positively influence team dynamics. However, properly dealing with situations as a team, due to high emotional intelligence within the team, can also positively affect team processes revolving around teamwork and interpersonal interaction. As this study is researching team dynamics, team EI is one of two EI indicators that are investigated in this research. In the literature, EI is mentioned by several scholars to have a positive influence on team effectiveness (Druskat et al., 2017; Jordan et al., 2006; Lee & Wong, 2019; Wong & Law, 2002). While some studies address a relationship between EI and agile team effectiveness (Rezvani & Khosravi, 2019; Richer, 2015), this specific direction of research is relatively uncharted. Therefore, it is very interesting to explore this subject in the context of agile teams.

Meanwhile, as EI is deemed to be related to agile team functioning, EI can influence different factors. Hence, while the EI of team members and the team is important, the EI of a team leader can also have a great effect on the team (Bumphus, 2008; Danquah, 2022; Jain &

Duggal, 2018; Kaur & Hirudayaraj, 2021; Maulding et al., 2012; Neil et al., 2016; Schlaerth et al., 2013; Semenets-Orlova et al., 2021; Waglay et al., 2020; Weinberger, 2009; Zhang et al., 2020). While most agile teams do not have a formal leader or manager like traditional teams, a team can still benefit from competent and resourceful leadership. In the case of Scrum, a product owner (PO) can be considered the leader of the team as they are responsible for the product of that sprint. Therefore, the PO is in a position to have an additional positive influence on his team as the informal leader. Wong and Law (2002) already mentioned a possible relationship between leader EI and follower performance, albeit not finding significant results. Henceforth, building on previous research, this study aims to specifically investigate the influence of leader EI on agile team processes and therefore agile team effectiveness. This specific relationship between agile leader EI and agile team processes and performance has received little attention from scholars. Hence, this study seeks to contribute to the literature by exploring this specific relationship in the agile context. In conclusion, the suggested exploratory research subjects lead to the following research question:

**“What is the relationship between a Product Owner’s EI, team-level and individual-level affective, behavioral, and cognitive variables, and agile team effectiveness?”**

The answer to this question should present theoretical contributions, as this study fills a specific gap in the literature regarding the effect of PO EI on agile team effectiveness. Moreover, the hands-on investigation and observation of agile teams should lead to unique insights, that are valuable to other scholars and agile practitioners seeking to implement EI. To answer this research question, an extreme case study is conducted between two agile teams. First, the methodology of the study will be explained, as the study follows a somewhat unconventional approach. This approach involves an inductive exploration of existing links between specific agile team processes and leader EI, a relationship that has received little attention in research. Hence, the exploration was instigated by selecting predetermined team variables which represented the largest discrepancy measured between both extreme cases. The cases in this research are selected from a pre-existing database, which is part of a larger overarching study of agile teams within a large organization. These extreme cases portray teams with the highest and lowest EI among team members and team leaders. Then, after the establishment of the agile team variables and the agile teams, a combined exploration of literature and qualitative data was conducted. As a result, a coherent illustration of the impact of (leader) EI on each team process is developed. The specific literature of each variable will be discussed along with the results of the respective variable. This way each results subsection will present a comprehensive walkthrough from existing literature to empirical evidence. At the end of the results section, a summary will be presented, providing answers to the main question of the

research. Finally, a discussion is initiated on the theoretical and practical implications of the study findings, the limitations of the study are discussed and directions for further research are suggested.

## 2. Methodology

### 2.1 Research design

This exploratory study makes use of extreme case analysis through multiple methods. These methods consisted of mainly qualitative analysis supported by data from quantitative analysis. Extreme case selection is a form of non-probability, purposive sampling, which means that the sample is selected to focus solely on these unusual cases instead of a random sample (Etikan, 2016). Especially in exploratory studies, case studies provide an advantage compared to forms of random sampling (Gerring, 2004). In the context of this research, extreme case analysis is, therefore, an interesting method as it is suitable for testing hypotheses about causal paths (Seawright, 2016). Moreover, the study of Seawright (2016) argues that extreme case values on the independent variable (EI in this case) are good alternative methods to discovery-related goals, which are very present in this study. Hence, extreme case analysis on the independent variable EI is the elected method, as it allows for a clear contrast between a high EI and low EI leader (PO) of the team. Coincidentally, the selected teams for case analysis also represented the respective highest and lowest average EI teams. Accordingly, these selected cases represent the largest possible contrast within the population of teams in the existing data set (Seawright, 2016), and should therefore provide very interesting and valuable results. Correspondingly, the ethical standards of data collection and analysis are complied with, as the BMS ethics committee approved this study (190473).

In light of this extreme case study, a mixed method is used for analysis, combining qualitative and quantitative analysis. Mixed method research can be defined as “a systematic integration of quantitative and qualitative methods in a single study for purposes of obtaining a fuller picture and deeper understanding of a phenomenon.” (Huey Chen, as cited in Johnson, Onwuegbuzie, & Turner, 2007). The use of mixed methodology research makes sense, as this exploratory study presumably achieves the most interesting results when video observation qualitative data is supported by quantitative data. Hence, this study resembles a qualitative dominant, mixed study as described by Johnson et al. (2007). The qualitative analysis is shaped by video observations of the regular meetings of both teams. Through these

observations, the relationship between the leader's EI, the team's EI, and the team processes can be illustrated by real examples from the team environment. This way, a well-constructed overview can be formed of the leader's role in the team environment and team variables. In turn, this gives practical examples of the influence of a leader's EI on not only team performance but individual performance and his performance, perceived by his followers. The direction of conclusions is generally inductive. First, the observations of the meetings lead to findings that do not stem from the literature but are unique to the context of the empirical evidence. Furthermore, the variables selected from the pool of variables are chosen upon their contextual fit within team functioning. Moreover, the variables are also selected due to their large discrepancy in scores between the teams, for the purpose of extreme case research. However, existing literature on the specific team variables and their relationship with EI is utilized to clearly define each variable. Hence, the theory for each variable provides specific verbal and non-verbal behaviors to mark during observations. Essentially, a combination of existing literature and exclusive observations culminates into this exploratory qualitative research. Therefore, this research can be regarded as case research for theory elaboration, as this study creates a unique conjunction between existing general theory, combined with contextual empirical evidence (Ketokivi & Choi, 2014). Hence, this research presents results that are interesting, but situational and not generalizable to every team environment. The right interpretation in the context of the study can, however, lead to valuable insights that apply to other team situations.

The quantitative analysis will entail surveys that are taken after each sprint meeting of the team, and filled in by the team members. This means that the data are perceived scores, rated by the team members. For each specific survey item, a suitable, validated scale was gathered through renowned articles or supervisor insight. While most variables are measured in a team context, a few variables are measured on an individual level. These select variables (Meeting Mood and Goal Clarity) relate to individual affective and cognitive states and are therefore measured individually. The survey results are used for the input variables leader EI and team EI, all team process variables, and the output variables defining individual, team, and leader performance. This data gathered from the surveys is used to guide, as well as support the qualitative analysis.

Forthwith, the illustrated mixed-method approach makes thankful use of multiple sources of data in the form of quantitative survey data and qualitative video observation data. In effect, this study triangulates its findings by utilizing multiple different data sources and engaging in multiple research methodologies, therefore not leaning on one particular dataset or methodology. Such triangulation attributes the study results with less bias and more



generalizability, ultimately increasing the validity of the research (Carter et al., 2014). Furthermore, peer review has taken place by study supervisors, who are experts in this field of study and have reviewed the findings and provided feedback for improvement through meetings, increasing the rigor of presented findings (Johnson et al., 2020). Ultimately, besides a well-established study framework, methodology, and measures to reduce bias like triangulation and peer feedback, the exploratory nature and setup of this study inevitably leave room for researcher bias. However, due to exploratory aims, the findings of this research should be treated as such.

As previously explained, this study focuses on the influence of POs' EI on the effectiveness of teams in an agile environment. Therefore, it is essential to establish what leads to team effectiveness to properly assess the effectiveness and the influence EI has on its aspects. Kozlowski and Ilgen (2006) state that team dynamics can be viewed through an I-P-O (Input-process-output) framework with team inputs influencing team processes and emergent states, culminating in team outcomes like effectiveness. With the inputs team and leader EI known, the next step is to establish which team processes are present in the context of this study. As mentioned, according to Kozlowski and Ilgen (2006) team processes can be categorized into affective, behavioral, and cognitive processes. While Marks et al. (2001) mention that such team variables can also be emergent states instead of processes, these team variables will be addressed as processes for the sake of clarity.

The selected variables are composed to provide a clear image of each process. To illustrate, Affective processes entail "motivational tendencies, relations among team members, and affective reactions" (Kozlowski & Ilgen, 2006, p. 87). In this study, the affective processes researched are Squad Cohesion, Squad Psychological safety, and Meeting Mood. Kozlowski and Ilgen (2006) use similar variables like team cohesion and affect, mood, and emotions. Even team conflict is incorporated in this study, however, categorized as behavioral. Squad cohesion is often mentioned in the literature regarding team functioning (Chang & Bordia, 2001; Evans & Dion, 1991; Tekleab et al., 2009), and is related to EI by several scholars (Kim & Ko, 2021; Moore & Mamiseishvili, 2012; Zhang & Hao, 2022). Moreover, Squad psychological safety is also mentioned as a crucial factor in the functioning and performance of a team (Baer & Frese, 2003; Carmeli et al., 2014; Edmondson, 1999; Javed et al., 2019; Nembhard & Edmondson, 2006). Further, EI is commonly related to psychological safety as well (Harper & White, 2013; Shankar & Tewari, 2021; Zhou et al., 2020), as the nature of these concepts shares common ground. Additionally, Meeting mood is commonly investigated in relation to team dynamics (Jordan et al., 2006; Lin et al., 2014; Wright & Cropanzano, 2000), while many scholars have also established a relationship between Mood and EI (Mikolajczak

et al., 2009; Petrides & Furnham, 2003; Salami, 2010; Sánchez-Álvarez et al., 2016; Schutte et al., 2002; Suárez-Albanchez et al., 2022; van Heck & Oudsten, 2008; van Mierlo et al., 2005). Altogether, these variables should provide a comprehensive impression of the affective processes in the subject agile teams.

Second, Behavioral processes entail what teams do, which involves their actions toward their goals, coordinating, adapting, and resolving task demands (Kozlowski & Ilgen, 2006). In this study the behavioral processes researched are team adaptability, squad autonomy, and team conflict management, variables that have all been at the forefront of existing team functioning and performance literature. For example, team adaptability has previously been related to team functioning by studies like that of Maynard et al. (2015). Similarly, several scholars have already established an existing relationship between adaptability and EI (Acikgöz & Latham, 2020; Celik & Storme, 2018; Parmentier et al., 2019; Pradhan et al., 2017; Sony & Mekoth, 2016; Udayar et al., 2018; Vashisht et al., 2021). Furthermore, squad autonomy is often correlated to team effectiveness (Gonzalez-Mulé et al., 2016; Ryu et al., 2022; Suárez-Albanchez et al., 2022; von Bonsdorff et al., 2015) and several studies have included the role of EI as well (Goswami & Mahanta, 2021; Jafri, 2018; Jain & Duggal, 2018; Waglay et al., 2020). Finally, conflict management is also a crucial factor to team functioning and effectiveness previously discussed by Tekleab et al. (2009), among others. Conflict management is also often connected to EI in other noteworthy studies (Afzalur Rahim et al., 2002; Başoğul & Özgür, 2016; Chen et al., 2019; Hopkins & Yonker, 2015; Jordan & Troth, 2004; Schlaerth et al., 2013; Shih & Susanto, 2010; Valente & Lourenço, 2020; Winardi et al., 2022). In conclusion, these variables all address the behaviors of the team in their category, together forming an image of the dynamic behavioral process of the teams.

Third, Cognitive processes entail “task relevant interactions among team members” (Kozlowski & Ilgen, 2006, p. 81). Cognitive processes revolve around task-related subjects like collective perceptions, knowledge organization, and information acquisition (Kozlowski & Ilgen, 2006). This study researches cognitive processes that are information sharing, team resilience, and goal clarity. These variables address different cognitive aspects of the team, together forming an image of the cognitive process of the teams. For example, information sharing is an important cognitive variable regarding teamwork (Mesmer-Magnus & DeChurch, 2009; Winquist & Larson, 1998), with many scholars already relating EI to information sharing (Ansari & Malik, 2017; Arabshahi et al., 2013; Goh & Lim, 2014; Jamshed & Majeed, 2018; Malik, 2021; Othman & Abdullah, 2012; Tamta & Rao, 2017; Tuan, 2016). Likewise, team resilience is a cognitive variable often researched in the context of teams (Chapman et al., 2020; Hartwig et al., 2020; Meneghel et al., 2016; Morgan et al., 2013), with some studies already establishing

the role of EI (Armstrong et al., 2011; Bumphus, 2008; Danquah, 2022; Magnano et al., 2016; Maulding et al., 2012; Schneider et al., 2013; Trigueros et al., 2020). Finally, goal clarity is naturally very important to a team's dynamic and effectiveness (Ahmed et al., 2022; Anderson & Stritch, 2016; Bang et al., 2010; Caillier, 2016; Jung, 2014; Lee et al., 1991; Lui et al., 2022; Peng et al., 2021; Peralta et al., 2015; Raziq et al., 2018; van der Hoek et al., 2018). Moreover, the role of EI in relation to goal clarity has also previously been investigated and established (Jordan et al., 2002; Lin et al., 2014; Martinez-Pons, 1997). Conclusively, the above-mentioned affective, behavioral, and cognitive variables are selected from the existing set of variables, from which data was collected in the overarching study. From this data set, these selected variables represented an even match of affective, behavioral, and cognitive variables, and contained a notable difference in score between the teams, which allowed for a meaningful analysis. Additionally, most variables have previously been related to EI by other researchers, promising interesting results.

## 2.2 Sample

The population of the teams consists of 10 agile teams from a large corporate organization in the Netherlands. This organization has adopted an agile methodology based on the Spotify agile model (Alqudah & Razali, 2016), meaning that team members are part of a chapter besides being part of the team. This specific study is part of a larger research project of the University of Twente within this organization, therefore the sampling of the population was already conducted. The data collection takes place within 3 weeks, equal to the sprint length of the subject teams. To illustrate, the first instance of data collection is the video recording of the first meeting, with the last instance being the questionnaire after the 3<sup>rd</sup> meeting. These teams all operate in different fields of practice, consisting of members from professions of different tribes within the company. To achieve an extreme case analysis, two teams were sampled based on their leader's emotional intelligence, with the teams of leaders with the highest and lowest EI scores being selected. This way, the effect of leader EI can be measured the best, as the contrast in EI is the largest within the sample. The 2 teams consist of a product owner (PO) and several team members.

Table 1: Agile team demographics and descriptives.

Team	PO EI	Nr. of Members	Gender M/F	Age range	Nationality	Avg maturity of the team
12	High	9	8/1	29-35	7 Indian 2 Dutch	0,72 years
6	Low	7	9/0	27-48	4 Dutch 1 Belgian 1 Spanish 1 Hungarian	0,69 years

The meetings are filmed in a meeting room within the company building with members present in the room during the meetings. As members participating through digital ways of communication would impact the quality of the video data, 50% of the members should be physically present. During the meetings, team six had an average of 6 team members present, with an average meeting length of 49 minutes. On the other hand, team twelve had an average of 7,33 team members present, with an average meeting length of 1 hour and 5 minutes. In detail, to spread the instances of data collection, three meetings of each squad are videotaped: (1) a sprint planning meeting, where the activities for the sprint are planned, (2) a sprint refinement meeting, where the team reviews the goals set in the sprint planning and (3) sprint retrospective meeting where the squad reflects on the sprint.

The scrum guide of Schwaber and Sutherland (2020) addresses events that a scrum sprint should contain to achieve optimal success, which includes planning, daily and retrospective meetings. Therefore, these 3 specific meetings are elected to be recorded and observed as they are key meetings within the sprint and represent the beginning, middle, and end of the sprint. As a result, the combination of these video observations should present a proportionate and accurate image of the dynamics and processes of the observed teams.

Moreover, the survey questions are spread across 3 questionnaires with the team members filling one questionnaire after each meeting. However, some subjects regarding the meetings (e.g., meeting mood, meeting psychological safety) are included in every questionnaire.

## 2.3 Measures

The survey data was collected through a physical questionnaire after each of the 3 sprint meetings. For each subject, a set of questions is assembled based on existing literature. Most variables are measured once after a meeting, with a specific set of variables measured at each meeting. This means that these team variables are measured at different points in time. For example, emotional intelligence is measured after meeting 1, while squad cohesion is measured after meeting 2. This excludes the meeting-specific variables like meeting effectiveness, which are measured after each meeting as these refer to a specific meeting instead of the entire sprint. It is important to note that the conduction of the survey and the observation of the team meetings occur at different times. This means that the observer might assess a team process before the team has filled out the survey on this variable and vice versa. Finally, the final score for each variable is composed by combining the individual questionnaire scores for each subject into a team score. Notably, the EI scores partly remain individual as the leader's EI is the main interest of this study.

### 2.3.1 Independent variables

*Leader emotional intelligence.* Leader emotional intelligence can be defined as a leader's "subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). The Leader's emotional intelligence functions as an independent variable in this study, as it is expected to influence other variables. EI is measured individually for each team member through a survey after the first meeting of each squad. This survey consists of 16 questions regarding EI based on the survey of Wong & Law (2002). The survey is self-rated on a Likert scale of 1 to 7, meaning we are talking about perceived emotional intelligence. Through the survey we look specifically at the members assigned with the task of product owner and look at their EI, to establish the leader's emotional intelligence.

*Team emotional intelligence.* Team emotional intelligence can be defined as a teams' composed "subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). The team's emotional intelligence functions as an independent variable in this study, as it is expected to influence other variables.

EI is measured individually for each team member through a survey after the first meeting of each squad. Team EI functions as an aggregated variable and is formed from the average of each member's EI. This survey consists of 16 questions regarding EI based on the survey of Wong & Law (2002). The survey is self-rated on a Likert scale of 1 to 7, meaning we are talking about perceived emotional intelligence. The Cronbach's alpha for team 12 is 0,799 and for team 6 is 0,785.

### 2.3.2 Mediator variables

#### **Team variables**

*Information sharing.* Information sharing can be defined as “sharing new information that is unknown to the rest of the team”. Information sharing is one of the mediator variables in this study. Information sharing is individually rated through 4 survey items based on the survey of Bunderson and Boumgarden (2010). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on information sharing. The Cronbach's alpha for team 12 is 0,194 and for team 6 is 0,949.

*Team Resilience.* Team resilience can be defined as knowing how to cope with challenges, the ability to cope with difficult periods, and knowing how to handle difficult situations when facing them (Stephens et al., 2013). Team resilience is one of the mediator variables in this study. Team resilience is individually rated through 3 survey items based on the survey of Stephens et al. (2013). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on team resilience. The Cronbach's alpha for team 12 is 0,627 and for team 6 is 0,360.

*Squad cohesion.* Squad cohesion can be defined as “the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives.” (Tekleab et al., 2009). Squad cohesion is one of the mediator variables in this study. Squad cohesion is individually rated through 6 survey items based on the survey of Tekleab et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on Squad cohesion. The Cronbach's alpha for team 12 is 0,678 and for team 6 is 0,842.

*Squad autonomy.* Squad autonomy can be defined as a squad's "degree to which the task provides substantial freedom, independence, and discretion in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman, J. R., & Oldham, 1980, p. 79). Squad autonomy is one of the mediator variables in this study. Squad autonomy is individually rated through 3 survey items based on the survey of van Mierlo et al. (2005). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on Squad autonomy. The Cronbach's alpha for team 12 is 0,925 and for team 6 is -0,032.

*Conflict management.* Conflict management can be defined as a process of the team in which they engage in open discussion or conflict and are prepared to manage conflict when it arises. Conflict management is one of the mediator variables in this study. Conflict management is individually rated through 4 survey items based on the survey of Tekleab et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on conflict management. The Cronbach's alpha for team 12 is -1,114 and for team 6 is 0,801.

*Team adaptability.* Team adaptability can be defined as "the capacity of a team to make needed changes in response of a disruption or trigger" (Maynard et al., 2015, p. 655). Team adaptability is one of the mediator variables in this study. Team adaptability is individually rated through 4 survey items based on the survey of Abrantes et al. (2018). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think the team functions on Team adaptability. The Cronbach's alpha for team 12 is 0,828 and for team 6 is -0,307.

*Meeting mood.* Meeting mood can be defined as the emotional state and well-being of the team during the meetings, a mix of positive and negative affect (Watson et al., 1988). Meeting mood is one of the mediator variables in this study. Meeting mood is individually rated through 14 survey items based on the survey of Watson et al. (1988). The questions are based on a Likert scale of 1 to 7. Unlike most variables, meeting mood is rated after every meeting. The variable score, therefore, represents the average of 3 team meetings. This is an individually rated variable, meaning that each team member has to rate their mood during each meeting. However, the individual meeting mood is aggregated into a team mood to compare between teams. The Cronbach's alpha for team 12 is 0,846 and for team 6 is 0,537.

*Squad psychological safety.* Squad psychological safety can be defined as “a shared belief that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 354). Squad psychological safety is one of the mediator variables in this study. Squad psychological safety is individually rated through 3 survey items based on the survey of Detert and Burris (2007). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think about psychological safety within the team. The Cronbach’s alpha for team 12 is 0,770 and for team 6 is 0,248.

*Goal clarity.* Goal clarity can be defined as an individual’s clarity of goals and the prioritization of those goals (Lee et al., 1991). Goal clarity is one of the mediator variables in this study. Goal clarity is individually rated through 4 survey items based on the survey of Lee et al. (1991). The questions are based on a Likert scale of 1 to 7. This is an individually rated variable, meaning that each team member has to rate their goal clarity during each meeting. However, the individual Goal clarity is aggregated into a team goal clarity to compare between teams. The Cronbach’s alpha for team 12 is 0,875 and for team 6 is 0,769.

### 2.3.3 Dependent variables

#### **Team Performance**

*Squad performance.* Squad performance can be defined as the general performance of the team. Squad performance is one of the dependent variables in this study. Squad performance is individually rated through 4 survey items based on the survey of Gibson et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think about the squad’s performance. The Cronbach’s alpha for team 12 is -2,008 and for team 6 is 0,595.

*Meeting effectiveness.* Meeting effectiveness can be defined as the effectiveness of the team during the meeting. Meeting effectiveness is one of the dependent variables in this study. Meeting effectiveness is individually rated through 4 survey items based on the survey of Rogelberg et al. (2006). The questions are based on a Likert scale of 1 to 7. Unlike most variables, meeting effectiveness is rated after every meeting. The variable score, therefore, represents the average meeting effectiveness of 3 team meetings. This is an individually rated team variable, meaning that each team member has to rate how they think about that meeting’s effectiveness. The Cronbach’s alpha for team 12 is 0,995 and for team 6 is 0,447.



## **Follower performance**

*Job Performance.* Job performance can be defined as the individual task performance of each team member. Job performance is one of the dependent variables in this study. Job performance is individually rated through 4 survey items based on the survey of Gibson et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated variable, meaning that each team member has to rate how they think about their performance. The Cronbach's alpha for team 12 is 0,701 and for team 6 is 0,685.

*Sprint performance.* Sprint performance can be defined as the performance of the team during the past sprint. Sprint performance is one of the dependent variables in this study. Sprint performance is individually rated through 5 survey items based on the survey of Gibson et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated team variable, meaning that each team member has to rate how they think about their performance during the past sprint. The Cronbach's alpha for team 12 is -3,973 and for team 6 is 0,619.

## **Leader Performance**

*Product owner performance.* Product owner performance can be defined as the perceived performance of the product owner of the team. Product owner performance is one of the dependent variables in this study. Product owner performance is individually rated through 4 survey items based on the survey of Gibson et al. (2009). The questions are based on a Likert scale of 1 to 7. This is an individually rated variable rating the product owner, meaning that each team member has to rate how they think of the product owner's performance. The Cronbach's alpha for team 12 is 0,555 and for team 6 is 0,939.

## **2.4 Video data collection**

This study uses two different sources of data, namely survey data and video data. While the survey is the main quantitative data source in this study, the video data is very valuable for the qualitative part. Comparing the scores of each variable between the teams does not lead to very conclusive answers regarding the influence of EI on these outcomes. Therefore, the video data is used to observe the team's behaviors and specifically the leader's behavior to recognize patterns and to be able to interpret and explain the leader's influence.

The video data is collected by recording video and audio material from each of the 3 sprint meetings. The video material is recorded with 3 cameras, each positioned differently to have a good shot of every team member. These utilized methods are picked to be as little intrusive as possible to preserve the representativeness of the meetings.

This data collection was coordinated by a team of researchers with the help of specific software. This software, the observer XT, is engineered specifically for facilitating video observations and is therefore very suitable for this study. As mentioned the video data will be used for video observation methodology for the emotional intelligence measure. Notably, video observations are used as a complementary method to the surveys as they can provide more objective views (O'Donovan et al., 2020).

## 2.5 Data analysis

Even before exploring and comparing the survey data, the videos were observed with an open mind, without looking at the team data. This way the observer creates an unprejudiced image of the team dynamics (next to EI) and the course of the meetings, which is crucial for the unbiased analysis of the teams. Moreover, by analyzing the video data before utilizing the survey data the video observations are not limited by the scope of the data but allow for other insights by the observer. When the variables for further analysis are selected, a fully-fledged analysis of the video data was conducted, which can be naturally combined with insights from the first observation to deliver a complete analysis. This fully-fledged observation consists of a specific analysis of the behavior, in the context of each specific variable and the role of EI in that behavior.

For the data analysis, the following step was comparing the survey scores for both teams. For each team, the survey scores are calculated in a separate data sheet. Therefore, a self-made database was used to put the data together and more easily analyze the differences in scores. With not all variables equally valuable to analyze more in-depth, certain variables were picked to use in the final comparison. The useful variables in the context of team processes, with a difference larger than 0.5, are selected. Logically, intending to highlight the effect of EI and the difference it makes in team processes, it was interesting to investigate variables that contain a notable variance between the teams. With the final set of variables determined, an analysis and comparison of the scores between the teams was conducted. The first interesting notes emerge from this analysis, which leads to guidelines for further analysis.

With the quantitative analysis in mind, the observer will again analyze the video data and assess the behavior of the team during the meetings, in the context of the variables. The analysis of this qualitative data was arranged similarly to discourse analysis. Hence, “Discourse analysis considers how language, both spoken and written, enacts social and cultural perspectives and identities” (Gee, 2011, p. 2). In other words, discourse analysis seeks to reflect on what is being said and look for a deeper interpretation of the context (Gee, 2011). This study uses a similar methodology for the analysis of qualitative video data, as the recordings are observed and analyzed, to interpret the contextual meaning and value of the behavior and statements exhibited in the meetings. Most importantly, the behavior of the members, with the PO in specific, was investigated to seek patterns that provide evidence for EI abilities.

For example, the observer looked at the leader’s behavior and interaction with the team to assess their EI and the role that had on the team’s behavior. Transcriptions of the meetings were used to support the interpretation of behavior and highlight statements for further analysis. The specific EI abilities of the leader and team members are evaluated through the codebook of van Gorp (2018), as it was specifically developed to observe and code EI behavior. Therefore, the analysis of the meetings should provide context and examples of EI within the teams, expressed during the recorded meetings. To continue, a conjunction of survey data and video data allows for a deeper understanding of team dynamics, which allows for well-substantiated examples and therefore conclusions. Also, through this observation method, specific examples of the leader’s influence can be used to explain the difference in data scores between the teams. The survey data may imply clear differences between the teams, however without further explanation. Therefore, observing the videos will reveal the real sources of differences between teams and, most importantly, the role a PO’s EI has on these differences.

Through the analysis of the survey and video data, the researcher can draw conclusions on the role of the leader’s EI in team processes, which in turn influences the team outcomes. In this unique study framework, the results section presents the quantitative and qualitative data weaved together with theory, illustrating an extensive walkthrough of each process in relation to EI, and its influence on team effectiveness. Hence, each variable in the results section will be introduced with an extensive elaboration on the literature of that variable.

### 3. Results

#### 3.1 Quantitative variable data

Table 2 presents the descriptives of the measured variables. In terms of the independent variables, it can be seen that the 5,9 out of 7 EI score of the PO of team 12 was higher than the 4,75 out of 7 EI score of the PO of team 6, boasting a difference of 1,15. Similarly, the average EI of the team members was 0,7 higher in team 12 compared to team 6. Furthermore, the scores of the team variables are presented, sorted from the largest to the smallest variance. For example, the table illustrates that team 12 scored 5,61 on conflict management compared to team 6 scoring 4,04, which resulted in a difference of 1,58 between the teams. At last, the dependent variables, the team, follower (individual), and leader performance scores are presented. To illustrate, team 12 had a much higher meeting effectiveness of 5,96 as team 6 scored 4,18, a discrepancy of 1,78 between them. On the other hand, the individual job performance represented a smaller difference of 0,39 between the teams. To interpret, the greater difference in team performance between the teams, compared to follower performance, implies that these processes, and therefore EI, have a greater influence on team effectiveness than individual effectiveness. Hence, the quantitative data can be interpreted and analyzed accordingly, however, strong conclusions cannot be drawn.

*Table 2. Survey scores on EI, team variables, and performance*

	<i>Team 12</i>	<i>Team 6</i>	<i>Difference</i>
<b>Emotional intelligence</b>			
PO EI	5.90	4.75	1.15
Team EI	5.90	5.20	0.70
<b>Team variables</b>			
Conflict management	5.61	4.04	1.58
Squad autonomy	5.67	4.52	1.14
Information sharing	5.92	4.82	1.10
Squad cohesion	6.17	5.10	1.07
Team resilience	5.93	4.86	1.07

Team adaptability	5.56	4.64	0.91
Meeting mood	5.80	5.00	0.80
Squad psychological safety	5.22	4.51	0.70
Goal Clarity	5.94	5.36	0.59

#### Performance scores

##### Team performance

Squad performance	5.94	4.81	1.13
Meeting effectiveness	5.96	4.18	1.78

##### Follower performance

Job performance	5.96	5.57	0.39
Sprint performance	5.93	4.66	1.28

##### Leader performance

Product owner performance	5.96	4.07	1.89
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## 3.2 Qualitative exploration of team processes

The following section will include a thorough walkthrough of each team process variable included in this study. Each chapter will address one specific variable and follows a standard order of subjects. First, the literature on each variable will be discussed in relation to EI, Leader EI, and performance. Furthermore, the video observations of the recorded team meetings will be discussed, providing unique insights from the observations and instances connected to the variable in question. Therefore, after reading each chapter, one should have a clear image of the role of each variable in the context of this study and its role within the studied agile team functioning.

### Conflict management

Team conflict management can be defined as a process of the team in which they engage in open discussion or conflict and are prepared to manage conflict when it arises. Consequently, conflict management means openly dealing with conflict and initiating steps to resolve the

conflict. Moreover, good conflict management means knowing what to do when conflicts arise and being able to avoid negative aspects before they occur (Tekleab et al., 2009). This definition implies that it is not necessarily bad to have conflict within the team. When constructive, conflict can force the team to new insights and innovations due to differing opinions and views being brought together. Without any conflict, the team will not mature and evolve to the desired level of cooperation and performance. On the other hand, when conflict is dysfunctional, recurring, or unresolved it will negatively affect the team accordingly (Jordan & Troth, 2004).

In this study, conflict management is viewed as a team process approach as illustrated by Tekleab et al. (2009). However, many other scholars view conflict management as different individual conflict management behavior styles. These different styles or strategies are highlighted in the study of Jordan and Troth (2004): “In categorizing conflict responses, Thomas (1977) identified the following five styles of conflict resolution that are determined by how cooperative (concerned for others) and assertive (concerned for self) an individual is in a conflict situation: (a) dominating or competing, a focus on winning the conflict; (b) avoiding, withdrawing from a conflict and allowing the other party to gain all demands; (c) accommodating, allowing others to win in a conflict situation; (d) compromising, based on giving concessions; and (e) collaborating or integrating, seeking mutually advantageous gains by both parties.”. More interestingly, several studies argue that “a collaborating style in teams will result in superior outcomes because it encourages more open discussion and cooperation among members that will help the team synthesize information to derive a common solution (Jordan & Troth, 2004). This reveals that the literature has different ways of defining conflict management, which are both interesting and valuable for explaining the concept.

When investigating variables that affect a team’s conflict management, EI prominently emerges as very influential. Schlaerth, Ensari, and Christian (2013) found that, especially for team members, EI is strongly related to conflict management. They argue that members often had little training in conflict management and therefore EI is a key tool to conduct proper conflict management. This makes sense as team members with low EI could showcase avoiding behavior because they can’t express their emotions. Also, a team member who does not understand or consider their peer’s emotions might end up dominating the conflict. Therefore, as High EI facilitates the understanding of one's own emotions and managing that of others, it allows for the team to look for a constructive, satisfactory solution for both sides. For example, Başoğul and Özgür (2016) investigated the relationship between EI and conflict management strategies. They concluded that EI is positively associated with conflict management. More specifically, the strategy that has the strongest correlation with EI is compromising.

Compromising is a productive strategy as it seeks concessions within the team, which suggests that EI stimulates the right conflict strategies. The study of Shih and Susanto (2010) investigated the relationship between EI, conflict management strategies (CMS), and job performance. From their empirical study, they found that EI is an antecedent of conflict management strategies (CMS) integrating and compromising. This is very interesting as these are two of the most productive, problem-solving strategies which are the most social and satisfying for each party involved. Moreover, the study found that EI is positively related to job performance, mediated by integrating CMS. This provides more proof that EI doesn't just improve conflict management but specifically steers toward the best conflict strategies and therefore ensures the best performance. Ultimately, throughout the literature, the assumption that EI positively influences conflict management is widely accepted (Afzalur Rahim et al., 2002; Chen et al., 2019; Hopkins & Yonker, 2015; Valente & Lourenço, 2020; Winardi et al., 2022)

As it is clear that EI improves the conflict management of a team, EI indirectly positively influences the performance of the team as well. The study of Shih and Susanto (2010) already pointed out that EI influences job performance through CMS. More importantly, their study raised that EI stimulates the integrating and compromising CMS and through these strategies improves job performance. This is an important statement to point out, as several studies look into the influence of EI on conflict management without further specifying conflict management. EI is unique in influencing the inherently more social but also more productive conflict management strategies and with that has a very valuable influence on a team's performance. Moreover, the study by Winardi et al. (2022) reviewed many articles on the relationship between EI and conflict management. Amongst other findings, they state that EI and conflict management, separately but mostly in conjunction, positively influence job performance as well as team performance. This statement illustrates that EI, through CMS, influences individual performance as well as team performance. This makes a lot of sense, as proper conflict management allows for a better working environment which facilitates better individual performance. On the other hand, an improved working environment because of functional conflict can increase the team performance through for example better information exchange, task division and improved problem solving( Do i need a source here to affirm this, examples from own mind.). The presented evidence allows for the assumption that EI, through conflict management, positively affects performance, both on an individual and team level.

Because of his role as the informal leader of the team, the EI of the PO is very influential towards performance as the PO can exert a lot of influence on the team's conflict management. When in possession of high EI abilities, the PO can use his EI as a tool to properly manage

conflict into it being functional for the team, therefore greatly improving their performance. A very interesting study by Valente and Lourenço (2020) investigated the relationship between EI and conflict management for teachers. Through a sample of 382 teachers, they found that high EI teachers more often employ integrating and compromising conflict management strategies in the classroom. In the article, the researchers give a very valuable insight into how a high EI teacher utilizes his EI in the classroom: "Thus, in the face of classroom conflict, the teacher proposes alternatives, applies open lines of communication, makes qualification statements, applicants or statements supporting the student, makes concessions, accepts responsibility, maximizes similarities, and minimizes existing differences between self and student. Therefore, the integrating strategy is connected with problem-solving in the classroom. The use of this strategy involves openness and exchanging information, being the ideal strategy in dealing with complex classroom problems." (Valente & Lourenço, 2020, p. 7). Moreover, as mentioned before, the value of EI abilities in conflict management expresses itself in higher performance through different factors. Valente and Lourenço (2020) make another interesting statement on this: "Thus, the results indicated that teachers with higher EI use more integrating and compromising, for classroom conflict management. Both strategies are prime to more innovative and useful results, with better satisfaction for the choices taken, among those involved in a conflict, getting more accountable solutions and enhancing the quality of the teaching and learning process." (Valente & Lourenço, 2020, p. 7).

Of course, an agile team is different from a classroom of teenagers, which is why a teacher's situation can not be copied for the PO of an agile team. However, the essence of these statements is still true and a very valuable view on the influence of a leader's EI on the team environment. Moreover, this case can be a good example for a PO seeking to improve conflict management performance. In conclusion, these statements can be translated to the situation of the teams in an agile environment. For example, using these strategies, the team will be happier with the choices taken because they are involved through more constructive discussions. These will create feasible solutions as more members with different expertise have contributed and feel accountable as they are involved more intensively.

Transitioning to the case of the two subject agile teams, there are some interesting observations and conclusions to address. When looking at the scores of the teams it is obvious that team 12 does a better job at conflict management than team 6, with a difference in scores of 1.58. When observing the teams this difference in scores is visible through the behavior of the teams. Team 12 has plenty of discussions during their meetings. On some occasions, the discussion becomes dysfunctional through rudeness or unprofessional behavior during the meetings. One certain team member is often the perpetrator, seemingly unintended, of dysfunctional behavior like being a little rude or interrupting other members' conversations,



displaying dominant behavior. However, most of the time the discussion is functional and leads the team to clarity, conclusions, and better insights. Bottom-line, the predominantly functional discussion provides the team with more effectiveness and efficiency, which leads to better performance.

On the contrary, the meetings of team 6 are very calm and contain very little discussion. At first glance, it appears that this team is very good at conflict management as there is almost no conflict during the meetings. However, when closely observing the meetings it can be noticed that the team does not manage to openly discuss and resolve issues which results in problems being unresolved or pushed to a future meeting. It is also noticeable that some team members struggle with this and are not satisfied with the management of their conflicting opinions. This is a beautiful example of how having functional conflict is more fruitful than having no conflict at all. Due to not discussing necessary topics within the team as a result of conflict-avoiding behavior, team 6 does not reach the same level of depth and desired cooperation within the team. Therefore they don't reach optimal efficiency, effectiveness, and performance with that.

The POs, informal leaders of the team, play an important role in this conflict management dynamic. For example, the PO of team 12 allows the discussion to take place during the meetings and often instigates a discussion himself by asking a question to the team or by proposing an idea. Another interesting observation is that during meetings 1 and 2 when the PO is present, the discussions stay polite and functional. However, when the PO is not present in meeting 3 the dynamic changes and the discussions become less functional, heated, and impolite at times. Especially the specific team member who is very outspoken and dominant in general tends to dominate the conflict when the PO is not there. During the meetings, the PO does not manage the discussion but participates in them. This behavior by the PO leans very much towards integrating or compromising styles as he is eager to hear the team's opinions and needs but also has his responsibilities as PO. There might also be an indirect influence through the respect the team has for the PO due to his efforts and behavior as PO. This is also reflected in the change of dynamic when he is not present. The ability of the PO to adopt problem-solving, effective CMS like integrating and compromising attests to his high EI. The high EI of PO 12 allows him to express his own emotions and needs but also understanding and regulating his team's emotions by stimulating them to do the same. One of the conflict management variables, as defined by Tekleab et al. (2009), says "Conflict is dealt with openly on this squad". This variable is exemplary of how EI influences conflict management as the expression of emotions stimulates openness and sharing of otherwise more private opinions and feelings.

Moreover, as a role model, the behavior of the leader often reflects in the behavior of the team. That is why it is so important for the PO to have EI tools to properly engage and manage conflict. This statement explains some observations from team 6 as well. As mentioned, there is almost no conflict, functional or dysfunctional, during the meetings of team 6. Many of the team members adopt an avoiding CMS which results in hardly any in-depth discussion taking place. This is in line with the expectation by Jordan and Troth (2004) that lower EI individuals will more often display avoiding behavior, as team 6 has a relatively low average EI. The response of PO 6 to these situations is to sort of dominate the conflict by single-handedly deciding what to do next or deciding to solve it at another time in the future. This behavior by the PO can be viewed as a testimony of his lower EI and EI abilities. The PO is unable to recognize the value of functional discussion by stimulating it, nor is he optimally managing the conflict situation by dominating it. Dominating is a short-term solution for the conflict which allows the rest of the team to keep avoiding conflict. Therefore the team does not reach the desired level of depth in conflict which is costly for their efficiency and effectiveness. An interesting addition is the take of Schlaerth et al. (2013) that EI has a stronger relation to subordinate conflict management than leader conflict management due to leaders having access to more experience and training. However, a proposed addition to this theory is that while their statement is true, the ceiling of good conflict management is raised when EI is high as well. While a leader can be trained to deal with conflict, conflict is never a standard situation and requires feeling and emotions when complex. Thus, having EI capacities allows the PO to better anticipate and deal with conflict to a level training cannot prepare you for.

Bottom-line, a lack of conflict management is costly for the performance of the team, which is displayed through the difference in scores between the teams. In conclusion, aided by this case, it can be assumed that EI has a positive influence on conflict management styles. In turn, conflict management positively influences the performance of the team. To point out, especially the EI of the PO greatly facilitates his important role of managing the conflict towards an optimal team environment, which is very desirable for an agile team.

### Squad autonomy

Squad or team autonomy is about the autonomy a team has in performing tasks. Autonomy in general can be defined as “the degree to which the task provides substantial freedom, independence, and discretion in scheduling the work and in determining the procedures to be used in carrying it out” (Hackman, J. R., & Oldham, 1980, p. 79). According to van Mierlo, Rutte, Kompier and Doorewaard (2005) team autonomy refers to the same attributes but in a

team setting. According to Ryu, Neubert, and Gonzalez-Mulé (2022), an increase in autonomy facilitates a different team dynamic which creates more of a team identity. Due to more autonomy, the members are allowed to communicate freely and discuss topics as they like, as opposed to a low-autonomy environment where most communication goes through a supervisor. This difference in dynamic thus creates a team identity where team members feel identification towards each other and have a stronger team cohesion. This results in members starting to rely and lean on each other more.

An example of the positive effects of increased team autonomy is conflict management. Functional conflict management will increase in the team as the members can identify better with each other and will try to solve situations for the good of the team (Source!). Also, the members are responsible for handling differences in the team that can lead to this conflict, leading to them feeling more accountable. The sense of team identity and unity can lead to stronger team cohesion as well. Most importantly, as the members of an autonomous team can rely on each other and build a stronger bond, they will feel the need to manage others' emotions (Ryu et al., 2022). The opportunity for a team to build such a cohesive bond that they start managing each other's emotions could be greatly increased if the members possess high EI. High EI allows for the members to better express their own emotions, building cohesion more effectively. Moreover, having the EI to regulate other's emotions can facilitate and therefore satisfy the need of managing other member's emotions.

Additionally, the research of Suárez-Albanchez, Jimenez-Estevez, Blazquez-Resino, and Gutierrez-Broncano (2022) found that EI positively influences the relationship between team autonomy and well-being. Surprisingly, the article states that EI is mediating the relationship between autonomy and well-being. While the study of Ryu et al. (2022) implies that team autonomy stimulates the management of other's emotions, it seems a stretch to argue that the relationship between team autonomy and well-being is significantly (fully) mediated by team members' EI as being more autonomous does not increase EI by default.

However, extrapolating from the findings of Suárez-Albanchez et al. (2022), a moderating relationship does sound more likely. High EI team members might thrive better in a more autonomous environment as they are better able to express and regulate themselves, therefore self-managing the team. On the other hand, low-EI team members are less able to express and regulate the emotions of themselves and others and therefore might need some guidance. In this case, too much autonomy for a team with low EI members could lead to some issues. Evidence supporting this theory is the relation between EI and conflict management discussed in the previous chapter. There it became evident that high EI steers towards an integrating strategy, a proactive strategy focussed on problem-solving. In contrast, low EI more

often represents the avoiding strategy, a passive and reactive strategy. When obtaining more autonomy and thus having to discuss and make more decisions on how to approach things, integrating will outperform avoiding CMS. The relationship between team autonomy and conflict management is also mentioned by Ryu et al. (2022). While it would need more research, the assumption can be made that EI positively moderates the relationship between autonomy and team processes and therefore outcomes, like well-being and performance. Jain and Duggal (2018) also found EI to moderate a relationship involving autonomy, further affirming this proposition.

Apart from treating autonomy as an independent variable like previous studies did, Goswami and Mahanta (2021) found that autonomy positively moderates the relationship between EI and performance. The study by Jafri (2018) also found that autonomy moderates the relationship between EI and employee creativity. Indeed, this also seems logical as the influence of EI on performance can depend on how much freedom the members get to express and utilize EI skills. In a team environment with little autonomy, high EI members get little room to exert their EI abilities to support the team and vice versa. Ultimately, a fundamental argument can be made that EI and autonomy are positively related, following the conclusions of literature on this topic.

As it is evident that EI has an important influence on team autonomy and its influence on team outcomes, the EI of the PO might be even more important. The agile team environment that the subject teams operate in is already very autonomous by nature. However, the PO is the link between the team and the upper management and is therefore the safeguard of the team's true autonomy. With the fluctuating nature of the tasks at hand and the differing needs of team members, high EI POs can be very effective in handling this flexible situation. Erkutlu and Chafra (2012) found that a leader's EI moderates the relationship between team empowerment (Including autonomy amongst others) and proactivity. When considering the situation one can imagine that a high EI leader is better at channeling empowerment into proactivity within the team through the right (emotional) guidance. Moreover, Jain and Duggal (2018) looked into the mediating role of autonomy and the moderating role of EI in the relationship between transformational leadership and organizational commitment. This research is interesting as the fundamentals of transformational leadership are fitting to the agile environment and informal leadership role of the PO. The PO as (informal) project manager could enjoy more project success when using an inspirational motivation approach and empowering his team as this stimulates the team members towards accepting and pursuing goals (Srivastava & Jain, 2017), which is crucial in an environment with high agency and responsibility. Consequently, this type of leadership works more effectively if the team has high autonomy and the leader has access

to EI abilities to support the team (Jain & Duggal, 2018). The study of Waglay, Becker, and du Plessis (2020) confirms this, as they looked into the roles of EI and autonomy in the relationship between transformational leadership and performance. EI was found to mediate the relationship but the researchers could not find a significant role for autonomy. However, it still seems obvious that a high-EI PO thrives the most when he and the team have the desired autonomy instead of limited freedom enforced by upper management. All things considered, from the literature it can be assumed that EI and team autonomy are both very important for an agile team to perform at its best. Moreover, an emotionally intelligent PO can help their team emotionally navigate and optimize the autonomy they are trusted with. Therefore the EI of the PO in an agile team can be considered an important asset.

It is clear that EI has a positive influence on team autonomy, but this relationship is also very important to the team's performance. With the team having more autonomy they can adapt well to unforeseen events and perform tasks most effectively and efficiently. Due to this freedom, the performance of the team can be optimized, especially in volatile environments like agile. EI, through team autonomy, can influence performance through different variables like employee creativity (Jafri, 2018), well-being (Suárez-Albanchez et al., 2022), organizational commitment (Jain & Duggal, 2018), and proactivity (Erkutlu & Chafra, 2012). Also, scholars have stated that, possibly through these variables, this relationship can influence different types of team outcomes like job performance (Goswami & Mahanta, 2021), follower performance (Waglay et al., 2020), company performance (von Bonsdorff et al., 2015) and team effectiveness (Ryu et al., 2022). In conclusion, it is evident from the literature that team autonomy has an influence on (team) performance through many different variables, making it an important dynamic to take into consideration.

Zooming in on the two focal agile teams, differences in team autonomy are noticeable as well as how team autonomy by the PO. With team 12 scoring 5.67 on squad autonomy and team 6 scoring 4.52, the variance between the teams is 1.14. Part of this difference in autonomy and dealing with autonomy might be due to a difference in background and experience with agile. Team 12 is an IT team and consists mostly of members from an IT background who are very familiar with Agile. This means that this team is also more familiar with high team autonomy. On the contrary, team 6 is more centered on finance and its members mostly come from a finance background. Hence, the finance sector often operates in more traditional ways, thus with less autonomy and more (financial risk) management. Specifically, most finance teams are less frequently working through agile principles than IT teams. This might explain why team 6 experiences less team autonomy compared to team 12. Moreover, there is a possibility of variance between the teams in autonomy granted by upper management, on which tasks to

perform and how to perform them. This cannot be concluded from the observations. Nevertheless, background and experience are no everlasting justification for lacking team autonomy.

Furthermore, the PO of team 6 is displaying a unique leadership style. The PO is quite passive during the meetings, observing without interacting most of the time. However, whenever he interacts it's mostly giving his opinion or making a decision, more like a traditional manager. This mixed leadership behavior gives the impression that the PO is still searching for a suitable leadership style, coming from a different background and having to adapt to agile. In effect, it stands out that team 6 is quite indecisive and lacks proactiveness, which could derive from the behavior of their PO. In contrast, the PO of team 12 is adopting a leadership style similar to transformational leadership, being present in the meetings as a member of the team and guiding the team when necessary. The PO lets his team discuss and lead the meeting, being happy to sit back and give his opinion when he feels like he needs to. While this appears similar to the passive behavior of PO 6, the difference is that team 12 is very proactive and only needs some guidance from their PO, which he provides. If the PO would interfere too frequently it could hurt the meeting effectiveness of team 12. On the other hand, team 6 is quite passive thus needing more guidance and initiative from their PO, which their PO does not provide. Consequently, topics are pushed aside and debate does not reach the desired depth, hurting their meeting effectiveness.

An example showcasing team autonomy in team 12 is an instance where the PO suggests an idea on how to approach something. However, the rest of the team counters with arguments on why his idea might not work. The PO accepts the opinion of the team and together they formulate the approach the team thinks is best. This is a prime example of the team having proper autonomy to decide how to approach certain problems and the PO giving them room to work with this autonomy. This example is also an indication of the EI skills the PO of team 12 has. Specifically, he expresses his emotions and opinions when he feels it is necessary but is also able to understand and regulate other members' emotions to guide them to the agile team process. The team benefits from this and therefore thrives in the agile environment, which is reflected in their performance outcomes as well. The subject case is an excellent example of how the EI of the team and the PO allows the team to fully thrive in a highly autonomous environment, which is proof that this combination can improve performance in similar situations.

## Information Sharing

Information sharing can be defined as sharing new information that is unknown to the rest of the team. In the literature, the term information pooling is also used, which means the pooling of unshared information by team members before decision-making activities. Information sharing is about freely sharing key information within the team and with everyone on the team. Moreover, it is important to quickly share information that affects the team and put effort into keeping the team up to date (Bunderson & Sutcliffe, 2002).

The article by Bunderson and Boumgarden (2010, p.5) says the following about teams and information sharing: “For example, we know that information is more likely to be shared when group members each have an “expert role assignment,” i.e., some piece of the group’s task for which they are known to have the relevant information and accountability (Stasser et al. 1995, Stewart and Stasser 1995). Clear identification of expert roles facilitates information sharing by making it clear that members possess different information and by clearly indicating where within the group particular types of information can be found (see Liang et al. 1995, Moreland et al. 1996, Moreland 1999, Moreland and Myaskovsky 2000).”. It is an interesting finding that team structure positively influences information sharing by clearly indicating responsibilities. While the agile environment of the subject teams did not exactly contain expert role assignments, each member has their expertise and was part of a certain chapter that specializes in a specific expertise. Therefore each team member has access to unique information and this division of information is clear to the team. In this case, it seems like the agile team structure is comparable to that described by Bunderson and Boumgarden (2010) and therefore beneficial to team information sharing. To continue, research also shows that ‘unshared’ information that is pooled during the discussion significantly influenced the quality of decision-making (Winquist & Larson, 1998). If converted to an agile environment, this means that previously unknown information shared during the meeting positively influences decision-making. An example of this is sharing as much information as possible by the team to optimally plan the coming sprint. With proper pooling of unshared information, the decision-making on what to address and how to address it becomes easier and more effective.

It is evident that, as a team, it is important to look at information sharing as access to more information can greatly improve the dynamic of the meetings and therefore their efficiency and effectiveness. EI can help with improving information sharing by recognizing and understanding the emotions of peers. EI can facilitate recognizing that a peer might react in a certain way because of a lack of information. The peer might not be aware of a certain fact or

recent developments and therefore express irritation or fear. In a case like this, an emotionally intelligent peer or PO can recognize and regulate his peers' emotions by sharing information simultaneously. Sadly, there has been very little research on the relationship between EI and information sharing. However, knowledge sharing, a concept that is theoretically connected to information sharing, is often studied in relation to EI and can thus be interesting to investigate. Notably, according to Tamta and Rao (2017), information sharing and knowledge sharing can even be used interchangeably. Knowledge sharing can be defined as sharing the appropriate information, suggestions, thoughts, and expertise with the remaining people in the organization (Tamta & Rao, 2017). Goh and Lim (2014) found that EI is positively related to knowledge-sharing behavior and that EI influences someone's willingness to share knowledge. Moreover, Malik (2021) investigated the impact of EI on both tacit and explicit knowledge sharing and found that EI positively affects both types. In addition, there are several more studies that theoretically or empirically found EI to be positively related to knowledge sharing (Ansari & Malik, 2017; Arabshahi et al., 2013; Othman & Abdullah, 2012; Tamta & Rao, 2017; Tuan, 2016). The congregation of the presented literature concludes that EI positively influences knowledge sharing and it can therefore be assumed that EI influences information sharing as well. Also from a team standpoint, the team's EI is assumed to influence the team information sharing, as is evident from the scores.

While the interpersonal dynamic of the team members is important in stimulating them to share information, the PO can also play an important role. The article of Winquist and Larson (1998) suggests that the leader of a team can facilitate information sharing by making sure that different pieces of information are shared and acknowledged during task-related interaction. This means that the PO should have oversight on what task each team member performs and therefore what information he/she should possess and share accordingly. In this case, it is important to highlight the EI of the PO, as a high EI can greatly impact the PO's influence on information-sharing behavior. As mentioned before, an emotionally intelligent PO can understand the emotions of his peers and recognize their reactions stem from a lack of information. For example, a team member gets mad about a problem not being solved while another peer already knows that they are working on this. Consequently, the PO could regulate the emotions of his peers by simultaneously sharing or stimulating the sharing of information. The PO could also utilize his emotional memories to gain insight into what could affect the team and gather information accordingly. Jamshed and Majeed (2018) researched the relationship between leader EI, knowledge sharing, and team effectiveness. The findings reveal that knowledge sharing is influenced by the leader's EI. Furthermore, it appears that knowledge sharing mediates the relationship between leader EI and team effectiveness, validating a similar model as proposed in this study. While there is little research done on the



impact of a leader's EI on knowledge sharing, it can be assumed that the EI of the PO has a meaningful influence on the knowledge sharing behavior within his team.

From the information sharing scores, it is clear that team 12 is doing a better job at information sharing than team 6 with a difference of 1,1, one of the largest differences within the study. From observing the teams the main thing that stands out is the difference in behavior between the POs. The PO of team 12 starts meeting 1 by informing his team of the goal of the coming sprint and the recent developments around their tasks. In meeting 2 he arrives late to the meeting, but when it is his turn to speak he tells his team what is discussed in the PO meeting and the developments since the last meeting. By doing this the PO shares a lot of important information that the team does not have direct access to, which is what information sharing is about. Moreover, this way the PO stimulates his team during this moment to share other subjects that need to be mentioned, which is a great way of stimulating information sharing.

On the other hand, the PO of team 6 is not showcasing any of this behavior. This becomes evident in an instance during the first meeting. 33 minutes into the meeting, team member F5 asks what the main goal of the sprint is. When such a question is asked by a peer halfway through the meeting, that is proof of a lack of information sharing. As a response, the PO explains the main goal of the sprint is processing data. However, F4 mentions that they have to focus on add-ons as well, to which the PO responds "Ahh yeah okay let's add add-ons as well.". This instance not only shows that there is a lack of information sharing by the PO, but that the PO is not even fully aware himself. Henceforth, the PO of team 12 is doing a better job at sharing information as well as stimulating information sharing among his peers.

When regarding the members of the team, the amount of information shared throughout the meetings seems to be quite equal. Both teams have a member, F3 for team 12 and F6 for team 6, who seems to be the most knowledgeable about technicalities and is therefore sharing the most information and knowledge. The other peers are also occasionally sharing information when discussing a certain topic. From the observation, it is noticeable that among the teams the amount of information shared is quite equal. However, the PO of Team 12 is sharing a lot more information than the PO of Team 6. Moreover, the PO of team 12 is stimulating his team more towards sharing important information. It can be concluded that in this case, the PO makes a large difference, which seems to be related to higher scores as a result.

It is evident that the emotional intelligence of the PO and his peers influence information sharing among the team. Hence, information sharing is assumed to influence team performance as well. Information sharing allows for higher quality decision-making (Bunderson & Sutcliffe, 2002) during meetings and more efficient and effective execution of tasks. The study of Mesmer-Magnus and DeChurch (2009) conducted a meta-analysis of 72 studies on

information sharing and found that information sharing is a driver of team performance. Moreover, The article of Jamshed and Majeed (2018) found that knowledge sharing, as well as team emotional intelligence, have a positive effect on team performance. Research has also shown that EI positively influences team effectiveness through the mediation of knowledge sharing (Jamshed & Majeed, 2018). The aggregation of these studies allows for the assumption that EI positively impacts information sharing which in turn positively influences team performance. With this in mind, team 12 ,with higher team and PO EI scores, is doing better on information sharing as well as team performance, which confirms this assumption.

## Squad cohesion

Squad cohesion can be defined as “the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives.” (Tekleab et al., 2009). Cohesiveness within the team means trying to reach goals and taking responsibility together but also helping each other and getting along well. Team cohesion is very important to every team because functioning as ‘an oiled machine’ thrusts the team towards increased performance. The social aspect of being part of a team is fundamental to cohesion, as a personal bond is created through experiences and emotions shared. Thus, as relational behavior is important for cohesion an affiliated variable like EI could be hypothesized to facilitate cohesiveness in a team.

Kim and Ko (2021) found that EI is positively influencing team cohesion through the mediation of self-efficacy and trust. Moreover, they found that team cohesion positively affects performance. Similar effects were found by Black, Kim, Rhee, Wang, and Sakchutchawan (2019). The mediating variables like self-efficacy and trust fit naturally into this equation as EI stimulates perceiving emotions (Mayer and Salovey, 1997). This makes team members better understand themselves, increasing their self-efficacy. On the other hand, when team members display self-efficacy and deliver good input to the team, the trust in each other within the team rises as well. Trust also develops as highly EI members express and understand each other’s emotions better. Consequently, this increased self-efficacy and trust results in better team cohesion as this visible commitment and ability of the team creates a bond on a professional level.

Furthermore, Lee and Wong (2019) concluded that team emotional intelligence negatively influences task and relationship conflict and positively influences team effectiveness, which includes team performance and cohesion. Interestingly, the researchers found that team EI

moderates the relationship between relationship conflict and cohesion. This feels logical as high EI among the team means that they are better at solving any relationship conflict by accessing, expressing, and regulating emotions, therefore decreasing the influence of this conflict on their cohesion as a team. On the other hand, relationship conflict in teams with low EI can result in differences unsolved, greatly decreasing the cohesion of the team.

To continue, Moore and Mamiseishvili (2012) found that EI is positively related to cohesion. They state that the awareness of one's own emotions and the management of others' emotions have the strongest correlation to group cohesion out of the EI abilities. This is interesting as this further specifies the effect that EI has on the cohesion of a team. Comparatively, Quoidbach and Hansenne (2009) found that emotion regulation has the strongest positive influence on team cohesion. This again affirms the importance of regulating and managing one's own and others' emotions. In conclusion, the above-featured literature displays the variety of ways through which EI is assumed to have a positive influence on team cohesion. Collectively these studies allow for the clear assumption that EI is very important for team cohesion and should therefore be a point of attention when establishing or evaluating a team environment.

As mentioned, the articles of Moore and Mamiseishvili (2012) and Quoidbach and Hansenne (2009) present similar findings regarding emotion regulation and thus management of others' emotions have a strong correlation with team cohesion. This management of other's emotions can be executed by any team member but especially the leader of the team plays an important role. The leader of the team is in a great position to regulate his team's emotions as they have a different position with more overview and attention towards the team. Therefore, the EI of the leader can be of special importance in securing a cohesive team environment. For example, the article of Zhang and Hao (2022) investigated the relationship between the project manager's EI and team effectiveness through team cohesion in construction teams. They found that cohesion mediates the relationship between EI and team effectiveness. This means that the EI of the project manager, the team leader, is found to have a positive influence on team cohesion which in turn positively influences team effectiveness. A different study by Zhang et al. (2020) states that group leader EI positively influences group performance through group-level cohesion. This research establishes a specific type of relationship between leader EI, group cohesion, and group performance, further confirming the importance of the EI of the team leader.

Neil, Wagstaff, Weller, and Lewis (2016) conducted multiple studies looking into leadership behavior, team cohesion, EI, and performance. The quantitative study found that cohesion and

the EI of the team leader were both positively influencing the team's performance. Moreover, in their qualitative study, they looked into the effect of leadership behaviors through detailed interviews and found that leadership behaviors influence cohesion and therefore performance. They stated in their context; “transformational leadership behaviours were used to help promote a team focus on performance goals, inspire team members, and to improve the working experience of the individual” (Neil et al., 2016, p. 113). The influence of transformational leadership is also acknowledged by Callow, Smith, Hardy, Arthur, and Hardy (2009) as they investigate the relationship between TL, cohesion, and performance. They found that fostering acceptance of group goals and promoting teamwork stimulates the cohesion of the group. While not mentioned specifically, these conclusions lead to the thought that transformational leadership and EI are connected. The EI of the team leader could stimulate them towards adopting more transformational style behaviors, especially in an agile environment. For example, having the EI skill to perceive emotions well can facilitate the leader in attending to the needs of his team members and being a mentor to them (i.e., individualized consideration). The book of Weinberger (2009) also found that EI-facilitating thought is positively correlated to idealized behaviors. This sounds logical, as being able to properly perceive own and others' emotions emerging from situations can facilitate thought for future behavior. Thus, EI can be a facilitator for improved future behavior and can therefore lead to higher idealized behavior by the leader. For example, recognizing that certain behavior has led to negative emotions from team members and changing future behavior accordingly is a display of high EI skills. Ultimately, it is evident that the leader has an important influence on the cohesion of the team. Henceforth, the EI of the leader is relevant as it empowers the role of the leader, especially in an agile environment where the PO is a less formal role of leadership. In this situation, the EI of the PO can greatly improve team cohesion through his (transformational) behavior as a leader.

While the relationship between EI and cohesion is already well established, it is important to discuss the effect of this on team cohesion. Team cohesion is proven to be an influential variable within the team and therefore affects the performance of the team. Evans and Dion (1991) performed a meta-analysis on the relationship between cohesion and performance and found that cohesive teams perform 18% better than non-cohesive teams. While this percentage should not be taken as the undisputed effect of cohesion, it shows how influential team cohesion is towards the performance of the team. Chang and Bordia (2001) also found that cohesion is positively influencing team performance. There are many more articles illustrating the positive effect of team cohesion on team performance (Black et al., 2019; Kim & Ko, 2021; Lu & Fan, 2017; Neil et al., 2016; Quoidbach & Hansenne, 2009; Zhang et al., 2020) but also team effectiveness (Lee & Wong, 2019; Zhang & Hao, 2022) and project

success (Santo et al., 2021). All in all, it is evident that team cohesion positively influences team outcomes and is, therefore, crucial to consider for teams looking to increase or maintain high performance.

When zooming in on the observation of the focal teams there is a noticeable difference in cohesion between them. First of all, while team 12 scores 6.16 out of 7 on cohesion, team 6 scores 5.09 which means there is a 1.07 difference separating them. One simple explanation for this difference can be the time the teams have been together. Team 12 has a substantial amount of experience working with each other. The team has  $\frac{3}{4}$  of a year experience on average, with some working together for over a year and some just joining. On the other hand team 6 has been together for only a month, which is relatively short. An extended period of working together naturally leads to more cohesion within the team as the members had more time to know each other. Mathieu et al. (2015) found that the relationship between cohesion and performance also becomes stronger over time, supporting this theory. Moreover, the article of Lu and Fan (2017) reveals that psychological similarity positively affects favorable work outcomes like satisfaction and performance through team cohesion. They also found that EI amplifies the relationship between psychological similarity and TC. Psychological similarity “reflects congruence of values, beliefs, and attitudes among team members”. This is interesting as team 12 seems to have higher psychological similarity (More experience in agile, more experience as a team, mostly from the same culture), possibly setting them up for higher cohesion from the start. Additionally, Team 12 has a higher team EI and thus their EI moderates the effect of their similarity on cohesion. Team 6 has lower EI and lower PS and which partially explains their lower team cohesion. However, this does not explain all of the variance between the teams.

When looking at the teams it is hard to pinpoint specific moments where there is clear cohesion. Nevertheless, there is an overall observable contrast in behavior between the teams. For example, throughout the meetings, it stands out that team 12 is communicating a lot, discussing subjects with many members involved, and deciding together on how to proceed with certain tasks or goals. One characteristic of cohesion is being united in reaching goals towards performance, which is reflected in the behavior of team 12. On the contrary, team 6 are communicating less during the meetings and often only discusses certain tasks with the members specifically assigned to the task. Because of this, it feels like the team does not carry their responsibilities together and operates too disjointed, which could impact their cohesion. The POs of the teams play an influential role in these meetings. The PO of team 12 is often starting the meeting off with an elaboration of the goals of the current sprint or meeting. This way he involves the entire team with their goals and makes them feel included, resulting in

them participating in the discussion and voicing their opinion. The PO also stimulates this by asking questions to the team or by introducing ideas to discuss. The EI of the PO helps him in adopting this behavior as the PO genuinely cares for the emotions of others and recognizes that involving his team leads to everyone feeling appreciated, consequently contributing more and thus performing better as a team. The PO of team 6, as previously mentioned, is adopting more of a traditional managing style of behavior and often looks like he does not want to be in the meeting. Additionally, he is not putting effort into making the team more cohesive by stimulating them to work together or to engage in team goals as a team instead of as separate entities. This behavior displays the lack of EI of the PO, not recognizing the importance of a proper team bond and dynamic. He also fails to grasp the value of meetings in strengthening the cohesion of his team and working on team skills.

At the same time, cohesion also means helping each other and getting along well as a team. During the meetings of team 12, there is more than one instance where a team member does not understand a certain topic or task. As it takes away too much time from the meeting another member offers to help afterwards, often encouraged by the PO. Also, even though discussions can get heated the team makes a lot of jokes and is laughing a lot. As a team, being able to both dare to have discussions and voice opinions but also laugh and have a good time is a display of cohesion within the team. Having a strong bond means being nice but also being able to say what you think is necessary. The PO plays a big part in this as well, as he is often making jokes or remarks during the meetings to keep it positive. There is an instance where a team member explains that it is his first time handling a situation like this, to which the PO responds with "First time? There is a first time for everything!". However small, this remark ensures the team member that his concerns are heard and that making a mistake is not a problem. This is a great display of the EI of the PO, regulating the emotions of other members of the team for the benefit of team cohesion. Showcasing this behavior also stimulates others from the team to do the same, also described as idealized behavior in transformational leadership literature. The aforementioned illustrates the effect of TFL, especially in an agile team where this style thrives. On the other hand, team 6 has very few moments of joy or laughter and displays little friendship or collegiality towards each other. It is thus not surprising that they score their cohesion relatively low, as they might not feel a strong bond towards each other. The PO is no positive influence either as he is very serious during the meetings and often looks tired, bored, or distracted. This hints at his lack of EI, as he might be unable to properly perceive his own emotions or is unable to regulate his teams' emotions by focusing on the positive during meetings. Moreover, he does not seem able to recognize the lack of cohesion as he does not display behavior intended to improve the cohesion of the team.

In conclusion, it is clear that many variables influence the cohesion of the team and therefore the performance as well. EI is an important factor that precedes these variables and positively influences the behavior of leaders and members to strengthen cohesion within the team. Especially the EI of the PO appears to be impactful, as the role of the informal leader lends itself to guiding the team and safeguarding the team dynamic as he operates from a different abstraction level. The effect of a team working smoothly is hard to express in exact numbers but working together towards goals, getting along well, and also daring to be critical creates a deeper level of teamwork and cohesion that will most likely improve the performance of the team.

## Team Resilience

In this study, team resilience is defined as knowing how to cope with challenges, the ability to cope with difficult periods, and knowing how to handle difficult situations when facing them (Stephens et al., 2013). Interestingly, Chapman et al. (2020) reviewed the literature on team resilience and found that the most complete definition of team resilience is that of Morgan, Fletcher, and Sarkar (2013): “A dynamic, psychosocial process which protects a group of individuals from the potential negative effect of stressors they collectively encounter. It comprises of processes whereby team members use their individual and collective resources to positively adapt when experiencing adversity.” Team resilience is often viewed as an ability or capability, meaning that the team can bounce back and stay positive by dealing well with adversity as a team. Therefore, team resilience is very important for the dynamic of the team. A team's high resilience allows them to be functional and productive during difficult times. This means that the performance of the team is also maintained at a higher level due to team resilience. This relationship between team resilience and team performance is often discussed in the literature (Chapman et al., 2020).

As mentioned, Team resilience can be viewed as an ability, more specifically a shared mental ability. Therefore, EI can be an important factor in determining team resilience. The study of Schneider, Lyons, and Khazon (2013) found that individual EI increases the level of stress resilience. This means that when stressors are applied, a person with higher EI experiences less negative affect and treats these difficulties more as a challenge than a threat. The study by Danquah (2022) found EI to be positively correlated to resilience. Moreover, the study by Trigueros et al. (2020) investigated the relationship, among other variables, between EI and resilience of over 1500 academic students. The results show that EI has a significant positive effect on resilience, suggesting that EI helps to deal with the contingencies of life. Similarly,

the article of Magnano, Craparo, and Paolillo (2016) investigated the relationship between EI and achievement motivation, and the mediating role of resilience. The results display that while EI has a direct significant influence on achievement motivation, EI is also significantly positively related to resilience. Magnano et al. (2016) also make an interesting remark in their study: "Psychologically resilient people are effectively described as emotionally intelligent (Salovey et al., 1999) and appear to use positive emotions for their advantage (Tugade & Fredrickson, 2002) to produce beneficial outcomes in the coping process (e.g., Folkman & Moskowitz, 2000; Fredrickson, 2000); therefore certain individuals may have a greater tendency to draw on positive emotions in times of stress (e.g., Feldman Barrett & Gross, 2001; Salovey, Hsee, & Mayer, 1993). According to these considerations, it is possible to conclude that the ability to accurately perceive, access and regulate emotions helps to develop some self-regulatory processes (of emotions and motivation) that enable people to deal better with a stressful work environment, and to make adjustments to achieve organizational goals. Hence, emotional intelligence is a prerequisite to become resilient, and resilience is a particular way through which EI can lead to better motivation to work achievement." This is a very valuable and accurate take on the relationship between EI and resilience and summarizes their relationship well.

Likewise, the article of Armstrong, Galligan, and Critchley (2011) researches the relationship between emotional intelligence, psychological distress, and negative life events. The researchers used latent class regression to identify 3 classes of psychological distress among the subjects and look at the impact of negative life events on their psychological distress. Naturally, the resilient class experiences the least increase in psychological distress, being the most resilient. Furthermore, Armstrong et al. (2011) looked at the EI scores of these 3 classes and found that the resilient class scores the highest on each EI measure. Therefore it can be assumed that EI has a positive effect on psychological resilience. Examples of EI aiding resilience are emotional expression providing stress release and emotional self-management facilitating positive mood maintenance (Armstrong et al., 2011). This article's findings are in line with the observations in this study, as team 12 scored higher on both EI and resilience. Therefore it seems likely that their team resilience is partially explained by their EI.

It is evident from the literature that EI is positively related to team resilience, meaning that higher EI is assumed to lead to higher team resilience. An important part of resilience is to stay positive during negative events happening. The PO can play an important part in maintaining the team's positive affect and therefore the EI of the PO can also be of great importance to the team's resilience. An example is the remark of Magnano et al. (2016) that emotionally intelligent individuals might have a greater tendency to draw upon positive emotions in times



of stress. This means that an emotionally intelligent PO might be able to use positive emotions to cope with negative events. Moreover, he can utilize positive emotions to help his team cope with these events as well, making the team more resilient by doing so. The study of Meneghel, Salanova, and Martínez (2016) also found that positive emotions are positively related to team performance, mediated through resilience. This reinforces the claim that positive emotions enhance resilience and with that the performance of the team. As the role model and lead figure of the team, the positive emotions channeled by the PO might be of even greater influence on not only his resilience but that of his team. This way the PO can teach his team to stay positive during tough times and therefore increase their resilience. More specifically, keeping positive during the meetings should lead to better quality decision-making. Similarly, several studies concluded that there is a positive correlation between EI, resilience, and leadership (Bumphus, 2008; Maulding et al., 2012). This proves that EI positively influences leadership through resilience, meaning that higher EI allows the PO to be a better leader. Therefore the PO EI has a positive influence on the team through better leadership from the PO.

Another interesting theory can be drafted from the article of Armstrong et al. (2011). This study concluded that interpersonal EI measures like awareness and management of emotions of others can't be discriminated between the 3 differentiated classes of resilience. The researchers suggest this is because, in the case of multiple negative events, the intrapersonal EI measures have more effect than the interpersonal EI measures. This sounds very plausible as members of the team, in case of difficulties, will have their hands full on managing themselves which means that resilience as a team might fade. However, these interpersonal EI abilities can be very important for the PO, as he is the leader of the team who is responsible for guiding them in difficult times. A great PO who is highly emotionally intelligent can utilize these skills to help his team deal with these difficult situations, as he can focus on his team by dealing with his own difficulties, preserving the team's resilience. This theory further pushes the assumption that the PO is very influential for team resilience and that EI is a big facilitator for that.

With resilience established as an important variable, zooming in on the subject teams reveals that team 12 scores a lot higher on team resilience with a difference in scores of 1,07. This difference implies that Team 12 is a lot more resilient as a team. Moreover, when observing the meetings of team 12 a couple of instances show the influence of the PO on team resilience. At the start of the second meeting, the PO informs his team that he expects some problems to occur soon. For example, he mentions that the other teams are planning their sprints in way less detail which could lead to problems in their collaboration. By highlighting these expected

difficulties and discussing how to approach them the PO prepares his team for these difficulties, therefore making his team more resilient towards them. Furthermore, the PO displays multiple instances throughout the meetings where he uses positive emotions. The PO will say something funny or positive, or make a fool of himself after they discuss a difficult topic. This way the PO releases the tension in the room and regulates his team's emotions by staying positive. In contrast to the previous instance, these are clear examples of a PO with high EI utilizing it to draw on positive emotions to cope with difficult situations. More importantly, through this behavior the PO regulates the team's emotions and retains them in a better mood as well, increasing their current resilience as a team. To emphasize, this is a first-hand example of leader EI positively influencing team resilience and showcases the good efforts of the PO of team 12.

On the contrary, the PO of team 6 does not display any behavior during the meetings which actively stimulates team resilience. If difficult situations or problems occur, the PO often ends the discussion by deciding what to do or to solve it in the future. This is a fine short-term solution, as the team can no longer dwell on the problem. However, this does not change how the team could be affected by this problem in the future, and team members could still be worrying or experience negative emotions due to the situation. This could in turn play a role in the team members' performance and motivation. This shows that the PO of team 6 has a smaller influence on the team's resilience and this is presumably due to his lack of EI.

From the literature and observations of teams 12 and 6, it is clear that EI, especially leader EI, seems to positively affect team resilience. Similarly, team resilience is assumed to have a positive effect on team performance, as a more resilient team is expected to perform better during difficult circumstances. Especially in the volatile environment of an agile team, team resilience plays a big part in the team's performance. Comparatively, Magnano et al. (2016) found that resilience leads to more achievement motivation. This makes sense as the team is more positive and happy and they will have more headspace and focus for achieving their goals, while when occupied by negative emotions focus and motivation will be less on achievement. Furthermore, the literature presents multiple studies that found team resilience positively related to team outcomes like performance and functioning (Hartwig et al., 2020). For example, the aforementioned article by Meneghel et al. (2016) found that positive emotions are positively related to team performance, mediated by resilience. Notably, the literature primarily discusses maintaining performance instead of increasing performance through team resilience, which is logical as resilience prevents disruptions in the team processes and thus team performance (Hartwig et al., 2020).

Finally, it can be concluded that team resilience facilitates maintaining team performance during difficult episodes and that EI in turn facilitates team resilience through the members and their PO. Henceforth, it is self-explanatory that team 12 has higher performance scores than team 6, as team 12 has higher team resilience and EI. Most importantly they have a more capable, highly emotionally intelligent PO.

### Team adaptability

Maynard, Kennedy, and Sommer (2015, p.655) have defined team adaptability as “the capacity of a team to make needed changes in response of a disruption or trigger”. Team adaptability in this research specifically means dealing with unanticipated events and trying new approaches when problems occur on the spot. On the other hand, high adaptability also means preparing in advance how to overcome occurring obstacles and using innovative methods to do so. A team’s adaptability is very important for the team’s functioning, especially in an agile environment (Grass et al, 2020). Additionally, these teams often work on new products or projects and thus know less about what to expect.

On one hand, the team’s adaptability depends on the members’ flexibility and innovative capacities to be able to deal with these unexpected problems. Besides a team’s capacity, also the willingness to adapt is important (Vakola et al., 2004). When the team is not working well with each other or disagrees with certain decisions they might not be willing to adapt, change positions or switch tasks. Vakola, Tsaousis, and Nikolaou (2004) found that EI is positively related to attitude towards organizational change, confirming that also the willingness to change is important and EI is an important step towards adaptability.

Another example is the article of Sony and Mekoth (2016) who investigated the relationship between EI and the adaptability of front-line employees. They found that EI has a significant positive relationship with adaptability. Moreover, the results show that adaptability is in turn positively related to job performance. The researchers argue that front-line employees, dealing with clients as well as the organization, cope with the most unexpected events and therefore adaptability is of increased importance. As mentioned before, agile teams also deal with relatively much adversity and therefore adaptability is important to them as well. As EI is positively related to adaptability, this proves that higher EI can have a positive effect on performance through adaptability. There is more literature supporting the positive relationship between EI and adaptive performance (Acikgöz & Latham, 2020; Pradhan et al., 2017) and between EI and career adaptability (Celik & Storme, 2018; Parmentier et al., 2019; Udayar et al., 2018; Vashisht et al., 2021). Even though some of these studies define adaptability a little differently than this research, this literature provides proof that EI tends to positively influence

adaptability and, therefore, performance. This means that the team with a higher average EI is assumed to have higher adaptability among the team. Identically

While the adaptability of the team and each member is very important, the product owner can be of great influence on the team's adaptability as well. The PO can help prepare his team for unexpected situations and guide them through the changes they have to face. It can be argued that in case of sudden difficulties or unexpected events, the PO has a crucial position in guiding the team as their (informal) leader. Especially during meetings, the PO is there to aid the team in finding solutions to unexpected problems, stimulate them in finding innovative solutions, and prepare them for these unexpected events. EI can help a lot with this, as the PO can utilize experienced emotions from previously encountered problems to facilitate finding new and innovative solutions. Also, the PO can regulate their peers' emotions to help them adapt and focus on the task at hand. The PO's EI is important, first and foremost, for the PO to be adaptable and be open and willing to change and innovate to solve occurring problems. Boyar et al. (2022) confirm that EI positively affects the leader's adaptability. Furthermore, the PO can use EI to facilitate and coach the team to be more adaptable, mostly by being better at understanding what their peers need and utilizing emotions to quickly deal with issues.

As will be illustrated next, it's evident that Team 12 appears more adaptable than Team 6. Throughout the meetings team 12 seems to deal better with unanticipated events than team 6 does. This variance can partially be explained because of team 12's familiarity with Agile, with team 12 having an average experience with Agile of close to 5 years while team 6 has around 2 years of experience. Thus, they are more familiar with an environment like agile, less rigid than traditional team environments, which supposedly require more adaptability. Also, the higher EI of team 12 can be expected to play a role. Team 12 has a higher perceived EI score than Team 6 and also scores substantially higher on team adaptability, implicating the positive influence of EI. Moreover, the PO of team 12 seems to be doing a better job at stimulating the team's adaptability. There is an instance in the 2nd meeting of team 12 where the PO is asking the team if they can create a fictional database to continue their work, due to the real database not being ready yet. The team agreed that it is technically not worth the time and effort to do that, to which the PO complies and the idea is abandoned. Even though the idea of the PO was not implemented, the PO shows to be capable and willing to adapt to the unexpected lack of data with a new idea. The team also responds well to this comment, seemingly understanding the reason for it, and is willing to explain why it is suboptimal, keeping a good mood. By expressing this behavior, the PO is stimulating a more adaptive environment and encourages his team to do the same. While this instance is not a direct demonstration of EI

influencing adaptability, it can be assumed that the PO's EI influences his behavior towards adaptability as is also described in the literature.

On the other team, the PO of team 6 also showcases an instance of adaptability in a different form. During the 2nd meeting of team 6, it is mentioned that there is a new method to calculate something, which could however affect their time management as they need to invest hours into it. Then the team argues over the fact that if the outcome of the new calculation doesn't suit the upper management they will dismiss the method anyway, meaning they wasted their time. This indicates that the team is not willing to adapt or even investigate this new method. The PO however mentions that even though they don't like the idea they have to at least look at it and see if it is worth it. Through this, the PO forces his team to move from their normal ways and try to adapt. While this comment by the PO holds truth and value, the demeanor of the team stays in a similarly neutral, and indifferent way. The tonation and explanation of the PO could use more conviction and persuasion, which might result in such a reaction from the team. However, the team has sustained this mood through most of the meetings. While both POs showed an instance where they stimulated adaptability for their team, there is a difference to address. The instance of PO 6 is one of the only instances stimulating the team, while PO 12 is more frequently displaying behavior of triggering the team to think differently or deal with unexpected setbacks. Moreover, PO 12 is proactively influencing his team on multiple occasions, while PO 6 is mostly reactive. This combined makes that PO 12 is doing a better job by directly (making his team adapt at the spot) and indirectly (stimulating adaptive thinking and behavior) increasing the team's adaptability. Among many factors, EI is considered to influence PO 12's behavior as it enables him to understand emotions and situations better. On the other hand, he can regulate the emotions of his peers towards change and highlight the positive sides of adaptation.

Consequently, the difference between both POs translates into a higher adaptability score for team 12. This in turn influences the team's performance, which is higher for team 12 as well. The effect of a team's adaptability can depend on the number of unanticipated events and problems occurring. However, in general, a team's adaptability positively influences performance. For example, Klarner et al (2013) illustrate that adaptability mediates the relationship between competencies and performance. Therefore, a team's performance should increase if they can adapt to and deal well with problems. Also, the individual performance might depend on adaptability, because when the team lacks adaptability one member might have too much work or be under too much pressure because other team members refuse to help or be flexible. In the case of these teams, it is clear that team 12 has a higher adaptability which aids the higher performance scores they achieved.

## Meeting Mood

Mood or Well-being is a broad concept that can be defined in different ways. In general, mood is about the emotional state and well-being of the team during the meetings. The PANAS scale of Watson, Clark, and Tellegen (1988) is used in this study to measure mood during meetings. Watson et al. (1988) define mood as a mix of positive and negative affect. Positive affect (PA) means to what extent a person feels enthusiastic, active, and alert. Negative affect (NA) is to what extent a person generally feels aversive mood states like anger, guilt, fear, or nervousness (Watson et al., 1988). This means the mood is good among the team if there is high PA and low NA. Mood, Well-being, and affect are theoretical concepts that contain a lot of overlap and are defined in many different ways by different studies through different contexts. Therefore, it is hard to create a theoretical base on the relationship between EI and mood as diverse articles discussing this relationship bring a different definition of the dependent variable. However, there is a consensus across these articles and therefore they are useful to create an understanding of this relationship. Therefore, mood and well-being will be used interchangeably.

In their book chapter, van Heck and Oudsten (2008) conducted a thorough study on the concept of EI and its relationship with other associated variables (e.g. stress, health, well-being). In one of their chapters, they elucidate the relationship between EI and Well-being: "Both theory and research findings suggest a link between EI and emotional well-being. Theoretically, various authors have suggested that persons who can understand and regulate their emotions will have greater feelings of emotional well-being (Bar-On, 1997; Goleman, 1995; Salovey & Mayer, 1990). Empirically, several studies using self-report measures (e.g., EQ-I) and performance-based measures (e.g., MEIS) provide evidence that higher EI is associated with less depression (Martinez-Pons, 1997; Schutte et al., 1998), greater optimism (Schutte et al., 1998), and greater life satisfaction (Austin et al., 2005; Bar-On, 1997; Ciarrochi et al., 2000; Martinez-Pons, 1997; Mayer et al., 2002)." (van Heck & Oudsten, 2008, p. 114). The study of van Heck and Oudsten (2008) is very valuable, as they provide a lot of theoretical as well as empirical proof of the positive relationship between EI and well-being. Additionally, the articles of Martinez-Pons (1997) and Schutte, Malouff, Simunek, McKenley, and Hollander (2002) provide additional evidence for EI's association with less depression and greater optimism respectively. This shows empirical evidence of EI influencing PA and NA towards a higher state of (emotional) well-being, further establishing the relationship between EI and well-being. It can be assumed that this relationship holds during meetings as well, as the EI of the

PO and his peers positively influences their behavior toward each other and thus their mood during meetings.

Sánchez-Álvarez, Extremera, and Fernández-Berrocal (2016) also conducted a meta-analysis on the relationship between different EI frameworks and subjective well-being (SWB). The used EI frameworks are self-reported ability, mixed, and performance EI while SWB is split up into cognitive well-being (CWB) and affective well-being (AWB). AWB holds the most interest for this study as it illustrates the frequency of positive and negative emotions experienced. In fact, the questionnaire of Watson et al. (1988) is used to measure AWB. (Sánchez-Álvarez et al., 2016). Furthermore, the ability-based EI is also measured through the WLEIS scale by Wong and Law (2002), on which the EI questionnaire in this study is built. To continue, the results of the study show that EI is positively related to AWB, meaning EI is found to increase mood in this study. Even more interesting is the fact that ability-based EI is positively related to AWB as well, meaning both measures used in this study have previously been proven related to each other. This further strengthens the assumption of PO and team EI positively influencing meeting mood.

The study of Schutte et al. (2002) also looked into the relationship between EI and emotional well-being through several studies. In the first study, they found that EI is positively associated with a characteristically positive mood, using the study of Watson et al. (1988) to measure it. Moreover, the results of the third study illustrate that high EI individuals are better able to keep a positive mood when faced with negative events and experience more positivity during positive events (Schutte et al., 2002). This is in contrast to the findings of Petrides and Furnham (2003), who found that high-trait EI individuals are more sensitive to mood induction experiments. However, the studies of Schutte et al. (2002) suggest that higher EI individuals are generally in a more positive mood and more frequently experience and retain a positive mood state, explaining the higher EI team (team 12) scoring better on meeting mood. Additionally, it is interesting to point out that the studies of Mikolajczak et al. (2009) and Salami (2010) Mikolajczak, Petrides, Coumans and Luminet (2009) and Salami (2010) both found that EI functions as a moderator. The results of Salami (2010) show that EI has a moderating role between well-being and behavior and attitude, insisting that negative mood has less impact on behavior when an individual has high EI. On the other hand, Mikolajczak et al. (2009) found that EI moderates the role between the experimental emotional stressor and mood deterioration. The summary of the before mentioned studies allows for the assumption that EI, while linked with a characteristically more positive mood, on its own does not majorly influence the mood during meetings. However, EI seems to moderate the effect that certain events have on the mood of the peers and therefore the team.

This is interesting, as it leads to thinking about the effect of the PO's EI on the mood of his team. With his EI ability, the PO can regulate the emotions of his peers and therefore minimize the negative effect experienced. As mentioned before, EI mostly has a moderating effect on the meeting mood of the team. When thinking about it, the PO also has a "moderating" effect on his team, as he is influencing the team's behavior and their therefore performance. The high EI of a PO can give him more tools, as the leader of the team, to moderate the team's emotions and consequently their mood during the meetings. This in turn might lead to a happier team that performs better during the sprint.

From observing the teams there is not a very strong difference in meeting mood noticeable. However, it stands out that team 12 has displayed more positive affect like a more active and enthusiastic attitude during the meetings, while the negative affect seems the same. Therefore it is not surprising that the meeting mood score is 0.81 higher for team 12. Also when looking at each meeting separately it appears that team 12 is generally in a better mood state. The biggest difference is during meeting 2 (1,0) while the smallest difference is during meeting 3 (0,5). The difference in meeting mood seems to be partially explained by the higher average EI of team 12, which is assumed to increase the mood of the team. While team 12 is in a better mood overall, one member is complaining more than the others. Interestingly, he mainly does this when the PO is not around, which vows for the positive effect the PO has on this member's behavior. Team 6 appears to be in a neutral mood overall, with no members expressing more negativity. While not having to address negativity too often, the PO of team 12 also demonstrated more effort in increasing the mood of his team during their meetings. There is an instance where one of the team members is assigned a task to which he responds "This is actually the first time". The PO responds with "First time? There is a first time for everything!" with a smile. It is visible that the member is smiling and the mood is good. Another instance is when the PO mentions redirecting the data to an LDAP container, asking "It is an LDAP container right?". To this, a team member says "No it is LLD". The PO laughingly replies "Almost!" to which the team starts laughing as well. A final example of an instance is when the team is discussing how a certain task should be approached and it can be sensed that the mood is more serious during this moment in time. After the task is settled the team is voting on the amount of time needed for this task and a team member makes a joke about the time assigned by one peer. The PO is tagging along by making another joke and saying "You are allowed to disagree with this decision!", because the majority of the team chose something else. This is again a very smart way of making a joke to lighten up the mood but also treat the team well and make them feel heard. Especially after some more tense situations, humor is an easy way to regulate emotions by focusing on the positive. The PO of team 12 is doing a good job at this and showcases his EI by regulating his team's emotions and mood.



On the other hand, the PO of team 6 does not showcase this kind of team-behavioral interpretation or any humor. Sometimes there is a joke made in the team but seldomly by the PO. A part of this is likely to be explained by the lower EI of the PO, not being able to utilize his EI to regulate the mood among his peers. It is important to point out that the mood of team 6 is not bad at all. They score a 5.04 out of 7 which means the mood is good. However, the thing that team 6 might need is some help to reset or lighten the mood when some more tense situations occur during the meetings. In other words, they might need to see some more happy faces sometimes as this team is quite serious all along. This is what the PO of team 12 is doing very well, aiding his team in retaining a good mood during various situations. It is also interesting to note that the mood of team 12 is the worst in meeting 3, the only meeting in which their PO is absent. Consequently, while the difference in EI can also affect the difference in mood, the influence of the PO EI is very clear in this analysis.

In effect, the difference in mood between the teams can greatly influence their performance. The mood during the meetings is assumed to be a representation of the general mood during the sprint, meaning that the current mood state is influencing the team every day. In their studies, Wright and Cropanzano (2000) found that psychological well-being is predictive of job performance, meaning that the higher the well-being, the higher the performance. Even more interesting, Lin, Yu, and Yi (2014) found that PA has a positive effect on job performance while Jordan, Lawrence, and Troth (2006) found that negative mood negatively influences team performance through team processes. More recently, Salgado et al. (2019) have reestablished well-being (cognitive and emotional) as a predictor for job performance. This set of literature confirms that the mood state of the team and its individuals can very much influence the performance of the team. This is self-evident as a team member's negative mood can lead to less individual performance due to not being focussed on work or unwillingness or inability to be productive. Moreover, the negative mood of one or multiple team members could affect the team performance as well due to members being irritable which leads to more conflicts arising and cohesion deteriorating. On the other hand, a positive mood state can greatly help the performance as the team is motivated and happy to work with each other and be productive. This is even more evidence for the importance of an emotionally intelligent PO, as through his EI the PO can help the team retain a positive mood and therefore perform at their best. Conclusively, the EI of the PO and his peers are very influential towards the mood during the meetings and therefore the performance during the sprint.

## Squad psychological safety

Team psychological safety is defined as “a shared belief that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 354). In other words, a state of psychological safety means speaking up freely as people are not constrained by the possibility of others’ disapproval and/or the negative personal consequences that might accrue to them as a result. Practically this means that team members can bring up problems and tough issues and that mistakes are not held against one another. Moreover, psychological safety means that team members value each other's unique skills and talent but are also comfortable checking the right way to do something (Nembhard & Edmondson, 2006). When this climate of psychological safety is established, the team can greatly benefit from this as more information and ideas are brought into the team. For example, the research of Baer and Frese (2003) highlights that psychological safety moderates the relationship between process innovation and performance, such as return on assets. PS enables the full potential of process innovation as speaking up and taking risks helps with the adoption and implementation of new processes. High process innovation leads to lower company performance when PS is low, as the team cannot handle the continuous innovation. However, Higher PS increases company performance through innovation due to good communication and input from the team. Because of this, PS is especially interesting for agile teams as they are constantly innovating as each sprint includes different tasks and goals. Therefore PS is of increased importance as these teams need to gather input from all members. This way agile teams are able to create the most efficient and effective plan to attack the goals of the sprint, as they often are composed of different disciplines and expertises. Likewise, Javed, Naqvi, Khan, Arjoon, and Tayyeb (2019) found that inclusive leadership is positively influencing innovative work behavior through the mediation of PS. Interestingly, this means that the leader is including the team in discussions and decision making and therefore the team feels like their input is welcome and feels psychologically safe. In turn, this PS leads to higher innovative work behavior through different ideas being shared from which innovations and solutions are born. This conclusion is similar to that of Baer and Frese (2003), stating that PS influences the relationship between process innovation and performance. Therefore it can be concluded that PS increases the innovativeness but also the effectiveness of innovations implemented.

Moreover, leader inclusiveness is also pointed out by Nembhard and Edmondson (2006) as a positive influence on PS. This highlights the influence of leader behavior on the PS of the team. For instance, the study of Carmeli, Sheaffer, Binyamin, Reiter-Palmon, and Shimoni (2014)

uncovered the relationship between Transformational leadership (TFL) and creative problem-solving and the mediating role of PS and reflexivity, in a series. The article makes a statement that leaders who provide intellectual stimulation and encourage critical thinking make their followers feel psychologically safe and expected to be open. This is strengthened when leaders provide their team with support, encouragement, and empathy Carmeli et al. (2014). As such, the behavior of the leader is a very important factor for the PS climate of the team.

Through the literature PS is established as a relational variable that influences several team outcomes, therefore proving its importance. When exploring the subject of PS, a potential predictor that surfaces is EI. For example, the article of Ghosh, Shuck, and Petrosko (2012) found that EI positively influences PS which in turn influences learning behavior. For instance, EI can influence PS, as the expression of emotions stimulates other members to do the same. Moreover, the regulation of emotions by focusing on the positives diminishes negative reactions to input and captures the value of every idea, encouraging members to speak their minds and contribute to the conversation. This climate of PS leads to more valuable input being shared and the team learning from each other. An increase in learning behavior within the team allows for a long-term increase in individual and team performance. Harper and White (2013) support the value of EI as they state that having high EI in the team improves the PS of the team. They also claim this, in turn, increases team learning and performance. Additionally, the study of Shankar and Tewari (2021) found a significant relationship between collective EI and PS, influencing collective performance as well.

Similarly, Zhou, Zhu, and Vredenburg (2020) explored the relationship between EI and team decision-making mediated by PS. Their findings conclude that team-level EI improves team decision-making performance through PS. Zhou et al. (2020) added that: "Low levels of team EI may result in an inability of the team to encourage participation, smooth implementation and cope with conflict, thus reducing feelings of psychological safety. Teams with lower EI are less capable of perceiving and reacting to harmful emotions of team members and thus will be prone to lessen psychological safety (Harper and White, 2013)." (Zhou et al., 2020, pp. 127–128). In consequence, this low PS leads to team members holding back valuable ideas and information leading to worse decision-making. On the contrary, when PS is high the entire team will contribute to the discussion which will lead to thorough and well-rounded decision-making, eventually improving performance. Especially in an agile team consisting of members from different expertise, including every member's input can greatly increase the decision-

making performance. This influence of PS on team outcomes once again pinpoints the importance of EI, as EI can positively affect the climate of PS within the team.

In the first place, EI has been demonstrated to directly influence the climate of PS in the team. However, EI can also indirectly influence PS through the leader of the team. As previously discussed, the behavior of the team leaders is very impactful towards PS and therefore outcomes of the team. Henceforth, the EI of the leader is of enhanced importance as their EI facilitates improved leader behavior which in turn affects team effectiveness. An example is EI steering towards TL, increasing the PS of the team (Carmeli et al., 2014). The literature review by Kaur and Hirudayaraj (2021) mentions that highly EI leaders stimulate psychologically safe environments which in turn stimulates learning. Emotionally intelligent leaders recognize the need for a highly psychologically safe environment that is free of criticism, refusal, and discouragement. Respecting other team members while being cooperative allows the leader to build trust with his team. Consequently, Team settings with high PS are found to promote learning behavior (Kaur & Hirudayaraj, 2021). The leader is also considered responsible for a psychologically safe environment, which vows for the importance of leader EI as a tool for facilitating this crucial environment.

Comparatively, the study of Druskat, Wolff, Messer, Koman, and Batista-Foguet (2017) concluded that team EI norms positively affect team effectiveness through PS. They specifically found that the norm of 'interpersonal understanding' is affecting PS. Interpersonal understanding means creating an understanding of each other's talents, preferences, and needs which results in more trust and safety, increasing performance. Creating this understanding by continuously asking and showing interest is a well-suited task for the leader of the team. Again, EI functions as a tool for leaders as it allows them to better perceive the preferences and needs of team members through their emotional expression. Moreover, high EI makes emotions and feelings highly valued by the leader, thus increasing empathy and sensitivity towards the team. Consequently, this will stimulate the climate of PS in the team as they feel heard and understood. In support of the preceding statements Semenets-Orlova, Klochko, Shkoda, Marusina and Tepliuk (2021) emphasizes that leaders can most quickly change the team climate and have the most significant impact on the team PS. All in all, the addressed literature proves the importance of EI in the context of PS. Most importantly, based on the literature, the EI of the team leader appears the most influential as the leader has the largest influence on the climate of PS, with EI considered an important tool in safeguarding that environment.

When zooming in on the climate of PS in the context of the subject agile teams it stands out that team 12 appears to experience higher PS than team 6, also based on their observed behavior. This is reflected in the average PS scores as well with a 5,67 out of 7 score for team 12 while team 6 scored 4,96 out of 7, a difference of 0.70. When comparing the teams it is clear that team 12 is speaking up more and is feeling comfortable contributing and giving opinions. During the meetings, there is a lot of discussion on how to encounter a certain task or problem, and often multiple members are chiming in, giving their views or ideas on the subject. Through this dynamic, the team makes very deliberate plans and decisions on how to proceed during the meetings. This improved decision-making most likely culminates in higher team effectiveness, which is reflected in the higher performance scores of team 12. In contrast, team 6 is not speaking up much and points of discussion are often dealt with quickly, without much input from other team members than those specifically involved. Moreover, sometimes team members ask or comment on something and nobody really responds. It is hard to derive if they just do not have any feedback or thoughts if they are generally a more introverted team, or if they don't feel safe to present any input to the team. However, it leads to think that there is not a great climate of PS within team 6.

The EI of team 12 is considerably higher than team 6, which could explain the difference in how the teams handle these meeting situations. For example, team 12 having better EI skills to put comments of other members into perspective allows them to retain a better emotional state and PS. Besides the team EI, there can be many possible influences on the climate of PS. Hence, the POs of the teams can have a great influence on this climate as well. Take the PO of team 12, who appears to utilize his EI well to establish a psychologically safe environment. There is an instance during a meeting where the PO suggests creating a fictional database to facilitate a head start on a certain task. His team then explains to him that it is technically not worth doing that and the PO recognizes this and accepts his input will not be used. This altercation between the PO and his team shows that the team environment allows for any ideas to be brought in and that it's not personal when it is not implemented. The fact that the team feels confident to engage in discussions with their PO and no negativity is involved shows that there is a climate of PS. The fact that the PO handles this the way he does vouches for his EI, relativizing the discussion and regulating his own emotions. Moreover, the PO values input from the team with no negative comments or disapproval of any input, making the team feel like their input is worth sharing. This behavior as a role model is crucial for the team as it stimulates them to learn from and replicate this behavior.

On the other hand, the PO of team 6 does not display any of this behavior. The PO does not specifically exhibit destructive behavior deteriorating the PS climate in the team. However, the PO does not display any behavior stimulating the PS of the team. The team is not contributing much during the meetings making them very stale and relatively unproductive compared to those of team 12. The PO of team 6 does not seem to recognize this nor make efforts to stimulate his team to share their valuable knowledge. This behavior hints towards the lack of EI of the PO. The PO might not recognize the significance of his team feeling safe to speak up, which can be interpreted from his behavior during the meeting. The PO might recognize that his team is not contributing much but might not be able to regulate the emotions of the team towards a state where the team dares to speak up and share their thoughts and ideas. The team environment cannot be assessed past the observations of the meetings but there is a possibility that previous negative reactions have led to lower PS within the team. All in all, it appears that the climate of PS in team 6 is relatively low, which is confirmed by their PS score.

While not the only factor explaining the difference in PS between the teams, it is evident that the behavior of the PO has a crucial influence on the dynamic and climate of PS within the team. Despite the small sample size, the observations imply that high EI can provide the PO with tools to recognize and thus operate toward a more psychologically safe environment. This climate of PS impacts decision-making and the way teams deal with the continuous innovations entailing agile, thus greatly improving meeting effectiveness and team performance.

## Goal Clarity

The following chapter will revolve around goal clarity and its relationship with EI. Goal clarity can be defined as an individual's clarity of goals and the prioritization of those goals (Lee et al., 1991). In an agile environment, this practically entails an exact understanding of what to do and having specific goals to aim for during a sprint. Other aspects of goal clarity are knowing which goals to prioritize when multiple goals are present and team members encouraging each other to achieve these goals. Goal clarity can be crucial to the functioning and performance of the team, as having clear goals to aim for allows for more efficient and effective efforts toward those goals (Kramer et al, 2013). An example of the importance of goal clarity presented by Gonzalez-Mulé, Courtright, DeGeest, Seong, and Hong (2016) involves the relationship between autonomy, performance feedback, goal clarity, and performance. Their study found that high autonomy paired with high-performance feedback is providing teams with high clarity of organizational goals, resulting in higher performance. On the other hand, teams with high autonomy but low levels of feedback perform worse because of low goal clarity; This is

because they don't know how to steer their efforts toward the desired outcomes, resulting in lower expected performance. As the observed teams in this study are agile teams, who enjoy a lot of autonomy, goal clarity, and thus performance feedback becomes even more important. Otherwise, the teams will have little direction and therefore be less effective in their efforts. This shows that goal clarity is important, especially in highly autonomous environments like agile with performance feedback being crucial to this goal clarity.

Besides autonomy and feedback, the study of Peralta, Lopes, Gilson, Lourenço, and Pais (2015) also found a link with team innovation processes. Their article investigated the relationship between innovation processes, team effectiveness, and the moderating role of goal clarity. The findings present that goal clarity has a positive moderating effect on this relationship, which makes sense as innovation processes can be valuable but also be counterproductive when losing track or if not aimed at the right processes. When goal clarity is high within the team they can align their creative innovations with performance goals, optimizing their innovations and therefore effectiveness. Henceforth, goal clarity is especially important for agile teams as grounded innovations are crucial in volatile and dynamic environments like these, as also mentioned in previous chapters. The relationship between team innovation and goal clarity is backed up by Lui, Lai, Luo, and Moran (2022) as they propose a direct positive effect of goal clarity on team innovation.

Another finding presented by Bang, Fuglesang, Ovesen, and Eilertsen (2010) includes a positive relationship between goal clarity, learning behavior, and team effectiveness. Moreover, they established the mediating role of focused communication as clear goals support a focused discussion during the meetings. These findings highlight the importance of goal clarity during the meetings as it allows for focused discussions and therefore more efficient and effective meetings. This effectiveness can be expressed through for example improved decision-making quality. The presented evidence illustrates the value of goal clarity for team effectiveness in general, but especially for agile teams. Goal clarity provides focus and direction for the team, which when paired with autonomy can be the fundament of high-performing agile teams.

While the team itself is responsible for and has an influence on the clarity of goals within the team, the team leader can exert considerable influence on the goal clarity as well. The position of the leader often provides the most oversight of the team's objectives and therefore he/she is in the best position to establish and prioritize the goals together with the team. Especially in agile, the product owner has end responsibility for the 'product' of the team, thus having oversight of everything happening within the team is quite crucial. Zooming in on leadership,

Raziq, Borini, Malik, Ahmad and Shabaz (2018) investigated the relationship between leadership styles and project success. Their results presented that goal clarity mediates the relationship between transformational leadership and project success. Transformational leadership is mainly about motivating and inspiring the team and therefore goal clarity becomes more prevalent as the leader involves the team instead of giving them tasks. "A project manager focusing on clarifying goals and requirements to the team shows concern not just for the project, but also for the team members. In other words, for goal clarity, a relational leadership style (like the transformational style) seems appropriate." (Raziq et al., 2018, p. 317). These ideas on leadership style are supported by the study of Caillier (2016), stating that goal clarity is mediating the relationship between TFL and self-efficacy, extra-role behavior, and turnover intentions. This reestablishes the position of transformational leadership, as this style includes and motivates the employees and thus clarifies what their set goals are. In turn, this improves their attitudes and behaviors on the work floor, influencing the performance of the team long term. A very specific example of the importance of TL is depicted by Peng, Chen, Zou, and Nie (2021). Their research looked into the influence of environmentally specific TL on team pro-environmental behavior, mediated by goal clarity. The findings highlight that pro-environmental goal clarity mediates the relationship between environmentally specific TL and team pro-environmental behavior. This finding is a beautiful practical example of how the focus of the leader on important subjects through his transformational leadership increases the goal clarity on this subject and therefore the effective behavior of the team on this matter. This again shows that the behavior of the leader can be influential towards team functioning through goal clarity.

Similarly, Ahmed, Yang, Hongjuan, and Mahmood (2022) state that empowering leadership enhances job performance through goal clarity. High empowerment leadership can consist of giving authority to the team, including the members in the decision-making process, and encouraging self-management (Ahmed et al., 2022), being similar to the transformational leadership style. Altogether, TL as a form of empowering leadership appears to be effective at establishing goal clarity among the team, which is assumed to increase the effectiveness and performance of the team.

Now that the association between goal clarity and team effectiveness is established, it is interesting to examine emotional intelligence as a predicting factor of goal clarity. For instance, Martinez-Pons (1997) once confirmed an existing positive relationship between EI and goal orientation. More in the context of this study, the research of Mazur, Pisarski, Chang, and Ashkanasy (2014) found that utilizing EI skills sets up cooperative and effective communication during the goal-setting process, which presumably contributes to goal clarity. This suggests



that EI facilitates improved team dynamics, thus improving the goal setting and goal clarity of the team. Similarly, the study of Jordan, Ashkanasy, Härtel, and Hooper (2002) looked into the influence of EI on team performance, separated into team process effectiveness and team goal focus. They found that EI initially positively affects team performance. This can be interpreted as EI positively affecting team goal focus with goal focus eventually improving general team performance. Furthermore, the researchers found that low EI teams initially perform less well than high EI teams. However, interestingly, over time the low EI teams catch up to the same performance as high EI teams. This would mean that EI improves the initial processes and low EI teams need more time to establish the team processes, as it takes longer to get used to the dynamic of the team and its members. Henceforth, the conclusion of Jordan et al. (2002) implicates that EI in the context of goal clarity is of increased importance for agile teams. Agile teams have shorter time schedules in which they have to perform and the team composition changes more frequently due to team members switching teams. An entirely new agile team might be formed after a sprint is finished, meaning the team dynamic has to be defined all over again. Therefore, high EI in an agile team can be crucial as this positively affects these team processes and allows them to perform faster and at a higher level than low EI teams. The influence of EI is retractable, as high EI in the team allows for the relational processes to establish faster as the team is able to perceive and regulate emotions quite well. Therefore, highly EI teams have a head start on establishing the goals and fine tuning the task processes. Interestingly, Jordan et al. (2002) claim that over time, the low EI teams start performing equally to the high EI teams. However, in the case of complex tasks or situations the difference in peak performance between teams might be larger because high EI facilitates smoother relational interactions when each member has to perform to their full potential. Also as mentioned, in time constrained team environments like agile the sprint performance of low EI teams is assumed to be lower due to limited time with the team. Ultimately it is evident that EI can be very important for team performance, especially in team environments like agile.

In light of EI being important for goal clarity, it is crucial to address the EI of the team leader. The transformational leadership style is assumed to have a positive influence on the team dynamics and outcomes and is therefore a preferred style to adopt when aiming to build goal clarity. In previous chapters and literature, EI has been linked to TL and is thought to positively influence and facilitate the empowering, transformational leadership style. The EI of the team leader has increased significantly as the leader position is essential for goal clarity, as he is the link between his team and the organization. Therefore, high EI in the role of a product owner in an agile team can be crucial for stimulating goal clarity and therefore important team outcomes.

Several consulted studies already established the link between goal clarity and team outcomes, outlining the value of goal clarity on team functioning and consequently team performance. Variables that are mentioned in positive relation to goal clarity are multiple attitudes and behaviors (e.g. Self-Efficacy, Extra-Role Behaviors, Turnover Intentions) (Caillier, 2016; Jung, 2014; Peng et al., 2021) but also team outcomes like team innovation (Lui et al., 2022), project success (Raziq et al., 2018), team effectiveness (Bang et al., 2010; Peralta et al., 2015), student performance (Nguyen et al., 2020), task performance (Anderson & Stritch, 2016), Job performance (Ahmed et al., 2022) and team performance (Gonzalez-Mulé et al., 2016; Jordan et al., 2002; van der Hoek et al., 2018). Following these findings, it is indisputable that goal clarity has a large influence on the team. Consequently, EI as a tool and studied predictor of goal clarity can be of great importance for the team, especially in the hands of a team leader.

With the theoretical relationship between EI, goal clarity, and team performance well-established, it is interesting to investigate and observe the subject of agile teams in this context. Examining the scores of both teams shows a difference of 0,59 with team 12 scoring 5,94 and team 6 scoring 5,36. This difference in scores is corroborated through the observation of the meetings of both teams as team 12 appears to have higher goal clarity, which is reflected through the higher performance of the team as well. With this in mind, a large influence on this difference in goal clarity seems to stem from the PO's difference in behavior. The PO of team 12 is exerting much more behavior supporting the goal clarity within the team compared to the PO of team 6. The most significant example is the PO opening the first meeting of the sprint with a comprehensive explanation of the goals and expectations of the team and setting some priorities for the sprint. A specific instance from the meeting is when the PO is extensively informing his team on the goals for the sprint and how they are going to approach it. He explains that they are better off doing the 'France' part in between other activities. "And we can do ourselves a great favor if we do this- if we take this seriously". "This will make our lives a little bit easier down the road". In this instance the PO showcases his EI skills, utilizing emotions as he understands emotions that could arise if they don't follow this plan and uses that to help the team prioritize their goals. This is an excellent example of the influence of the PO and EI supporting good behavior by the PO. Moreover, the PO starts each meeting with a short summary of the progression of the sprint. In these statements, he also mentions valuable information from meetings with other POs and upper management and discusses the feedback he received from them. This action is also very valuable as Gonzalez-Mulé et al. (2016) have proven that performance feedback is crucial for goal clarity in high autonomy environments like agile. In the meetings, the members that guide the meeting contribute to goal clarity by explaining and prioritizing the goals of the meeting and sprint in general. However, it is mainly

the PO that introduces the goals of the team and intervenes multiple times to keep the team on the right track toward these goals. This way the PO provides his team with essential performance feedback and organizational goal clarity, which influences the performance of the team.

Comparatively, the PO of team 6 does not introduce the goals of the sprint nor does he provide performance feedback from the PO meetings, which has consequences for the goal clarity of his team. The member that is operating the scrum tool is contributing the most to goal clarity by processing team tasks for the sprint. The PO might discuss goals at other moments outside the meetings, which however is not visible through the observations. Overall, no team member nor the PO is setting out goals during the meetings for the sprint, which can hurt the goal clarity of the team. An example of this is an instance where a team member asks what the goal of this sprint is, to which the PO responds with a general idea of their goal. When another member adds that something else should be their goal as well, the PO agrees and says “Ohh yeah that needs to be added as well”. This sequence shows that there are no clear goals set for the sprint or that the goal-setting process is sub-optimal, resulting in a lack of goal clarity which is expressed during the meetings.

The EI of the members but primarily the POs is assumed to influence their behavior concerning goal clarity. For example, the goal clarity stimulating behavior by the PO of team 12 also reflects the findings of Bang et al. (2010). By including the team in essential information they continue the meetings with increased goal clarity, resulting in higher meeting quality and effectiveness through focused discussions. The EI of the PO should play a role here, as it presumably steers their behavior towards a more transformational style, including and motivating the team which increases their goal clarity but also commitment and self-efficacy. Comparatively, adopting a mainly transactional, conservative leadership style like the PO of team 6 facilitates distributing tasks without informing members of the general goals of the sprint, resulting in less goal clarity throughout the team. In an agile environment, this style is prone to mistakes, as the PO then has to manage the continuously changing goals and priorities himself. By informing the team with the necessary information and letting them contribute instead of ordering tasks, the team has high goal clarity and the entire team is included and committed to their performance goals. This likely makes the life of the leader easier on top of an increase in team performance. The behavior of PO 12 also coincides a lot with empowerment leadership, which is also proven to have a positive effect on goal clarity through trust and inclusiveness. Conclusively, the observation of both teams proves the value of an empowering, transformational leadership style and therefore the high EI of PO 12, as he is using the right tools to put his team in the best environment, improving team effectiveness.

## 4. Discussions

### 4.1 Summary of the Results

This study explored the relationship between leadership EI, team and individual affective, behavioral, and cognitive variables, and agile team effectiveness. A comparison and analysis of the survey data revealed a notable variance between both cases as the higher EI leader scored better on all variables, leading to the assumption that EI seems to have had a positive influence. Interestingly, the data illustrated that the team variables represented the largest difference between the teams, reflected through the survey performance scores and observations. Moreover, the product owner's performance represented the largest difference in scores, which attests to the difference in leadership qualities of the POs.

The observations of team meetings mostly confirmed the impression set by the survey data. The team with a higher EI leader performed better in most of the team processes, presumably fueled by their higher EI abilities. Interestingly, the findings suggest that team EI seems to be related to improving team dynamics and therefore team effectiveness. However, most importantly, the PO with higher EI was exhibiting increased social, empowering leadership behavior in the context of all team processes. This enhanced leadership behavior was linked to EI through multiple instances where the PO showcased emotionally intelligent behavior, positively influencing agile ABC team processes and leading to improved team performance and effectiveness. Moreover, the higher EI PO displayed behaviors linked to TFL, like individualized consideration. Therefore, the mention of TFL in relation to EI in the literature, combined with the displayed TFL behavior, suggests that TFL might be a fitting leadership strategy for agile leaders.

Throughout the study of quantitative and qualitative data, it has become evident that EI can play a positive role in team outcomes. Hence, it was clear that higher team and PO EI seemed to have a positive effect on team performance factors, like squad performance and meeting effectiveness. However, individual performance seemed to be less affected by EI as this differentiated the least between both teams. Finally, the largest difference in performance appeared to be that of the POs, as the observations illustrated differing qualities of leadership, affected by the EI capabilities of both POs. Henceforth, these findings lead to a conclusive answer to the research question: The EI of the PO is likely to contribute to agile team and individual level affective, behavioral, and cognitive processes, and therefore agile team effectiveness.

## 4.2 Theoretical Implications

Through the analysis of all the variables, it is clear that they are all very important for the functioning and performance of an agile team. While each variable has different strengths in correlation to EI, they are all connected and crucial for team dynamics. Especially the team variables that involve the functioning and feeling of the team like cohesion, conflict management, and autonomy appear to have the strongest relationship to EI. Correspondingly, the data represents higher EI within the team and the PO having a positive effect on team performance factors like squad performance and meeting effectiveness. However, individual performance seems to be less affected by EI. The study from Druskat and Wolff (2001) already mentioned that team emotional intelligence is just as important as individual emotional intelligence and since, many scholars (Druskat et al., 2017; Jamshed & Majeed, 2018; Jordan et al., 2002; Lee & Wong, 2019) have investigated team emotional intelligence and established its significance and positive effect on team variables. Therefore, the finding that team emotional intelligence and team-related variables have a particularly strong relationship resonates well with the current theory. However, the idea that EI has a greater influence on team functioning and performance than individual performance receives little mention in the literature (Druskat et al., 2017). Therefore, this comparison between team and individual EI could be interesting for future research.

As it is apparent that EI has a great influence on team variables and processes, the observation of these agile teams induces the assumption that team processes are of exceptional importance in an agile environment. Hence, agile teams are often more reliant on each other and work more closely together than traditional teams. This illustrates why it is particularly crucial to address these team processes in an agile team and why EI can be positively impactful in these environments. The study by Gren and Lindman (2020) recognizes that group dynamics are important within agile teams and that coaching on group dynamics should receive more attention and inclusion at companies and schools in the agile context. Therefore, this leads to interesting ideas for further research to increase the understanding of differences between traditional and agile methodologies, becoming increasingly important in the future as more branches and teams are likely to transition from traditional team settings to agile ways of working.

In regards to the influence of EI on team dynamics, better team functioning and performance can also be seen as a product of the high EI capacity of a PO, which evidently has a large impact on the team and therefore on team performance. From the observation, the EI of a PO appears to have a unique influence on behavior, positively affecting the team on all variables

and therefore improving their performance. The informal leadership position of the PO provides great opportunities to help the team through guidance and leadership. In general, leadership has often been related to EI in the literature (Bumphus, 2008; Danquah, 2022; Kaur & Hirudayaraj, 2021; Maulding et al., 2012; Neil et al., 2016; Schlaerth et al., 2013; Semenets-Orlova et al., 2021; Weinberger, 2009; Wong & Law, 2002; Zhang & Hao, 2022; Zhang et al., 2020), establishing the importance of EI among leaders. In contrast, while some scholars have associated agile leadership with EI (Hayward, 2021; Mersino, 2013), there has been limited research on the specific importance of EI among product owners and its relation to team functioning and performance. Therefore, this study provides a novel insight into EI in relation to product owner behavior and its effect on team dynamics. Nevertheless, further investigation is necessary to fully comprehend the effect of EI on an informal leadership position, like that of a product owner in an agile team environment. In addition, the agile environment requires a leader to empower his team, to which TFL appears to be a possible suiting leadership strategy. Possession of high EI might steer leaders towards a TFL style and the combination of EI abilities and TFL can set a PO up for great leadership and performance for his team. The relationship between TFL and EI has been investigated by several scholars (Brown & Reilly, 2008; Jain & Duggal, 2018; Waglay et al., 2020), reaffirming a potential correlation between empowering TFL leadership and qualities like EI. However, establishing the optimal leadership strategy powered by EI, to reach the highest leadership performance in an agile environment, would require further investigation in this context.

### 4.3 Practical implications

Through this innovative, exploratory empirical research, the findings present some practical implications for practitioners who are involved with agile team dynamics. Individuals, agile teams, product owners, and organizations can all learn from the outcome of this case study and utilize this knowledge for improving their situation. It is important to restate that this is an exploratory study with a small sample of cases and therefore the results are not generalizable to every team or situation. The reader should interpret the outcomes of the study and translate the takeaways to their situation to learn and improve. With this in mind, several practical implications will be provided that can be considered when implementing or reflecting on EI within another environment.

Primarily, the findings imply that high EI in the hands of the PO might be the most important role of EI within an agile team. Hence, high leader EI is potentially very beneficial in a team setting as it provides the PO with more tools to create cohesion and cooperation within the

team. Therefore, a highly EI leader can be a very impactful asset within an agile scrum team, similar to the ones in this case study. Company executives should consider EI when selecting a leader for the team and should aid the team leaders in developing this crucial skill. Additionally, providing coaching on awareness and application of EI among agile leaders can lead to fruitful increases in team effectiveness. Moreover, the agile environment thrives with a leader empowering his team, to which TFL emerges from the literature as a suitable leadership strategy. Also, EI appears to steer leaders towards a TFL style, and the combination of EI abilities and TFL set the PO up for optimal leadership and performance for his team. Hence, directing attention towards EI, optionally paired with a TFL leadership strategy, should lead to improved leadership performance in agile environments.

For example, our findings imply that EI can be an effective tool for developing effective agile team dynamics. It is evident from this case study that EI has a substantial influence on team variables and team functioning in general. Optimally, before attempting to increase EI within the team one should assess their team dynamics and look at which variables of team functioning the bottlenecks are located. Hence, especially when the problem lies within the social functionality of the team like cohesion or conflict management, EI might be one of the most beneficial skills to train. Think about training and coaching on EI in the context of a team environment to increase awareness of EI but ultimately improve the EI traits and skills of team members and the team as a whole.

Finally, organizations should also consider EI as an important factor that cannot be ignored. Especially organizations that employ scrum teams should make EI one of their spearheads when they look for long-term improvement in their organization. For example, executives embarking on EI should analyze and establish their team dynamic and its needs. Accordingly, they should look to acquire expert knowledge from professionals and empirical evidence from case research, like this study, to smoothly transition into a high EI environment. Such an approach would make it interesting for businesses, as it takes away from the intangible, theoretical nature of the subject, and provides tangible value and results for practicing teams. Optionally, when there is a lack of knowledge or tools within the organization they can consider hiring an expert on EI and coaching to aid in establishing higher EI awareness and abilities within the team.

## 4.4 Limitations & Future Research

While this study is executed with the utmost effort to ensure viable, reliable results through a rigorous methodology, this study is susceptible to limitations and bias due to several reasons. As an illustration, for the clarity and coherence of this study, each variable is processed individually in relation to EI. However, even though all team variables are measured independently and assessed independently, arguments can be made that some variables overlap quite a lot. Squad cohesion for example is such a broad concept that it is influenced by all other variables in some way. Therefore, although very interesting and valuable to address individually, in realistic team situations these variables should be considered in relation to each other, the context of the team, and the situation. Moreover, sometimes certain issues will affect several variables. On the other hand, efforts of change or improvement will often affect multiple team variables as well, as the team dynamic will always have something intangible and complex to it. In the end, these variables are not solitary entities that can be influenced in isolation but are all connected as part of the team dynamic. Hence, changes will affect multiple team variables if not all, and should therefore be viewed as a whole. Therefore, future studies could look to acquire a larger quantitative data set and investigate the interaction effect between these team variables, potentially backed up by qualitative research, further exploring possible interaction effects emerging.

Another limitation regarding the survey measures is the difference in time of measurement. Hence, while emotional intelligence is measured after the first meeting, most other variables are measured after the second meeting as well as after the third meeting. Moreover, some variables are measured after each meeting and represent an average score over the three meetings. In contrast, the video observations are conducted after the survey was finished, meaning the qualitative data and quantitative data are collected in a different time frame. The first notable impediment is the discrepancy between the time of measurement of the survey variables. This can affect the results, as the team and its members might feel different each time they fill out a questionnaire, due to the course of the meeting or the events occurring in between meetings. Therefore, the survey results might be skewed towards the tenure of that moment of measurement. In addition, the qualitative analysis, based on the video data, is evaluating the team variables over the three meetings combined. In practice, this means that a variable, like information sharing, is evaluated over the three meetings combined. Hence, an exemplary instance from meeting 1 is used while the questionnaire on this variable is conducted after meeting 2. This means that the findings on information sharing based on predominantly longitudinal qualitative data might differ from the cross-sectional quantitative survey data. Therefore, this is another reason for a discrepancy in results between the two



methods of analysis, which is reflected through some conflicting conclusions. While this might take away from the practicality of conducting a survey, future studies can look to gather all data at one moment in time. Effectively, in this context, conducting one large questionnaire after the last meeting would be a possibility to intercept this problem

Furthermore, a potential limitation that stems from the team process variables is the discrepancy between findings from quantitative and qualitative data. Hence, the analysis of the qualitative video observations leads to the conclusion that some variables, like information sharing, have a lesser correlation with EI than variables like conflict management and squad cohesion. In contrast, the quantitative data implies that information sharing does have a high discrepancy between the teams. This leads to slightly different inferences from the quantitative and qualitative analysis. The source of this discrepancy might be that the quantitative data contains perceived scores, that members allocated themselves. In contrast, the qualitative data contains video recordings of team meetings observed by the researcher, supported by literature on the observed variables. Naturally, a difference has occurred, where the team members perceive their functioning differently from the perception of the observer. The qualitative part of this research should be taken more seriously in regards to drawing conclusions, as the quantitative data's main purpose is to support the findings from qualitative data. As this extreme case study provides only a small data set of quantitative survey data, the rigor of the quantitative analysis falls short of the standards of quantitative research, which limits generalizability. While bias might never be completely excluded when using questionnaires for research purposes, future researchers can try to address this limitation, by further perfecting the formatting and wording of the questionnaire (Mccoll et al., 2001).

Another limitation regarding the team variables is the selection of these team process-defining affective, behavioral, and cognitive variables. The overarching study, which conducted the gathering of data, collected a large array of variables of which some were selected to be used in this exploratory research. Therefore, this particular study was limited in its options of arranging a set of variables that represents the team processes and dynamics well. While all these existing survey variables were carefully chosen and substantiated, the population and composition of variables that could define team processes is much larger. Consequently, other scholars establishing different variables to define the agile team process can have valid arguments to do so. For example, from the investigation of the literature on the examined team process variables, several other variables emerged that are interesting in this context. Decision-making is one of the variables mentioned in several articles on different variables (Information sharing, psychological safety, goal clarity). Decision-making surfacing as a correlating variable makes sense, as it can be assumed to improve through several relational team variables, influencing this decision-making. For example, information sharing could

improve decision-making, as decisions become more precise when all influencing factors are weighed in, facilitated through frequently sharing information revolving around these factors. In turn, higher decision-making quality is likely to improve the performance of the team, as better choices are made for future goals, directions, tasks, etc. As decision-making, presumably, often takes place during meetings, a possible positive outcome is increased meeting effectiveness. Moreover, the effect of information sharing, and in turn on decision making, might affect both individual and team performance, as it affects individual tasks but also team goals and proceedings. Similarly, psychological safety and goal clarity can affect decision-making, and in turn team outcomes, by sharing more ideas and feedback and having clear goals to aim at, possibly making task division and planning easier and more effective. While these assumptions might seem reasonable and credible in practice, a real conclusion on this relationship requires further investigation by other scholars, and could therefore be an interesting addition to future research projects. Besides decision-making, some other variables are not included in this research that received mention in the literature. For example, team innovation processes or innovativeness are often mentioned in relation to EI and other team variables, or are utilized as dependent variables.

Another noteworthy limitation of this study is the execution of the data collection methods. Firstly, the survey data is imperfect as some team members were not present during certain meetings. For example, the retrospective meeting of team 12 is missing several team members including the PO. This means the questionnaire conducted after the 3<sup>rd</sup> meeting is missing several scores, which influences the quantitative portion of the data. On the other hand, the lack of presence by team members, especially the PO, affects the dynamic of the meeting and therefore the qualitative data collection and analysis as well. Moreover, the collection method of the video recordings has some drawbacks, as the audio and video quality is not always perfect, which affects the interpretability of the verbal and non-verbal behavior of the team. Future researchers aiming to execute a similar type of data collection might want to stay on top of the collection process, perfecting the video recording quality and reducing the non-response bias within the survey (Mccoll et al., 2001).

Finally, one of the most influential but insurmountable limitations of this study's findings lies within the analysis of the data. The quantitative data is partially selected based on a notable difference between the scores of the teams, as the goal is to investigate the impact of EI. While most suitable variables were selected, there is a selection bias towards a difference between the teams. On the other hand, there inevitably is a bias in the findings from the observations. The observer, despite all attempted precautions to minimize it, will always observe these teams with some form of prejudice or bias. A different observer might provide slightly different conclusions on the video data, possibly altering the findings of this study. This affects the rigor

and reliability of the findings of this study. To subdue this, future research could include a second observer and combine findings to increase observer reliability. In conclusion, the amount of limitations present in this research is also part of the exploratory nature of this study, and its goals to provide unique discoveries.

Furthermore, some topics and suggestions will be discussed that might be interesting to pursue for further research. These are ideas and topics that emerged from the research process but could not be investigated during the current study. For example, by considering different variables to be influential in the relationship with EI, one can broaden their view and understanding of the effects of EI even further. Equally important, the position of EI in this relationship can be reconsidered as well. To illustrate, it can be theoretically assumed that instead of a mediating relationship proposed by Suárez-Albanchez et al. (2022), a moderating effect is applied by EI on the relationship between autonomy and team functioning. High EI individuals and teams are likely to thrive more in autonomous environments because of emotional management capabilities. A moderating effect of EI was previously investigated and established in relation to different variables (Jain & Duggal, 2018; Salami, 2010). Therefore, in future studies, it might be interesting to investigate EI in a moderating role in relation to these variables. On the other hand, some variables might moderate the role of EI as well. Hence, autonomy presumably moderates the effect of EI as well, as high autonomy gives freedom for high EI skills to be expressed more. This might be the case for other variables as well which could lead to other interesting research questions like “Which variables are necessary for EI to thrive optimally in agile teams”.

Additionally, there are also some statements encountered in the literature that are debatable and could be fascinating for further exploration. For example, Jordan et al. (2002) claim that, while at the start teams with high EI perform better than low EI teams, after some time the performance equals out. However, a possible counter-argument is that in complex situations which require full focus, like agile, EI will still raise the maximum performance a team can reach. Hence, even when working together for several years, a team with higher EI presumably might still perform better than a low EI team. For this reason, it might be fruitful to conduct a longitudinal study on multiple agile teams with differing levels of EI, to see how they develop over time. Comparatively, Schlaerth, Ensari, and Christian (2013) state that leaders are less dependent on EI because they have more access to training compared to their followers. While this might be true, an argument can be made that, while training can assist a leader in dealing with challenges, some situations can't be trained for and would require skills like EI. For instance, this research leads to the assumption that EI increases the ceiling of conflict management as each situation is unique and requires feeling and EI. This relationship between

training, EI, and leadership performance in highly stressful or complex team environments could be an interesting path to take for investigation.

It is interesting to look at the different roles EI can have in relation to team functioning and performance. Moreover, it might also be interesting to dive deeper into EI and investigate the influence of specific elements. For example, EI abilities as defined by Wong and Law (2002) are divided into 4 categories. Of these categories, regulating emotions of self and others is mentioned by Quoidbach and Hansenne (2009), as one of the most important EI abilities. Therefore, it might be interesting to measure these EI abilities individually and investigate the relationship of each ability to the different team process variables. Furthermore, a longitudinal study, where one of the multiple agile teams is observed and investigated on these different EI abilities in relation to team functioning and performance, might lead to even more specific and valuable findings.

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