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Teammates That Are Destined to Become Rivals

A discourse analysis of team dynamics and performance in the pinnacle of motorsport

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Abstract

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Key words: Formula 1, Team dynamics, Team performance, Effectiveness, Extreme environment, Competition, Coordination, Cooperation, Rivalry, Discourse analysis

Research question: *How do team dynamics influence team performance in an extreme environment?*

Purpose: The purpose of this thesis is to provide a deeper understanding of how team dynamics influence team performance, and thus team effectiveness, in an extreme environment.

Methodology: In order to address the research question, a qualitative research study based on interpretive epistemology has been conducted. A discourse analysis is used with the aim to analyze the Formula 1 drivers' use of language and social effects thereof. In addition, an abductive approach has been applied.

Theoretical perspectives: The literature review creates a framework of teams operating in extreme environments. It specifies through the notions of coordination and cooperation, cohesion and conflict.

Result: Through studying the interactions within the Formula 1 teams Mercedes and Red Bull using discourse analysis, our findings indicate that while positive dynamics enhance team performance, intense rivalry can lead to decreased performance and unfavorable outcomes. The environment also seems to have an influence on the team dynamics.

Conclusions: Through discussing our empirical analysis, this study concludes that there are multiple factors affecting team dynamics. The most important factors were the context of the extreme environment and the internal competition that influenced the overall cohesion.

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1. Introduction

1.1 Background

Three...Two...One... And suddenly the deafening roar from 20 of the most spectacular racing cars on the planet turns into projectiles of hundreds of kilometers per hour, pushing the engineering limits known to motorsport. This occurs in the pinnacle of motorsport, Formula 1, which is viewed live by hundreds of thousands people, and millions on broadcasts (Formula 1, n.d). The drivers of Formula 1 are employed by their respective racing teams, where the drivers can be seen as crucial team members. In this study, we choose to use Driskell et al's (2018b) definition of a team, which can be understood as “two or more persons who interact in pursuit of a common goal” (p.435).

The respective Formula 1 teams can further be defined as organizations. Daft et al. (2020) firstly describe organizations as goal directed social entities, which is visible as the goal of Formula 1 teams is to collect as many points as possible from the races. Secondly, Daft et al. (2020) explain that organizations are formed as intentionally structured and coordinated systems that are associated with the external environment. In the context of Formula 1 teams, the drivers are supplemented by other parties than merely the drivers, such as designers, mechanics and team principals. In addition, the Formula 1 teams are highly dependent on the external environment, being the audience. In alignment with Daft et al. (2020), the Formula 1 teams fit the definition of organizations.

The Formula 1 teams may not be viewed as stereotypical organizations, as the drivers' day-to-day work consists of racing in a unique environment. This environment consists of battling extreme g-forces and reaching top speeds up to 370 km/h (Formula 1, n.d.a). Due to the high speed and extreme g-forces, the drivers are faced with daring decision-making (Formula 1, n.d). Therefore, the drivers are often referred to as fighter pilots (Formula 1, n.d.a). In other words, Formula 1 exemplifies an extreme environment, characterized by riskful and stressful conditions where performance outcomes have significant consequences (Driskell et al. 2018b).

In such settings, traditional team dynamics are challenged, and the balance between individual competitiveness and team objectives become crucial. In turn, team objectives require cooperation, which is essential for ensuring that goals are met (McEwan & Beauchamp, 2014). In Formula 1, cooperation between drivers can lead to strategic advantages, such as better race positioning and points accumulation for the World Constructors' Championship (WCC). However, the drivers are also direct competitors. Given the challenged team dynamics in extreme environments and the nature of the motorsport, rivalry within teams can emerge (Kilduff, 2010). Kilduff (2014) describes rivalry as a personal and emotional relationship, where the foundation is between two specific competitors who already know one another. On one hand, rivalry can result in individual performance, and on the other hand, rivalry can disrupt team cohesion (Kilduff, 2010). This study examines the interactions and communications of Formula 1 drivers through discourse analysis, meaning how the spoken language of the drivers are producing and reproducing the social realities in their specific organizational context (Svensson, 2019). Therefore, the thesis aims to uncover the teams operating in an extreme environment, with a focus on team dynamics and performance.

1.2 Problematization

Traditional organizational theories often derive from corporate or non-competitive sport environments (Kohn, 1992). Considering the extreme environment which Formula 1 drivers operate within, where mistakes could lead to severe consequences, traditional organizational theories may not fully address the unique challenges presented in this study. Furthermore, previous research on team dynamics and performance has offered insights into traditional organizational settings, focusing on aspects such as coordination, cooperation, and conflict management (Cohen & Bailey, 1997; Mathieu et al. 2008). However, the current literature does not entirely represent the complexities of extreme environments (Schmutz et al. 2023).

In regards to previous research on sports teams, aspects such as cohesion and cooperation for optimal performance are emphasized (Carron et al. 2002; McEwan & Beauchamp, 2014). However, these studies typically overlook the potential for intra-team rivalry, especially in contexts where individual and team goals might directly conflict. In Formula 1, drivers are

expected to work together towards team objectives, and simultaneously, the drivers are in direct competition for individual aspirations. The connection between team objectives and competition may complicate team dynamics and thus performance.

1.3 Purpose and research question

The purpose of this thesis is to provide a deeper understanding of how team dynamics influence team performance, and thus team effectiveness, in an extreme environment. By applying discourse analysis to communications among team members, this study aims to explore the complexities of the competitive and cooperative team dynamics. Therefore, this study proposes the following research question:

How do team dynamics influence team performance in an extreme environment?

1.4 Getting familiar with Formula 1

Formula 1 is the pinnacle of motorsport and the world's most prestigious motor racing competition (Formula 1, n.d. a). At the current Formula 1 grid there are 10 competing teams, each team consists of two drivers at the racetrack, adding up to a total of 20 drivers. In the 2023 season there were 23 races (also known as Grand Prix). In order to win, the drivers need to score points from the various Grand Prixes. Almost all of the points are collected from the individual driver's finishing position at the Grand Prix. 1st place scores 25 points, second 18 and third 15 points (Formula 1 n.d. b). Finishing over 10th position gives 0 points. During each season of competition there are two championships to win. The drivers championship (WDC) in which all 20 drivers compete against each other, including their teammate for the highest points possible. The other championship is the constructors championship (WCC). In this championship, the 10 teams add up their 2 drivers points and the team with the most points wins. The prize money is significantly larger in the WCC, the WDC is where the status and public interest lies. Another aspect that is good to know is that 'race retirement' means that the car can compete in the race anymore.

In Formula 1, teams have a major incentive to share knowledge such as winning car setups because points scored by both drivers count toward the constructors' world championship (Lapr   & Cravey, 2022). Team principles (TP) want their drivers to cooperate because of the constructors' world championship. In Formula 1, winning races is the main objective. This is highlighted by Andreas Seidl, McLaren's team principal of 2019 (Formula 1 c, 2021):

“To be honest, all I care about is their speed, because that is something we can't fix. I prefer to have a quick driver who is difficult in terms of personality or character because that is something we can work on, but a slow driver who is a nice guy we will not fix.” (4:06)

1.5 Disposition

This thesis is divided into six chapters which in chronological order includes introduction, theory, methodology, empirical material and analysis, discussion and finally conclusions. The first chapter sets the stage for the thesis by outlining the unique aspects of Formula 1 as a context for studying extreme team dynamics. It introduces the research question and the purpose of the study. The second chapter reviews existing literature on team dynamics and performance, focusing on aspects of cooperation and coordination, competition, and conflicts within teams. Following, chapter three describes our philosophical groundings and discourse analysis method used to examine the communications of Formula 1 drivers. It details the data collection process, analytical techniques employed to interpret the data and a reflection. The fourth chapter is empirical material and analysis. It presents the data collected from Formula 1 races and team communications. This chapter analyzes specific instances of interaction between team members, exploring how rivalry and cooperation manifest in high-pressure situations. The fifth chapter interprets the findings from the empirical analysis, discussing how they relate to existing theories of team dynamics and performance. This section debates the implications of the findings for understanding teamwork in both sports and business contexts under extreme conditions. Finally, the conclusion summarizes the key insights from the research, discussing the theoretical and practical implications for team management in extreme environments. It also outlines the limitations of the study and suggests directions for future research.

2. Literature review

2.1 Team dynamics and performance

A team can be defined as “two or more persons who interact in pursuit of a common goal” (Driskell et al. 2018b, 435). Team-based structures has become increasingly more common in organizations over the last decades, leading to a substantial increase in research on related topics, such as group dynamics and team effectiveness (Byrne & Eddy, 2023; Cohen & Bailey, 1997; Kozlowski & Ilgen, 2006; Manata & Bozeman, 2022; Mathieu et al. 2008). The use of team structures can bring benefits to the whole organization, including collaboration among employees, effective communication, and increased job satisfaction and motivation, and may aid in gaining competitive advantage (Cohen & Bailey, 1997; Gençer, 2019). As organizations rely more on these structures, it becomes essential that they are functioning efficiently (Manata & Bozeman, 2022; Mathieu et al. 2019).

McGrath (1964) provided an Input Process-Outcome (IPO) framework for team effectiveness, which constituted the base for effectiveness research for years to come (Kozlowski & Ilgen, 2006). In this framework, ‘inputs’ describe the composition of antecedent individual team member factors, team-level factors, and broader organizational factors that enable and constrain team members’ interactions (Kozlowski & Ilgen, 2006; Mathieu et al. 2008). Team ‘processes’ describe how inputs are converted to outcomes, through member interactions directed at task accomplishment (Mathieu et al. 2008; Mathieu et al. 2019). ‘Outcomes’ are the results and by-products of team activities that are valued by one or more parties, such as team members, organizational heads, team supporters (Marks et al. 2001; Mathieu et al. 2008).

Although the IPO framework has been widely used and tested as a model in research, it was not intended as one. It was originally developed as a way to organize the research literature on small groups (Kozlowski & Ilgen, 2006). Early critiques of the IPO model include the lack of consideration on temporal factors, environmental factors, and its static nature (Kozlowski & Ilgen, 2006; Marks et al. 2001; Mathieu et al. 2008). Additionally, although researchers has

generally agreed about the conceptual meaning of team processes, having team member interaction as the core, the lack of a unified fundamental base for the concept has led to a wide variety of variables being used as “processes” in research, though not always being indicative of interaction behaviors (Marks et al. 2001; Mathieu et al. 2019).

As a result, the IPO framework has been expanded and refined over time. Cohen and Bailey (1997) elaborated on the framework by contributing with environmental factors, referring to the external environment that the organization is exposed to. The authors also expanded on the original input factors by adding task, group composition, and organizational context design factors, which have an impact on outcomes both directly and indirectly through the process stage. Additionally, Cohen and Bailey (1997) made an initial effort to distinguish non-interaction variables from team processes, which they came to refer to as ‘group psychosocial traits’. Team process was defined as “interactions such as communication and conflict that occur among group members and external others” (Cohen & Bailey, 1997, p.244). However, Marks et al. (2001) criticized this definition as to not being specific enough to actually guide further research. Instead, they define team processes as “interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals” (Marks et al. 2001, p.357).

Similar to Cohen and Bailey (1997), Marks et al. (2001) separate non-interaction variables from the original process concept. These variables describe cognitive, affective and motivational states of teams, as opposed to describing the nature of member interaction (Marks et al. 2001). The authors refer to these variables as emergent states, which they define as constructs that characterize “properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes” (Marks et al. 2001, 357). Emergent states are formed by team processes and can become new inputs to contiguous processes and outcomes in a dynamic, episodic manner (Marks et al. 2001; Kozlowski & Ilgen, 2006; McEwan & Beauchamp, 2014). The main contribution by Marks et al. (2001) however, which led to this model being widely recognized and highly cited (Driskell et al. 2018a), was the introduction of a multi-phase perspective on team processes.. This perspective proposed a hierarchical structure of

ten different process dimensions which are embedded in recurring action-, transition- and interpersonal phases (Marks et al. 2001).

These developments lead to the input-mediator-outcome (IMO) model, developed by Ilgen et al. (2005). In this framework, mediating mechanisms replaced the team process stage, and include both processes and emergent state (Mathieu et al. 2019). The multilevel nature of teams and time factors are also taken into account (Mathieu et al. 2008). Ensuing team effectiveness research has expanded, developed and reworked the IPO and IMO frameworks to various research contexts, proving its value for team effectiveness researchers (Mathieu et al. 2019).

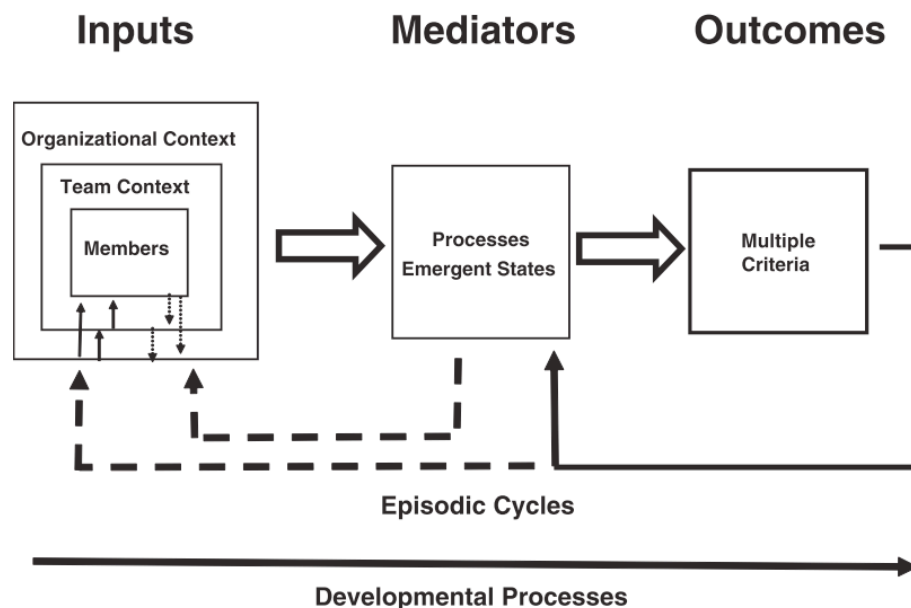


Figure 1. The IMO model (Mathieu et al. 2008).

Team performance is one of many outcomes considered within effectiveness research Cohen and Bailey (1997), but it is arguably the most studied (Mathieu et al. 2008). It is described as the degree of which a team accomplishes its goals (Hindiyeh & Cross, 2022) and may include both quality and quantity measures (Cohen & Bailey, 1997). However, in a meta-analysis, Hindiyeh and Cross (2022) found that the most frequently studied process factors within team performance literature were communication, coordination (cooperation) and decision making. Other highly researched factors included conflict, innovation and cohesion (Hindiyeh & Cross, 2022).

Additionally, McEwan and Beauchamp (2014) identify teamwork as an important process. The authors define teamwork as: “a dynamic process involving a collaborative effort by team members to effectively carry out the independent and interdependent behaviors that are required to maximize a team’s likelihood of achieving its purposes” (p.233). With this definition, they constitute that teamwork evolves over time, that tasks must be performed in unison with teammates’ behaviors for optimal team performance, that teams who collaborate effectively are more likely to achieve their goals compared to those who do not (all else being equal), and that teamwork itself is a mediator within the Input-Mediator-Outcome (IMO) team effectiveness model (McEwan & Beauchamp, 2014).

While teamwork has been extensively studied in general organizational settings (Marks et al. 2001), little attention has been paid to the nature of teamwork in sports (McEwan & Beauchamp, 2014). In teams of high interdependence, such as sports teams (Wolfe et al. 2005), teamwork is fundamental (McEwan & Beauchamp, 2014; Driskell et al. 2018b). However, putting the team's best interests aside for personal gains is not uncommon in sports (Wolfe et al. 2005). To assess how these types of different team dynamics influence team and organizational outcomes, researchers are encouraged to model several process constructs (Hindiyeh & Cross, 2022), in a clearly provided context (Bailey & Cohen, 1997), with clearly defined outcome measures (Mathieu et al. 2008). The Input-Process-Outcome (IPO) described (McGrath, 1964; Marks et al. 2001), its subsequent Input-Mediator-Outcome model (IMO) and its refinements by authors such as Ilgen et al. (2005), provides a framework for understanding how team dynamics influence Formula 1 teams’ performance. By applying these theoretical insights to phenomena found in Formula 1 teams, this aims to nuance the complexity of teams and what could lead to an increase in overall performance.

2.1.1 Coordination and cooperation

Coordination and cooperation are commonly intertwined within team effectiveness research (Hindiyeh & Cross, 2022). However, McEwan and Beauchamp (2014) notes that the two are indeed different. They argue that within the construct of coordination, one team members’ contributions are contingent on corresponding contributions from other team members, and that

appropriate timing and synchronization of these contributions is a requisite to achieve team success. This conception aligns with Marks et al. (2001, pp.367-368), who defines coordination activities as a “process of orchestrating the sequence and timing of independent actions”. Furthermore, cooperation refers to team members working together for a common goal, where team success is dependent on team members collaborating and helping each other with task execution (McEwan & Beauchamp, 2014). To put it simply - coordination ensures that tasks and activities are organized efficiently, while cooperation ensures that team members are willing to work together and support each other. While we agree with this differentiation, due to the close nature and common overlapping of these constructs, as previously mentioned, in this thesis we will adhere to the definition of coordination (cooperation) provided by Hindiyeh and Cross (2022): “Executing a plan or decision involving communication, cooperation and coordination between team members” (p.482). However, we suggest the reader to be mindful of this duality.

Coordination becomes more significant as tasks interdependence increases (Marks et al. 2001), which makes coordination a key factor in highly interdependent teams. In organizational contexts, cooperation has been found to improve task outcomes, communication, member satisfaction, and team ratings of general efficiency (Cohen & Bailey, 1997). There are also indications that team members that collaborate report increased cohesion (Cohen & Bailey, 1997). A substantial amount of research indicates that similarity, in terms of personal and social characteristics, facilitates, increases and deepens cooperation (Gençer, 2019; Kilduff et al. 2010). Moreover, problems within the coordination process tend to result in performance loss, often characterized by communication and synchronization issues (Marks et al. 2001). From previous literature, it is clear that cooperation and collaboration are fundamental factors for team performance. Indeed, Cohen and Bailey (1997) found no support for cooperation having a negative effect on team effectiveness in their study sample.

Team sports are inherently characterized by cooperation. As in other organizational settings, coordination among teammates is a key factor for performance in interdependent team sports, i.e. basketball (McEwan & Beauchamp, 2014). Uncooperative behavior in interdependent teams however, may be detrimental to performance (Christie & Barling, 2010). Yet, individuals who are more interested in their own visibility, statistics and heroics than team objectives are not

uncommon in sport teams (Wolfe et al. 2005). Pursuing non-cooperative courses of action that lead to greater (often short-term) outcomes for one individual may be tempting, however Van Lange et al. (2013) argues that if everyone were to pursue this action, the longer term outcomes are likely to be worse as a collective. The opposite scenario is also worth noting, where individuals choose not to prioritize personal gain and instead support team objectives. Team performance is often maximized through collaboration (Christie & Barling, 2010), and in Formula 1, the teams want the drivers to cooperate to facilitate team results (Lapr   & Cravey, 2022). In contrast to this, in a study on the NBA, Staw and Hoang (1995) found that individual achievement measures, such as the ability to score, were more predictive of playing time than team-oriented measures such as blocked shots and assists. Wolfe et al. (2005) conclude that both individual and collective contributions are essential for team performance, and that further research needs to address whether individual reputation outweighs the importance of actual team outcomes.

The differentiation between coordination and cooperation is relevant to our study as it highlights the complex team dynamics within Formula 1 racing, where both are essential for optimal performance. Understanding these constructs enables us to analyze how drivers balance individual aspirations with team goals in an extreme environment.

2.1.2 Cohesion

Cohesion is a widely studied emergent state construct within team effectiveness research (Kozlowski & Ilgen, 2006). It is considered a by-product of team experiences (McEwan & Beauchamp, 2014) and can be defined as “the strength of a team’s interpersonal bonds, motivation for each other, cooperation, participation or ability to understand the team’s needs and expectations, while staying united in its pursuit for common objectives” (Hindiye   & Cross, 2022, p.482). Cohesion can be divided into task cohesion and social cohesion. Task cohesion includes aspects of shared task commitment and collaboration, and social cohesion refers to individuals' attraction to the group and its members (Manata & Bozeman, 2022).

Task interdependence, helping behavior, and collaboration among team members can positively influence cohesion within a team (Cohen & Bailey, 1997; Gençer, 2019; Kozlowski & Ilgen, 2006). Effective communication, promoting teamwork, team building interventions and high performance expectations has also been shown to enhance cohesion (Callow et al. 2009; Opute, 2012). Experiencing team politics however, may negatively affect cohesion levels within a team, as it compels individuals to choose more self-focused actions (Chiu et al. 2023). This has a direct negative influence on team cooperation and subsequently also on team performance. Similar negative effects have been found with task-related stress and pressure (Razinskas & Hoegl, 2020).

Cohesion can directly strengthen team coordination as shared commitment increases with cohesion (Chiu et al. 2023). In their review of team process constructs in organization research, Cohen and Bailey (1997) summarized that cohesion is shown to be positively related to team performance. This conclusion has been supported by a myriad of studies in different fields (e.g. Callow et al. 2009; Carron et al. 2002; Chiu et al. 2023; Ilgen et al. 2005; Hindiyeh & Cross, 2022).

In sport settings, cohesion has been found to positively predict teamwork behaviors such as communication, cooperation, and constructive conflict management (McEwan & Beauchamp, 2014). In their effectiveness research review, Cohen and Bailey (1997) critiques solid findings of cohesion having a positive effect on performance in sports teams as to being biased, with the reasoning that team members would not question obvious and logical performance measurements (e.g. goals), and that “obviously, such situations would not hold for many groups in organizations.” (p.256). However, Wolfe et al. (2005) argues that sports teams can be comparable with organizational teams producing a product. As Cohen and Bailey (1997) noted, most organizations produce products, and the nature of the products may vary. Cohesion has been shown to have a strong positive relationship on team success and performance in sports such basketball, soccer, hockey and handball (Carron et al. 2002; McEwan & Beauchamp, 2014). However, we have not been able to find any studies conducted on the effects of cohesion in the context of Formula 1, which makes this interesting to integrate to our study.

2.1.3 Competition

Previous research has shown that teams are more likely to shift towards competitive behaviors and move away from cooperative interactions, rather than transitioning from competition to cooperation (Maltarich et al. 2018). Deutsch (1949) explains competition as a situation between two parties when the win of one party requires a loss from the other. Intra-team competition is when members within a team compete against each other but do not compete with other groups (Julian & Perry, 1967). Meanwhile, being a part of a team means that the members also have levels of interdependence and share common goals and at the same time pursuing their own goals. These assumptions contradict each other since success from a team requires failure from another (Kohn, 1992).

Pondy (1967) states that games, and competition in particular depend on the presence of a conflict. This might disrupt team collaboration, which could throw off the balance in organizations that typically perform well. In addition to reducing cooperation, competition can also impair the levels of inter-communication, coordination of efforts, friendliness, and pride within the group, and ultimately the level of harmony and cohesion in the group (Deutsch, 1994; Kohn, 1992).

Furthermore, Kilduff (2010) criticized Deutsch (1949) definition of competition as simplifying, since it may fail to fully capture the essences of why competition may appear. He stated that people are naturally competitive, but their past and ongoing relationships make their interactions more complex than just the competition itself (Kilduff, 2014). According to Kilduff (2010), prior research has at times used the term 'competition' as a synonym for 'rivalry'. To make a distinction, Kilduff (2014) illustrates rivalry as a nuanced version of competition. Rivalry emphasizes a relationship which stems from a specific competitor who the person already knows, unlike competition with strangers or unknown opponents (Kilduff, 2014). Kilduff (2014), also emphasizes that rivalry takes the history between the competitors into account. Additionally, Kilduff (2014) emphasizes that the emotional stakes of competing can vary based on these relationships and past interactions, regardless of any actual rewards. Apart from previous personal history, similarities between individuals and repeated interactions could also foster

rivalry (Kilduff et al. 2010). According to Kilduff et al. (2010) this phenomenon could be explained by Festinger's 'social comparison' (Hoffman et al. 1954) in which people strive to evaluate themselves, and therefore compare themselves with others that have similar abilities. When competitors with similar status are fighting over superiority, a destructive conflict can occur when rival athletes sabotage each other (Piezunka et al. 2018). Since competition and rivalry exists as a phenomena within Formula 1, we find these concepts of importance when analyzing the empirical material.

2.1.4 Conflict

According to Jehn (1997), conflicts are in general a combination of task, relational and process-oriented conflicts. Task conflicts arise when there is disagreement regarding the approach to the goals of the task, this could lead to conflicts and debates about how the task should be approached (Jehn, 1997). Relational conflicts stem from emotional differences between group members. They include conflicts based on personal dislikes, value conflicts, or social issues within the group. Relational conflicts tend to be harmful to group dynamics and effectiveness (Jehn, 1997). Finally, Jehn (1997) explains Process-oriented conflicts come from the logistics of task execution, including debates about responsibility distribution and resource allocation. Process-oriented conflicts focus on how work is organized and carried out, which tasks should be assigned to whom, and how resources should be distributed. Furthermore, Jehn (1999) argues that process-oriented conflicts can also create a healthy debate and promote creativity within teams that stems from the conflict itself.

Intra-team conflicts are generally considered to have a strong negative effect on team cohesion (Manata & Bozeman, 2022). While Marks et al. (2001) exemplified that low cohesion may lead to an increase in team conflicts, only trivial effects have been found in ensuing research (Manata & Bozeman, 2022). Additionally, as in general organizational settings, intra-team conflicts seem to decrease the level of cohesion within sports teams, as shown by research in sports such as ski mountaineering (Phillippe et al. 2014), ice hockey (Sullivan & Feltz, 2001) and volleyball (Weiss et al. 2021). Intra-team conflicts appear to be inevitable in sports teams (Lüdemann & Kleinert,

2023; Piezunka et al. 2018). However, there seems to be a lack of consistent understanding of the phenomenon within the literature (Paradis et al. 2014).

As teams experience various conflicts, the conflicts itself could also be dealt with in various ways. Deutsch (1990) describes a cooperative process as team members who openly and honestly communicate with each other, and shows interest to inform and be informed. This type of process emphasizes similarities and common interests, and therefore reduces differences between team members (Deutsch, 1990). This in turn leads to an alignment in beliefs and values among the team members (Deutsch, 1990). The author further explains that the cooperative process results in a trusting, friendly attitude, leading to a willingness to help and support each other's needs. Tjosvold & Tjosvold (1994, 1995, cited in Alper et al. 2000) argue that teams who are committed to cooperative goals and engage in open-minded discussions are better equipped to handle conflicts constructively. These teams acknowledge the mutual benefits of solving conflicts and understand that their aim is to support one another in achieving their respective goals (Tjosvold & Tjosvold, 1994, 1995, cited in Alper et al. 2000).

In contrast, Deutsch (1990) describes a competitive process as team members who lack communication or mislead communication. In addition, this type of process is characterized by techniques of obtaining information to one another, resulting in team members merely being interested in providing information that is discouraging for the other (Deutsch, 1990). Where the cooperative process emphasizes similarity, the competitive process tends to increase sensitivity to differences and threats, therefore undermining similarities (Deutsch 1990). The author argues that this in turn leads to a sense of complete oppositeness among the team. A complete oppositeness can, according to Deutsch (1990), result in team members having a suspicious and unfriendly attitude towards each other.

Whether conflict is handled cooperatively or competitively affects the dynamics and outcomes of conflict (Alper et al. 2000). Furthermore, Alper et al. (2000), suggest that teams who are using cooperative approaches to managing conflict make the individuals feel that they can deal with their conflict, which in turn leads to effective team performance. Specifically, Alper et al. (2000) found that managing conflict for mutual benefit increased the team's belief in being able to

handle conflicts as well as the team's effectiveness. Teams that managed conflict through competitive means experienced a decline in overall team performance (Alper et al. 2000). Similarly, Maltarich et al. (2018) found that using a competitive approach to managing task conflict and relationship conflict can have a negative effect on performance. Furthermore, Maltarich et al. (2018) suggests that early in a team's life cycle, action on conflicts, before norms of conflict management get established, results in better performance. Early interventions aimed at promoting task conflict or preventing the development of a competitive approach to conflict might produce weaker and more variable results (Maltarich et al. 2018). At later stages, encouraging the cooperative approach may prevent or mitigate the negative effect on performance that the competitive approach paired with high levels of task conflict was shown to yield (Maltarich et al. 2018). The previous theories of this segment will better help us understand where conflicts stem from and how they should be managed effectively when analyzing the empirical material.

2.3 Extreme environments

Driskell et al. (2018b, p.435) define an extreme environment as “settings in which there are significant task, social, or environmental demands that entail high levels of risk and increased consequences for poor performance”. Similarly, Bell et al. (2018) characterize extreme environments as task contexts distinguished by unusually high demands, such as time pressure or confinement, where poor performance can lead to severe consequences. Driskell et al. (2018b) further emphasizes these extreme task environments through the overarching construct of stress or demand. Moreover, research on teams in extreme environments, as summarized by Schmutz et al. (2023), often centers on isolated, confined, and extreme environments, prioritizing team inputs and emergent states. In contrast, teams in extreme action environments, which engage in dynamic, high-intensity performance events, focus more on team processes, taskwork, and performance outcomes. Although studies typically examine extreme contexts like military operations, polar expeditions, and spaceflights, environments considered less extreme, such as those involving airline flight crews and high-altitude mountaineering, are also explored (Schmutz et al. 2023).

We are aware that the context of Formula 1 involves more than the extreme environment of the racing tracks such as occasions when the drivers are off the racing track. However, given these considerations, we argue that Formula 1 falls within the scope of extreme environments due to the high-risk nature and severe consequences of poor performance inherent in the sport. Further, teams in such environments face unique challenges in establishing and maintaining cohesion. Driskell et al. (2018a) discuss how aspects of team interaction such as status, roles, cognition, and interpersonal relations may be compromised in these settings.

3. Methodology

The following chapter presents this study's methodological framework, with the ambition to clearly and transparently illustrate for the reader how this thesis has been conducted. Initially, we present our approach to discourse analysis both theoretically and methodologically, as it permeates our subsequent considerations. Thereafter, we reflect on the study's philosophical groundings and research approach. This is followed by explanations and arguments for the object of study and empirical material selection, followed by how we subsequently analyzed the material. Finally, we reflect and argue for the study's credibility.

3.1 Discourse analysis

As the purpose of this study is to provide a deeper understanding of how team dynamics influence team performance, a discourse analysis has been conducted, with the aim to analyze the Formula 1 drivers' use of language. According to Svensson (2019), one of the fundamental assumptions of discourse analysis is that language and speech are not neutral means of communication. Instead they have the ability to produce and reproduce the socially constructed world in which people live. By using discourse analysis, which is both a theory and a practical tool (Svensson, 2019), we aimed to study the functions of language and language use derived from the empirical material. In regards to the inherent difficulties of studying organizations operating in extreme environments, and the emphasis on further research needed to be conducted in the research field (Schmutz et al. 2023), discourse analysis provides a powerful tool as it can be used in conjunction with secondary data sources without negative implications of relevance (Svensson, 2019).

Discourse analysis follows the assumption that the phenomenon being studied exists within the framework of a constructed reality, underpinned by and dependent on interactive actions, where language and speech have the capacity to influence the social, political, and material world (Svensson, 2019). In regards to our empirical material, the said statements regarding the actions by the drivers follow the principle of having an impact on the drivers' surroundings, aligning

with Svensson (2019). How words and sentences are spoken and phrased, combined with contextualized factors such as the physical environment, creates possibilities of adding knowledge to current theoretical concepts on team dynamics operating in extreme environments.

However, attempting to clarify our approach to discourse has its implicit problems. According to Svensson (2019), attempting to comprehensively and convincingly define discourse analysis as a methodological tool can lead to a risk of excluding nuances of important information. For this reason, we also refrain from trying to describe the concept in definitive terms, even though it can be argued to be helpful in regards to the replicability possibilities of this study. The reason behind this is confirmed by Svensson (2019), who explains that discourse analysis refrains from claiming to describe an ‘objective’ and static reality. Instead, the definition follows its own assumptions that reality is constantly emerging and changing. In the context of our study and its purpose, this knowledge led us to the insight of having to creatively construct discourse as a methodological tool to a certain degree. This leads to the implications of this study being subject of further contributing to what Alvesson and Kärreman (2000, cited in Bell, Bryman & Harley, 2022), have put forward as negative critique toward the term ‘discourse analysis’, as it risks being too broad to be meaningful. To align with the critique and emphasize a clarification of which type of discourse analytical method we have used, we lean toward what Svensson (2019) phrases as social psychological discourse analysis. This ramification distinguishes itself by adding the element of focusing on social interactions or monologues in everyday life, leaving out the ‘big’ discourses in society. It further acknowledges the effect situation and context, the social setting, have on how feelings and attitudes are expressed through language. In the context of our study, the words and sentences expressed by the drivers thus are affected by environmental factors.

3.2 Philosophical groundings and research approach

In addition to discourse analysis, to achieve the purpose of the study and to answer the research question, a qualitative approach has been applied. This approach allows us to understand the specific setting of the extreme environment within its original context, and extend this comprehension to a broader context (Rennstam & Wästerfors, 2018). In addition, the qualitative

approach provides a general orientation due to its emphasis on subjective phenomena that cannot be exactly measured (Bell et al. 2022). Furthermore, an abductive approach has been applied to this study, meaning that we have initially used existing theories (Bell et al. 2022). Accordingly, during the writing of the thesis, we have added new perspectives from what was discovered in the empirical findings (Bell et al. 2022). In addition, qualitative research is based on interpretive epistemology (Bell et al. 2022). The interpretivist tradition as according to Bell et al. (2022) shares similar aspects with discourse, aligning with Svensson (2019). Both emphasize the subjective and constructionist perspective, where understanding how phenomena are experienced and portrayed is difficult to analyze in terms of quantified figures (Bell et al. 2022). This leads us to the conclusion that the study therefore has a social constructionist perspective, which can be understood as our world being subject to interpretation and is constructed during social interactions between people (Bell et al. 2022). People as social beings thus have the ability to constantly produce and reproduce the creation process of our world. In terms of our empirical findings, the driver pairings analyzed are social beings. They have the ability to shape how the receiver perceives the said statements, which is what we are interested in understanding: the effects in the socially constructed reality through the language used. Whether what is said is desirable or 'true' is not of our interest, which further distinguishes this from the quantitative methodology that, with its perspective, tries to see the world as a static and a predictable reality where objectivity can be measured (Bell et al. 2022).

3.2.1 Multiple case study

As mentioned previously, this study has a qualitative research approach. More specifically, this study has a research design of being multiple qualitative case studies, which is based on secondary data in the form of textual and visual documents. Bell et al. (2022) explain that in recent years, multiple qualitative case studies have been used more frequently in business research. Relevant to our study, the emphasis has been on the dynamics between the pairings of various drivers. Accordingly, Bell et al. (2022) explain that multiple case studies focus on the emphasis on the individual cases, which aligns with our empirical findings. Furthermore, Bell et al. (2022) describe the use of comparative and contrastive measures in multiple case studies. We

have consistently considered what is unique and what is common across the pairings of the various drivers. In addition, this contributes to our theoretical reflection of the findings. Moreover, Yin (2014, cited in Bell et al. 2022) describes the characteristics of a ‘unique case’. A unique case focuses on gaining information about something that is unusual and can support the researcher to argue a point in a dramatic way (Yin, 2014, cited in Bell et al. 2022). In accordance with our study, we have focused on the extreme environment in Formula 1, which could be described as unusual and unique in relation to ‘normal’ organizational settings.

3.3 Object of study

The object of this study is Formula 1, often referred to as the pinnacle of motorsport (see section 1.4 for a detailed description). As we aimed to explore the interpersonal dynamics and organizational behavior in an extreme environment, Formula 1 with its well-documented history of races, provided a rich context where factors such as conflicts, cohesion, and cooperation among drivers were evident. This research focuses on eight specific races.

3.4 Data collection

Data was collected through the subscription service Formula 1 TV (Formula 1, n.d. d), which consists of a digital archive of previous Formula 1 races, interviews, press conferences dating back to the 1970s. However, the more recent archive material used in this study, from the year of 2014 to 2022, has the addition of including team radio communications between the driver and the team. This gave us access to the language used during the intense and extreme conditions of the races, thus enabling for a deeper discourse analysis. We also collected data through available articles online and on Youtube, in the search of complementing material. This was guided by Svensson (2019), who emphasizes that the corpus, the selection of documents found most relevant in relation to the study, are limited to sources which may give access to the studied phenomena.

Furthermore, according to Bell et al. (2022) qualitative research usually entails purposive sampling to some degree. Our study is no exception, as the driver pairings were a result of active

choices to fit the purpose of the study. Initially our sampling approach was exploratory, as we had identified Formula 1 as a potentially interesting context for our research field due to its unique aspects and the presence of extreme organizational phenomenon. As we elaborated on and examined the available digital material on Formula 1 in conjunction with applicable theory, this led to a main focus on teams and competition in the setting of an extreme environment. This further narrowed the focus of the empirical material, resulting in well-documented driver pairings where phenomena such as rivalry, conflicts and cooperation were evident. In this stage, the selective process of empirical material with the goal of adding to and refining theoretical concepts may be labeled as theoretical sampling (Bell et al. 2022).

3.5 Data analysis

In this section, we describe our practical analytical process. After the sample was collected in the sense of the driver pairings found relevant for our study: Hamilton vs. Rosberg, Hamilton vs Bottas, Riccardo vs Verstappen and Verstappen vs Pérez, we had an abundance of material. This included background information to the specific races, interviews and press conferences given by the drivers, team radio communication during the races and interviews held in external contexts. As Svensson (2019) emphasizes that the research question should guide the analysis of the empirical material, he also acknowledges that when the research question is not explicitly established, emphasis is instead placed on an open-minded interaction with the empirical material. As we had not explicitly written down our research question, we let the empirical material guide us in combination with the phenomena from our theoretical framework. This was necessary in the process of narrowing down to our research question.

To further organize the material collected, we used the method of sorting, reducing and arguing as described by Rennstam and Wästerfors (2018). The first step was to sort out the material, and even though the sorting process may inhibit the researchers creativity (Rennstam and Wästerfors, 2018), it was deemed necessary for us to be able to start making connections between events and said statements. This did not follow a strict or determined method, rather it was guided by the theoretical framework as mentioned before and with openness as in accordance with Svensson

(2019) and Rennstam and Wästerfors (2018). However, as Rennstam and Wästerfors (2018) emphasize, the sorting process cannot be unconditional. Thus, we aimed to ask questions to the material and categorize it based on evidence of theoretical phenomena such as obvious conflicts among team members. As we were to conduct a discourse analysis, spoken language had to be included in some form in conjunction with the events. In hindsight, the purposive sampling of our analytical process is highly evident as in accordance with Bell et al. (2022).

When we had an overview of the material we proceeded with reducing based on an approach of illustrative reduction as in accordance with Rennstam and Wästerfors (2018). In our context it meant to search for highlights within the categories, such as conflicts among team members, to narrow the material. In an interactive process with the material we asked questions such as ‘Is this evidence of conflict or something else?’, and further ‘How is it explicit in words spoken and what effects could this lead to?’ Then, when we believed we had sufficient material to say something and start arguing, we used the tool of discourse in accordance with how it has been described in this chapter's first section. This with the aim of nuancing and adding to our theoretical framework.

3.6 Reflection and credibility

As this study has been conducted through collecting already existing data, we believe it is necessary to reflect on the study's overall credibility. In contrast to collecting primary data, Bell et al. (2022) gives a rather uplifting view of the potential benefits of secondary analysis and points out the potential of collecting high-quality data and releasing more time for data analysis. The question of whether our data is of high-quality may however be reflected, as it was gathered through textual and visual documents on websites that we cannot secure have not been manipulated in any way or will be in the future. As secondary analysis also can be conducted on already existing and peer reviewed research (Bell et al. 2022), this will illustrate the contrast of credibility in relation to our study in a sense. However, in the context of this study being subject of discourse analysis, which emphasizes that words, sentences and language use does construct the world people live in and discards the importance of objective truths (Svensson, 2019), the potential effect Formula 1 drivers have in regards to influencing the socially constructed reality

cannot be neglected. As an important book may influence society values and construct ideologies (Svensson, 2019), the globally present Formula 1 drivers arguably also share this possibility. Therefore, however subjective or broad as an analytical tool discourse may be, the meaning of analyzing actors who may influence society still remains of importance. To summarize this paragraph, whether the material used does represent the truth of different occurrences is not the essence in the context of this study's contribution to organizational research on teams operating in extreme environments.

Furthermore, there is an implicit limitation in need of address regarding the previous section. As our discourse analysis does not include respondents to the said statements by the Formula 1 drivers, the known effects language use has on constructing the society is limited in this study. However, we aimed to provide nuances to how social realities are constructed within a specific organizational extreme environment, with the aim of pushing the understanding of organizational behavior further.

Moreover, as we have positioned ourselves in the interpretivist tradition, viewing the world as socially constructed and object of interpretation, there are intrinsic issues with the subjectivity and thus the replicability of this study. Our interpretation, and in the end the conclusions of the material may differ from similar previous research. As stated in Bell et al. (2022) transparency of the process and a well reduced empirical material is therefore of significance. This is assisted by our description of our process. In addition to our study's credibility, Bell et al. (2022) emphasize the importance of transferability, dependability and confirmability when evaluating qualitative research. The extreme context of Formula 1 must be taken into account when attempting to transfer the findings to other social contexts. The dependability however, as all raw material is available online for everyone with access, is well documented through the empirical analysis. The conformability aspect, if we have acted in good faith and as 'objective' as possible, will be left for fellow researchers to conclude when assessing our study.

4. Empirical material and analysis

4.1 Team Mercedes

4.1.1 Hamilton vs. Rosberg

Lewis Hamilton and Nico Rosberg are two Formula 1 drivers who competed together in the same team, Mercedes, between 2013 to 2016 (for an overview on Mercedes, see appendix). During this period, they both were successful drivers who won many races, making them both favorable in the public eye. However, sometimes they were caught in situations where they had to compete against each other, despite belonging to the same team. Both drivers can be seen as very competitive and individualistic, which will further be explored in this section. Their competitiveness led to intense rivalry, resulting in race retirements during various races. In this section, two of the most famous examples will be presented. The first example was from 2014, where a race in Belgium took place.

Belgian Grand Prix 2014

During the Belgian Grand Prix in 2014, Rosberg and Hamilton were continuously driving dangerously close to each other, with risk of colliding. During the second lap of the race, the risk became reality. A collision happened where Rosberg's front wing clipped Hamilton's rear tire, resulting in a puncture for Hamilton and ultimately leading to his retirement from the race. Moments after the collision, Hamilton quickly turned on his team radio and told the team:

[Rosberg] hit me! [Rosberg] has hit me, that's not cool guys. - Hamilton

As seen above, Hamilton was quick to inform the team that Rosberg was responsible for the collision. Hamilton's repeated reference to Rosberg indicates a strong sense of blame. This repetition not only reinforces Rosberg as responsible for the collision, but also serves to separate Hamilton's actions from the incident. This implies that Hamilton tries to distance himself from any fault and places the error entirely on Rosberg. Considering the fact that Rosberg and

Hamilton belong to the same team, it is interesting that Hamilton felt the need to signal to other team members that it was Rosberg's fault. This implies that the two do not typically view each other as team members, rather, they appear to see each other as rivals.

The phrase *"that's not cool guys"* adds an emotional layer to the statement. It indicates a breach of informal, unspoken rules about sportsmanship and team conduct. By expressing his disapproval in this way, Hamilton is referring to a shared sense of team cohesion, which he implies Rosberg has violated. This not only communicates disappointment but perhaps seeks to align the rest of the team against the action taken by Rosberg, which may be an attempt to foster a sense of solidarity with others who may feel the same. This attempt could result in an "us versus them" feeling if Hamilton influences the other team members to believe that Rosberg is the "bad guy".

Hamilton on Jonathan Ross show (2015)

In a different setting associated with the previous example, Hamilton was asked about the existing rivalry within the team and his opinions on his teammate Rosberg.

For sure there is friction I think naturally. [...] I got signed when I was 13 and I went to race in Italy, and when I got there, [Rosberg] was the golden child, because his father was a Formula 1 world champion. So he arrived in the helicopter and had all the best of everything and all these other things. - Hamilton

This statement exemplifies Hamilton's early start into professional racing, emphasizing a narrative of early commitment and dedication. The reference to Italy, known for its rich motorsport history, adds a layer of prestige and seriousness to Hamilton's racing career. The fact that Hamilton refers to Rosberg as the *"golden child"* identifies Rosberg as a figure of privilege and favoritism, influenced by his familial background. This positions Rosberg within a particular social category that is distinct from other racers who may not have similar heritage. It indicates a power imbalance, where Rosberg's background is perceived to confer unearned advantages. In addition to this, the description of Rosberg arriving in a helicopter could serve as a symbol of socioeconomic status and power. Hamilton showcases the divide between the "ordinary" and the

“elite”, placing Rosberg in the elite. Furthermore, the mentioning of the helicopter also implies a sense of jealousy from Hamilton, as he continued by expressing that Rosberg had “*all the best of everything*”. The sense of jealousy could be contributing to their rivalry. Hamilton continues by saying:

We actually became good friends after our first race together, he led the whole race and I was behind him and I overtook him in the last lap and won. That's where our relationship started. You can imagine, we are in Formula 1 now and he more than ever wants to set the record straight for sure. But, yeah I think there is only room for one number one. - Hamilton

With this quote, Hamilton emphasizes that their relationship started when he overtook Rosberg. By stating this, Hamilton sets the standard for their friendship, implying again a form of rivalry between one another. Hamilton further stated that “*there is only room for one number one*”, which indicates that they do not necessarily work towards a team goal, rather, they are individualistic in a sense of always putting themselves first in order to win a race. It acknowledges the reality that in the highest tiers of competitive sports, despite friendships and team affiliations, what dominates is individual aspirations. After Hamilton expressed the two mentioned excerpts, the host, Jonathan Ross, replied by saying:

“And [Hamilton] is sitting right here.” - Ross

Ross spoke about Hamilton in third person and confirmed the fact that Hamilton is the number one, which Hamilton enjoyed as he nodded and smiled at Ross. Hamilton’s non-verbal responses, being the nodding and smiling to Ross’s comments, seems to be an indication of his acceptance of the public recognition and the social role being ascribed to him. His acknowledgment through non-verbal responses like nodding and smiling validates Ross’s statement. This indicates that Hamilton reinforces his own acceptance of the “*number one*” status over Rosberg.

Spanish Grand Prix 2016

The second famous example of rivalry between Hamilton and Rosberg was during the Spanish Grand Prix in 2016. Both Mercedes drivers collided with each other just after the start, resulting

in them both having to retire from the race. As observed from the race, Hamilton tried to overtake Rosberg. In response, Rosberg blocked the overtake gap and pushed Hamilton out of the track. This led to Hamilton losing control over the car and ultimately crashing into Rosberg. As both drivers retired from the race, a team competitor from RedBull, named Verstappen, won the race. He became the youngest race winner in the history of F1. After the race was finished, Rosberg was asked about what happened and responded with the following:

[Hamilton] closed in and so I'm closing the door, you know, to defend my position because that was my race to win. - Rosberg

Rosberg begins by indirectly blaming Hamilton for the collision, since he said that Hamilton “closed in”. In this context, closing in means that Hamilton is attempting to overtake Rosberg. By stating this, Rosberg frames himself as responding to the circumstances that were created by Hamilton. Rosberg continued by stating “I’m closing the door, you know” which in motorsport terminology refers to blocking an overtaking maneuver by another driver. As mentioned previously, Hamilton and Rosberg belong to the same team, and instead of Rosberg letting Hamilton drive past him, he decided to block him. If the two were competitors who were not competing in the same team, this action would be acceptable. However, when Rosberg stated the excerpt above, he implied by saying “you know”, that it is acceptable to also block a teammate, which in Formula 1 is generally not socially allowed. It is worth noting that there are no general rules in Formula 1 regarding how the drivers should compete within the same teams. However, the teams want what is best for both drivers collectively with the aim to win the WCC. Furthermore, Rosberg stated “to defend my position”, indicating a defensive tactic. This could appear to be a seek to justify Rosberg’s decision as a standard racing strategy aimed at protecting his leading position rather than causing a collision. Rosberg ends by emphasizing that it was his “race to win”, which personalizes the incident. Furthermore, Rosberg expressed a strong belief in his potential to win the race if the collision had not occurred. This statement yet again reflects the perspective on the competitive nature of racing, where personal success seems to be more important over team success.

4.1.2 Hamilton vs. Bottas

In section 4.1.1, an analysis was conducted on the dynamic between Hamilton and Rosberg, which visualized the consequences of putting oneself first instead of one's team. The following section instead analyzes the dynamic between Hamilton and Bottas, who were team members in Mercedes between 2017 to 2021. Bottas joined Mercedes as a replacement for Rosberg and quickly established himself as a competent and reliable driver. Bottas' presence brought a fresh dynamic to the team. Although Hamilton generally outperformed Bottas in terms of championship standings, Bottas was instrumental in securing WCC by consistently finishing races in strong positions. Therefore, this gained crucial points for Mercedes in the WCC. During their time period as teammates, Mercedes continued to dominate in leading the WCC, and won each year from 2017 to 2021. Their teamwork and ability to secure double podiums were always crucial in maintaining this streak.

2017 Hungarian Grand Prix

During the Hungarian Grand Prix in 2017, two Ferrari drivers were leading the race. Bottas, belonging to Mercedes, was in third place after the Ferrari drivers. Hamilton, also belonging to Mercedes, was driving behind Bottas, being in fourth place. Hamilton told his team that he had a chance to catch up to the leading Ferrari team. He therefore asked the team if he could attempt to overtake the Ferrari drivers. To do so, Bottas needed to slow down in order to allow Hamilton to drive past him. The Mercedes team agreed to Hamilton's request, however, there was one condition. The condition implied that if Hamilton failed to pass the Ferrari drivers before the end of the race, he would need to return to the position he had, being behind Bottas. In the end, Hamilton did not succeed in overtaking the Ferrari drivers. He held his word by slowing down and allowing Bottas to drive past him, resulting in Bottas coming in third place, and Hamilton in fourth place. In the FIA post-race press conference, Bottas said:

“But really, thanks to [Hamilton] to keep the promise and let me by in the end, because I gave [Hamilton] the shot to try and get past the Ferraris.” - Bottas

The quote above visualizes Bottas’ appreciation to Hamilton. It also showcases trust between the teammates. Hamilton and Bottas needed to collaborate with each other in order to perform in a manner that was best for the team as a whole. There appears to be a mutual understanding that often occurs in racing teams where one driver may have to sacrifice their position to give the other a better chance at advancing. However, as seen in previous examples, this is not always the case between different teammates. In this example, Bottas trusted Hamilton to a great extent. It can be perceived that Bottas believes that the favor would be reciprocated if needed. It shows an awareness of the bigger picture where team success often requires personal compromises. Bottas continues by saying:

“It’s a shame, we had good pace in the end today but with the starting position we couldn’t finish any better.” - Bottas

Bottas refers to “we” instead of only himself, which reinforces the fact that Bottas values the team’s overall performance rather than his individual aspirations. In addition, Hamilton spoke about the race from his point of view:

“[Bottas] and I have a great amount of respect for one another. [...] Just as the team asked [Bottas] to do a job and [Bottas] did it, the same thing came my way. The same rule applies to me. I did it for the team.” - Hamilton

The excerpt above is an example of a good collaboration within a team. Bottas and Hamilton have respect for one another. Hamilton emphasizes that he slowed down and let Bottas drive ahead as a collective effort for the team’s cohesion. Hamilton appears to be aware of the fact that teammates help one another and in turn resulting in a shared trust to each other. The following race presented will visualize another example of Bottas and Hamilton’s relationship and the outcomes of this.

2018 Russian Grand Prix

During the Russian Grand Prix in 2018, Hamilton had a great chance to win the WDC. In order to win, Hamilton needed to gain as many points as possible. During this race, Bottas was driving ahead of Hamilton. Since Hamilton already had a great chance to win the WDC, the Mercedes team asked Bottas to let Hamilton pass in order to extend Hamilton's lead in the driver's championship. Bottas followed the team's orders and therefore let Hamilton pass through. In the interview 'Small talk', Bottas was asked why he allowed Hamilton to win the Russian Grand Prix. According to the interviewer, Bottas was supposed to win this race. Bottas answered by saying:

Yeah, I thought so as well, but I let [Hamilton] pass because [Hamilton] was fighting for the championship win in the drivers championship and I wasn't anymore so, at that point I was a team player. - Bottas

Bottas initially agrees with the interviewer's suggestion that he was supposed to win the race, with the phrase, "*Yeah, I thought so as well.*" This acknowledgment indicates that Bottas had personal ambitions and expectations for the race. It subtly shows his disappointment while setting the stage for explaining his decision. The fact that Bottas recognized that Hamilton was fighting for the championship win, while Bottas was not, indicates that he justifies his action as a necessary sacrifice for the greater good of the team. This implies that Bottas is willing to have a personal loss for a collective gain. Bottas concludes with, "*...so, at that point I was a team player.*" This statement reinforces his commitment to the team's objectives over his own. By identifying himself as a "*team player,*" Bottas aligns with a valued sports ethic, promoting the idea that the success of the team is more important than individual achievements. Bottas's willingness to support Hamilton's championship aspirations by sacrificing his own chance at winning a race indicates that he values collective achievements over personal glory. This action could likely contribute to a positive team environment, where drivers are seen as supportive of one another's success.

The two mentioned examples above visualize a good relationship between two team members who value each other. This seems to stem from the fact that Bottas was willing to collaborate with Hamilton's aspirations of winning the WDC. Bottas made this sacrifice since he desired to achieve a collective win for Mercedes in WCC. Furthermore, it is worth noting that from both examples mentioned above, Bottas and Hamilton got to show each other that they can trust one another. The first example showed that Hamilton held his word, and the second example showed that Bottas could reciprocate the favor. When comparing these examples to the examples mentioned in 4.1.1, it is apparent that the relationship between Hamilton and Rosberg did not hold the same amount of value, which in turn led to their conflicts. To conclude, a good collaboration between team members appears to be based on whether the individuals value each other higher than winning a race and its potential consequences that comes with winning.

4.2 Team Red Bull

4.2.1 Ricciardo vs. Verstappen

The following section will analyze the dynamics between Daniel Ricciardo and Max Verstappen who both drove in Red Bull's team between 2016 and 2018 (for an overview on Red Bull, see appendix). In comparison to Mercedes, Red Bull is perceived as more extreme and competitive where the stakes are higher. When Verstappen was 18 years old, he got promoted to the Red Bull team in 2016. Ricciardo, who had belonged to Red Bull since 2014 had established himself as a race winner, initially playing a senior role. At the Spanish Grand Prix in 2016, Verstappen competed in his first race with Red Bull. This was the same race that was mentioned above when analyzing the dynamics between Hamilton and Rosberg. Verstappen won this race, contributing to being the youngest winner in Formula 1 throughout history. This victory set the stage for the competitive dynamics that would define Verstappen and Ricciardo's relationship. Ricciardo, with several years of Formula 1 experience initially took on a mentor role to Verstappen. However, as Verstappen quickly acclimated and started challenging Ricciardo more directly, their relationship evolved into a more evenly matched rivalry. The following section will visualize two famous examples of Ricciardo and Verstappen's relationship during the years of 2016 to 2018.

2017 Hungarian Grand Prix

One of the most memorable incidents occurred at the 2017 Hungarian Grand Prix. On the very first lap of the race, Verstappen and Ricciardo were pushing for positions in the tight and twisty circuit. Verstappen was trying to fit into the circuit and braked too late when going into a turn. This resulted in a collision into Ricciardo's car. The impact caused Ricciardo to spin out of the circuit, causing a race retirement. Moments after the incident, Ricciardo speaks to his team through his radio:

Someone hit me [...] Is that who I think it was? [...] Sore loser!

Ricciardo's first words, "*Someone hit me [...] Is that who I think it was?*" reflect his initial confusion and the shock of the sudden collision. This quickly turns into a realization as he presumably suspects, and then confirms, that it was his teammate Verstappen who collided with him. The questioning tone indicates a mix of disbelief and the beginnings of frustration, as teammate collisions are generally frowned upon due to their collective impact on the team's overall performance. Furthermore, the phrase "*Sore loser!*" is particularly telling. It is a direct and harsh criticism that suggests that Ricciardo felt as if the collision was not just a racing incident, instead it was perhaps a result of poor collaboration from Verstappen. After the race, Ricciardo was visibly upset and criticized Verstappen:

"It was out of my hands, [...]. It's just overambitious. That's youth.[...] "It's not [inexperience], probably immaturity, that's the one." - Ricciardo

The excerpt above visualizes Ricciardo's strong and harsh criticism towards Verstappen. Ricciardo blames the incident on Verstappen's youth and calls him overambitious. Ricciardo's criticism pinpoints Verstappen's decision-making abilities, particularly in high-pressure situations. By labeling the move as "*overambitious*" and attributing it to "*youth*" and "*immaturity*," Ricciardo suggests that Verstappen lacks ability to assess risks and make strategic decisions in the heat of competition. Ricciardo further clarifies that it is not just a lack of experience but a matter of maturity. This distinction is critical because it shifts the focus from

skills to temperament, by labeling the behavior as immature, Ricciardo questions Verstappen's judgment and decision-making under pressure, which is a more pointed criticism and suggests a personal flaw rather than a professional shortcoming. After the race, Verstappen responded to Ricciardo's criticism in an interview:

"It is not nice and good but I will speak to [Ricciardo] about that. I apologize to him and also to the team because we could have scored some good points there. [...] I was trying to avoid [Ricciardo], of course, but unfortunately it was not possible." - Verstappen

Verstappen acknowledges the negative consequences of the incident by stating that he will apologize to Ricciardo and the team. This shows that Verstappen acknowledges the broader implications of his actions, not just for his teammate but for the entire team. Apologizing publicly signals his responsibility towards maintaining team harmony and addressing issues directly. Furthermore, Verstappen emphasizes the significance of contributing to the team's goals by stating *"we could have scored some good points there"*. This insight visualizes his alignment with team objectives and his understanding of the role of each race in the championship standings, reinforcing his role as a team player despite the individualistic nature of the sport. Verstappen continues by saying that he was trying to avoid Ricciardo, but it was not possible. This illustrates a classic scenario in competitive sports where the intent does not align with the outcome. Verstappen's explanation highlights that the collision was not deliberate but a misjudgment. Therefore, one could assume that this was not an aggressive attempt to overtake or block Ricciardo.

To conclude this example, Verstappen's response after the incident is perceived as a learning opportunity. He reflects and acknowledges mistakes as part of the maturation process in his sports career. Such incidents, followed by reflection and adjustment appear to be crucial in a driver's development, potentially leading to improved decision-making in future high-pressure situations. Furthermore, Verstappen showed commitment to the team by saying that he would speak to Ricciardo privately, along with apologizing publicly. This helps in reducing tensions or conflicts within the team. These actions are important for restoring trust and confidence among

team members, ensuring that internal conflicts do not derail the team's collective focus and performance in upcoming events.

2018 Azerbaijan Grand Prix

The second example of the dynamic between Ricciardo and Verstappen is from a race that happened a year later, the Azerbaijan Grand Prix in 2018. On lap 40, a decisive moment occurred. Ricciardo was driving behind Verstappen on a long straight road. In the first turn of the lap, Ricciardo attempted to overtake Verstappen. While Ricciardo was attempting to do this, Verstappen moved to defend his position. Verstappen shifted to the left in order to block Ricciardo. Ricciardo continued to commit to his move and with nowhere to go, he ended up crashing into Verstappen's car at high speed. Unfortunately, this race could have ended with a high score for both drivers and the Red Bull team. Instead, the impact was severe enough to retire both cars immediately from the race. After the race, Ricciardo stated in an interview:

"It's a pretty crappy situation. So, yeah I guess myself and [Verstappen] need to apologize for [Red Bull], we were battling and we want to race, and we are thankful that the team let us race but this is the worst scenario, that's the crappy part of it. [...] Just not nice from a teams' point of view and we obviously don't feel too great." - Ricciardo

Ricciardo refers to the incident as a "pretty crappy situation", highlighting the negative result of the crash. He appears to acknowledge that the incident holds a shared responsibility from both himself and Verstappen. The fact that Ricciardo apologizes directly to their team emphasizes his awareness of the consequences that their individual actions had on the collective group. Ricciardo continues by saying that he is thankful that their team let them race. However, he acknowledges that this freedom comes with high risks, especially the potential for incidents like the one that occurred. Furthermore, Ricciardo reflects upon that this is a worst scenario, which arguably visualizes the importance of collaborating together to achieve team goals, instead of thinking individually. To conclude, Ricciardo recognizes the broader emotional influence on the team by saying that it is not nice from a team's point of view. This confirms the importance of personal responsibility and team cohesion, along with balancing one's own aspirations with team

expectations and relationships. Furthermore, Verstappen also was interviewed regarding the incident and said the following:

"I think it shouldn't have happened of course, but it doesn't matter who to blame, it's just bad for the team. We lost a lot of points today [...] its bad for the team and that already bad enough "

Verstappen

Verstappen points out that it does not matter who to blame. This could be perceived as a mature approach to resolving a conflict within the team. He appears to prioritize harmony within the team and reflects an understanding that pointing who to blame could increase team tensions. The fact that Verstappen acknowledges that the incident was bad for the team shows an awareness of maintaining a good collaboration. Verstappen further elaborates on the consequences by saying *"we lost a lot of points today"*. Verstappen refers to *"we"*, implying collectivism as a team.

To conclude this section, two examples of Verstappen and Ricciardo's relationship were analyzed. The first example is from 2017, where Verstappen still was relatively young and therefore was perceived as immature. The second example was from a year later, where there is a noticeable difference in Verstappen's maturity as he did not blame Ricciardo for the incident. Despite colliding, the two team members seem to deal with the situation differently in the second example. They appear to think of the team as a whole and the consequences of always trying to win.

4.2.2 Verstappen vs. Pérez

The following section will discuss the dynamics between Verstappen and Pérez who have been teammates in Red Bull since 2021. During their partnership, Verstappen has won the WDC several times from 2021 through 2023. Pérez has played an important role in consistently securing points and supporting Verstappen in various ways to enhance Red Bull's success. During their time as teammates, their combined efforts have made Red Bull the dominant team in F1.

Abu Dhabi Grand Prix 2021

During this intense race, Pérez assisted Verstappen by driving in a way that prevented Hamilton from overtaking Verstappen. Hamilton was at the time leading the race alongside Verstappen. When Hamilton's car needed to change tiers, Pérez found himself ahead of Hamilton. Pérez needed to change his tiers too, but he skillfully managed to delay this and slow down Hamilton for several laps. Pérez's strategy allowed Verstappen to significantly reduce the gap of distance to Hamilton. At last, Verstappen won the final and claimed the WDC over Hamilton. After the race, Verstappen expressed his appreciation to his teammate Pérez in an interview:

"It's very rare to have a teammate like that and what [Pérez] showed today, [Pérez] was a real team player and I really hope we can continue this for a long time." - Verstappen

Verstappen starts by noting that it is very rare to have such a teammate, acknowledging the fact that not all Formula 1 drivers are willing or able to undermine their personal ambitions for the team's benefit. However, it is rather contradictory that Verstappen in his early days of racing would collide into his own team player, at the time being Ricciardo. This indicates that Verstappen appears to be slightly double sided since he appreciates when a teammate helps him win, but has previously gone out of his own ways by ruining for another teammate to win himself. Verstappen continues by describing Pérez as a *"real team player"*, which emphasizes that Pérez's actions were very helpful for Verstappen to win the race. This in turn may lead to a reinforcement of the collaborative spirit within the Red Bull team. Verstappen ends by expressing that he hopes that this collaboration can continue for a long time. It is interesting to note that it seems that Verstappen is implying a mutual collaboration towards each other. This could indicate that Verstappen would be willing to do the same for Pérez. However, things turned out differently in the São Paulo Grand Prix 2022 which will be presented below.

São Paulo Grand Prix 2022

A much more controversial incident than the example above occurred at the São Paulo Grand Prix 2022. At the time, Verstappen had already gained enough points to win the WDC, meaning that a better finishing position would not make any difference to him. However, in Pérez's case,

only one point would make a difference in order for him to move up to the second place in his WDC standing. For the team as a whole, it could result in Red Bull increasing the chance of having two drivers in the top two in the WDC standings for the first time in history for Red Bull. Towards the end of the race, Verstappen was driving ahead of Pérez. Verstappen was suddenly instructed by the team to switch positions with Pérez in order to help him gain the crucial points needed. However, Verstappen refused to follow this order. His response on the team radio was:

*"I told you already last summer, guys, don't ask that again to me. Okay? Are we clear about that?
I gave my reasons, and I stand by it." - Verstappen*

The excerpt above implies that Verstappen has certain reasons to not allow Pérez to overtake him, however, Verstappen does not explain why. However, Verstappen's aggressive tone when saying *"don't ask that again to me"* highlights that this was not a spontaneous decision. It appears to be based on a previously communicated opinion. Verstappen expresses his determination to maintain control over his actions when asking the team if they understand what he means, when saying *"Okay? Are we clear about that?"*. It can be perceived that Verstappen aims to prevent any future requests in a similar manner. Lastly, Verstappen acknowledges that he already has given his reasons for not letting Pérez overtake him, and stands by these reasons. Therefore, it appears that Verstappen has certain principles in order to maintain his integrity. These principles seem to be more important than what is best for the team as a whole. After the race, Pérez was asked about what happened between him and Verstappen during the race in an interview:

"Nothing to say really, I mean after all I have done for him it's a bit disappointing." - Pérez

Pérez appears to be frustrated and upset because Verstappen could not help him out. Pérez does not have anything to say to Verstappen. The reason for this could be because he wants to respect the dynamics in the team, and therefore does not want to publicly speak badly of Verstappen. It is interesting to note that Pérez reflects upon the fact that he has helped Verstappen in the past. As seen in the example above from the Abu Dhabi Grand Prix in 2021, Pérez certainly showed

willingness to help Verstappen there. Arguably, it can be reasonable to assume that Pérez becomes frustrated. Pérez may have had higher expectations of Verstappen since in this case, Verstappen did not have anything to lose by allowing Pérez drive past him. To conclude, there seems to be a lack of mutual support and fairness in their relationship, which may be a reason why Pérez expresses disappointment.

5. Discussion

The findings of this thesis illustrate the complexities of intra-team competition in the extreme environment of Formula 1. By exploring the dynamics within Mercedes and Red Bull teams, a discussion is made regarding how rivalry and collaboration coexist, and how this influences team performance and individual behavior. The following chapter combines the empirical findings with the theoretical frameworks of team effectiveness, competition, and extreme environments.

5.1 The consequences of competing in an extreme environment

When analyzing the different races in Formula 1, two drivers have been at focus in regards to their dynamics between each other. Driskell et al. (2018b) explain that “two or more persons who interact in pursuit of a common goal” (p.435) are defined as a team. It was evident from the discourse analysis of the quotes in the empirical material that the drivers identify themselves as belonging to a team. The teams identified in the empirical findings were Mercedes and Red Bull. This was seen in many examples, for instance when a driver referred to “we”, implying the team, and “teammates”, meaning the other drivers in their respective teams. However, as Driskell et al. (2018) mentioned in regards to pursuing a common goal, this was not always apparent in the analyzed cases. Despite the drivers belonging within the same teams, there were examples of the drivers not necessarily considering the team, which revealed a discourse that complicates the definition of team. An apparent example of not pursuing a common goal was during the São Paulo Grand Prix in 2022, where we analyzed the dynamics between Verstappen and Pérez, who belonged to Red Bull. As mentioned in the empirical findings, Verstappen was ordered by his team to allow Pérez drive past him, however, he declined the team order. It is apparent from the analyzed case between Verstappen and Pérez that Red Bull was highly dependent on the team functioning efficiently, in other words, that the team should do what is most efficient in order to maximize the overall performance. This aligns with Manata and Bozeman (2022) and Mathieu et al. (2019) who emphasize the importance of teams functioning efficiently. Furthermore, Cohen and Bailey (1997) explain that team structures can result in competitive advantage, which could

have been the case for Pérez if Verstappen allowed him to drive past. As mentioned, both Verstappen and Pérez belong to the same team, however, if the overall goal for Red Bull was to function efficiently and gain competitive advantage, this proved to not align with the outcome as they had a driver, being Verstappen, who was not willing to cooperate for the team as a whole.

To analyze the team dynamics, the IMO model is relevant to utilize. The cases between Hamilton and Bottas who helped each other during the respective races exemplifies the importance of effective team processes and emergent states in achieving high performance. Their mutual respect and collaboration align with the emergent states defined by Marks et al. (2001), such as cohesion and shared mental models, which enhance team effectiveness. In contrast, the cases between Hamilton and Rosberg showed the opposite. These cases identify frequent conflicts and lack of cooperation between each other. This demonstrates how negative emergent states can lead to poor team performance (Marks et al. 2001). Additionally, this aligns with Mathieu et al. (2008), who explain that team dynamics directly influence performance outputs in settings where high coordination is necessary. In the case between Hamilton and Rosberg, there was a need for coordination, however, as they were not willing to cooperate with each other, it resulted in a negative outcome, being the collision and race retirement. Furthermore, in the Verstappen and Pérez case, we noted a one sided cooperation, where Pérez was willing to help Verstappen achieve his individual goals, but the favor was not returned. From Verstappens perspective, the situation led to increased performance while Pérez's performance got hindered due to a lack of mutual collaboration.

Returning back to the case between Hamilton and Rosberg, arguably, they are competing against one another, despite belonging to the same team. This aligns with Deutsch's (1949) theory of competition, which is described as a situation between two parties where one's gain is another's loss. This is visualized through their attitudes towards each other, as they seemed to prioritize their individual winning over the team's. A similar example of Deutsch's (1949) theory can be seen in the case between Verstappen and Ricciardo. They both were competitive to the extent that it would affect the other driver. Although Hamilton and Rosberg's cases were more evident compared to Verstappen and Ricciardo, both examples show signs of what Kilduff (2010) describes as rivalry. Rivalry is characterized by personal history and emotional stakes, which

often escalates competitive behaviors (Kilduff, 2010). This rivalry can be harmful to the harmony of the team, however, it can also drive individual performance (Kilduff, 2010). This can be seen in the aggressive racing tactics that both Verstappen and Ricciardo, and Hamilton and Rosberg have. On the contrary, the case between Bottas and Hamilton did not visualize rivalry. Instead, Bottas' willingness to support Hamilton's championship shows a potential for competition to coexist with cooperation, which in this case fostered a more stable and productive team environment.

The settings of Formula 1 are defined with high levels of stress and significant consequences for performance. This aligns with Driskell et al.'s (2018) description of extreme environments. In regards to this type of environment in Formula 1, a combination of rivalry and competition can increase the risk of aggressive strategies and maneuvers on the track. An environment as such can create tensions between teammates, as seen for instance through the rivalry between Hamilton and Rosberg along with Verstappen and Ricciardo. The extreme environment seems to intensify these competitive urges that the drivers have. If the environment was not as intense, the drivers may have been more cooperative with each other. Furthermore, the collaboration between Hamilton and Bottas under such conditions demonstrates how effective teamwork can decrease the stress of extreme environments. Their ability to maintain cohesion and coordination, despite the inherent pressures, underscores the importance of trust and clear communication in such settings. In Verstappen and Pérez's case, despite the existing tensions, they showed that collaboration is possible if one driver is willing to sacrifice their individual aspirations in order to do what's best for the team. Pérez's willingness resulted in a positive team environment and overall satisfaction as expressed by Verstappen at the post race interview.

The extreme physical demands and the inherent risks associated with Formula 1 racing increase the need for effective communication, precise decision-making, and strong leadership within teams. Accordingly, Schmutz et al. (2023) and Driskell et al. (2018b) noted that in extreme conditions, the consequences for poor performance could be severe. This is noticeable since the collisions of Verstappen and Riccardo, as well as Hamilton and Rosberg led to severe consequences. Luckily, nobody was hurt during the three specific collisions, however, there is always a risk of injury when colliding.

5.2 Cooperative or competitive?

The case between Hamilton and Bottas can be identified as the most positive dynamic of the four cases. This is apparent due to the fact that their team cohesion and coordination resulted in a high performance. This corresponds with Cohen and Bailey (1997), as they emphasize these factors for achieving high performance. Hamilton and Bottas' mutual support, along with clear role definitions appear to enhance their team effectiveness. In contrast, the conflicts between Hamilton and Rosberg, as well as Ricciardo and Verstappen align with the effects of intra-team conflicts in regards to cohesion and performance. More specifically, their conflicts appeared to be 'relational', which Jehn (1997) explains can be harmful to group dynamics and effectiveness. A relational conflict stems from emotional differences between group members, including personal dislikes or social issues within the group (Jehn, 1997). In the case between Hamilton and Rosberg, the social issues are particularly visible when Hamilton spoke about Rosberg in a post interview, where Hamilton mentioned that Rosberg was "the golden child" and that Rosberg's father was a Formula 1 world champion. Hamilton even admitted to the existing friction between the two, which further confirms a personal dislike between one another. In the case between Ricciardo and Verstappen, the personal dislikes were visible when Ricciardo called Verstappen a "sore loser" and immature.

Existing literature often emphasizes the positive aspects of intra-team competition, suggesting that it can enhance motivation and performance among team members (Kohn, 1992). Verstappen and Ricciardo had an intense relationship but still managed to apologize to each other, which could imply that the competitiveness exists between them, but to a smaller extent of rivalry. Alper et al. (2000) describe a cooperative approach when handling conflicts, which aligns with Verstappen and Ricciardo's reaction to their incident during the Azerbaijan Grand Prix in 2018. However, the Hungarian Grand Prix in 2017 did not appear to be dealt with through a cooperative approach. Rather, in this situation, they seemed to have a competitive approach, as described by Alper et al. (2000). This is apparent when Ricciardo publicly blamed Verstappen for the collision. Similarly, the competitive approach is also apparent when analyzing the intense rivalry between Hamilton and Rosberg. Their excessive competitive instincts can result in disruptions regarding team cohesion and performance. Their way of handling conflicts seems to

also stem from blame and a lack of communication, further confirming what Alper et al. (2000) describe as a competitive approach of handling conflicts. In addition, this type of approach is illustrated by the on-track incidents and disagreements that not only strained their personal interactions but also, at times, affected the team's overall success in races. Such observations aligns with Deutsch's (1949) theory, which explains that competition within a team can reduce cooperation and increase conflicts, thereby undermining team effectiveness. Maltarich et al. (2018) confirms this when suggesting that using a competitive approach of managing conflict can have a negative effect on performance.

6. Conclusions

6.1 Theoretical findings and attributions

This thesis has addressed the complex interplay of team dynamics within Formula 1, focusing on how these dynamics influence both team performance and effectiveness in extreme environments. This has been conducted through the lens of discourse analysis. The empirical material gathered from the interactions within Mercedes and Red Bull indicates that rivalry and cooperation do not only coexist but also have an impact on the functioning and success of these teams. The findings emphasize the need for teams to cooperate and to have cohesion, in order to extract performance. By further understanding how the extreme environment of Formula 1 influences these dynamics, teams can better navigate the delicate interplay between individual ambitions and collective goals, ensuring that both are aligned towards achieving overarching team success.

Moreover, team dynamics directly impact team effectiveness in extreme environments like Formula 1. Positive dynamics, characterized by mutual support and clear communication, as seen between Hamilton and Bottas and in cases, between Pérez and Verstappen, enhance team performance. In contrast, negative interactions, marked by intense rivalry and conflict, such as between Hamilton and Rosberg and Ricciardo as well as Verstappen, can lead to decreased effectiveness and undermine team goals which, in this case, lead to car retirement and a loss of points. This highlights that effective teamwork in the extreme settings not only boosts performance but is essential for navigating the complexities of competitive environments.

6.2 Limitations of the study

The analysis primarily focuses on a few selected case studies within two specific teams, Mercedes and Red Bull. This limitation means the findings may not be generalizable to other Formula 1 teams or to other sports or professional settings where team dynamics play a critical role. The conclusions drawn are heavily dependent on the publically available data, such as race

outcomes, publicly made statements, and media reports. This reliance might limit the depth of understanding of the internal team dynamics, as much of the strategic decision-making and interpersonal interactions remain confidential within teams. The study's reliance on discourse analysis might introduce subjectivity, particularly in the interpretation of qualitative data. Different researchers might interpret the same data in varied ways, which could influence the consistency and reliability of the findings. The thesis captures only a snapshot of team dynamics and individual behaviors within a specific period. Formula 1 teams evolve, as do their strategies and personnel, meaning the findings might not hold in different seasons or under different competitive conditions. Due to the nature of observational research in real-world settings, it is impossible to control for all external variables that might influence the behavior of drivers and team dynamics. This lack of control can make it difficult to establish causal relationships.

6.3 Practical implications and future research

Understanding the interplay between rivalry and cooperation can help team managers and coaches develop strategies that optimize team performance. For instance, clear communication of team goals and individual roles can help align drivers' personal ambitions with the team's objectives, potentially reducing conflicts and enhancing team results. For future research, expanding the scope of cases considered when exploring the long-term effects of rivalry and collaboration on team performance in extreme environments, could provide deeper insights into the dynamics of intra-team competition.

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Appendix

Providing an overview of the teams is necessary to allow readers who are unfamiliar with Formula 1, as it will aid in understanding and thus allow for a critical evaluation of our empirical analysis and discussion. The first two mentioned driver pairings (Hamilton vs. Rosberg, and Hamilton vs Bottas) were during different time frames part of the Formula 1 team Mercedes-AMG Petronas (Mercedes AMG F1, 2024). In the empirical material and analysis chapter this is shortened as “Mercedes” for readability. The team, besides the two drivers of the cars, consists of over a thousand employees, from designers, developers, manufactures and team principal to the CEO and the Board (Mercedes AMG F1, 2024). Thus, the drivers actually racing the cars on the track constitutes only a small fraction of the organization. The last two driver pairings (Riccardo vs Verstappen and Verstappen vs Pérez) may also be illustrated as the tip of an iceberg. They are or were employed by the Formula 1 team Oracle Red Bull Racing, also known as “Red Bull”, which share the similar organization size and structure of over a thousand employees (Red Bull racing, 2024). The shortenings of the organizations, Mercedes and Red Bull, represent the teams which the driver pairings are part of in the empirical material analysis.