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Typology of Performance in Teams: The Structure of Team Effectiveness and Dysfunction

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Typology of Performance in Teams: The Structure of Team Effectiveness and Dysfunction

by

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Abstract

Effective team effectiveness is critical for organizations seeking to thrive in a competitive and dynamic environment, where collaborative efforts are increasingly integral to achieving strategic goals. While it is commonly believed that teamwork is on a spectrum of good to bad in team effectiveness criteria such as performance, viability, and well-being, this assumption has not been thoroughly tested. Questions remain about how these three outcomes interact and relate to each other, and whether there are trade-offs among these outcomes, such as high team performance at the cost of individual well-being. This study was conducted to explore these complexities by shifting the focus from viewing team effectiveness as a single, continuous outcome to examining distinct patterns of effectiveness *within* teams, where various outcomes coexist and influence each other. Latent Profile Analysis (LPA) was used to test five hypothesized team effectiveness profiles, followed by Multiple Logistic Regression (MLR) to examine how team conditions relate to profile membership. The analysis identified five distinct profiles: Thriving, Striving, Mediocre, Groupy, and Surviving, each showing unique patterns in Performance, Viability, and Well-being. The MLR results had one significant result, indicating 'Purpose' was more likely to belong to the highly effective (i.e., Thriving) profile compared to Mediocre teams. This research contributes to our understanding of team effectiveness by 1) challenging the traditional approach of examining team outcomes separately, proposing instead that these outcomes are multidimensional and interconnected, 2) building on the growing body of person-centered research in the teams literature, and 3) introducing a new taxonomy of team types, offering a practical framework for organizations to classify teams and enhance team effectiveness through targeted strategies.

Keywords: field research, latent profile analysis (LPA), multiple logistic regression

(MLR), organizational research, organizational teams, person-centered research, performance, team-centered research, team dynamics, team effectiveness, team profiles, viability, well-being

Preface

This thesis is original, unpublished, independent work by the author, L. Pezer. The research reported in Chapters 2-4 were covered by Ethics Certificate number REB21-1909, issued by the University of Calgary Conjoint Faculties Research Ethics Board for the project "Typology of Performance in Teams: The Structure of Team Effectiveness and Dysfunction" on March 17, 2022. This thesis has been professionally edited.

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This dissertation would not have been possible without the unwavering support of my family - Todd, Josie, and Charlotte. Your energy and love have been provided so much inspiration throughout this experience as we navigated sleepless nights, relocations, and everything in between together. I'm so lucky to have you all in my corner.

To my parents, you instilled in me the belief that no goal is beyond reach. The many conversations around our dinner table about dreaming big and the work it takes to make it possible, shaped my determination and patience to pursue this path. This dissertation reflects the strong foundation you built for me and the unwavering support you've always provided.

I am profoundly grateful to the people who supported the academic rigor of my research. To my supervisor, Tom, whose guidance has been invaluable. Your support throughout this process, as we navigated ideas and challenged conventional thinking, has left a lasting impact. My deepest appreciation also goes to my committee and to Biljana, whose mentorship in statistics enriched my approach to research, helping me to not only enhance my analytical skills but also to appreciate the philosophy behind the numbers.

I want to recognize and encourage the commitment shown by the organizations and leaders I worked for during the writing of this dissertation, who created room for me to balance my professional responsibilities with academic pursuits. This belief in the value of developing people has not only fueled my journey but also reinforces the very essence of what I hope my research will achieve: making people and teams better. Workplaces like the ones I have been a part of, which invest in their employees' growth, reflect a dedication to this shared goal, and for that, I am deeply appreciative.

Lastly, I want to acknowledge the journey of completing a PhD. There were moments of

doubt, times of elation, and stretches where the work seemed endless. Together, these moments wove a narrative for what it truly takes to grow, change, and accomplish something new. Looking back, I see how essential it is to embrace these experiences, even when the outcome feels unclear. As Winnie the Pooh so beautifully reminds us:

> "What if I fall? Oh, but my darling, what if you fly?"

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Chapter 1: Introduction

> Concerning the challenge we just faced about how to describe things in numbers and definitions, what is the reason for a unity/oneness? For however many things have a plurality of parts and are not merely a complete aggregate but instead some kind of a whole beyond its parts.
>
> — Aristotle, *Metaphysics*

Teams are an increasingly critical component of progressive organizations, making high-performance teamwork essential in modern workplace settings. A recent Deloitte survey revealed that 56% of executives are intensifying their focus on individual teams and workgroups as primary areas for fostering crucial organizational goals such as increased efficiency, strong culture, enhanced flexibility, agility, and promotion of diversity (Deloitte, 2023). Despite the growing emphasis on team-based work (Kozlowski & Ilgen, 2006), research has shown that few teams are highly effective, with a significant number (42%, according to Wageman et al., 2008) being dysfunctional (e.g., Hackman, 1990; O'Neill & Salas, 2018; Sims et al., 2005; Wageman et al., 2008; West, 2012). This is problematic as organizations continue to rely heavily on teams that are not meeting critical effectiveness measures such as performance, viability, and individual member well-being.

The literature has examined various aspects of teamwork that influence team effectiveness, including underlying team conditions (e.g., Hackman, 1990), member personality (e.g., Driskell et al., 2006), person-team fit (e.g., De Cooman et al., 2016), conflict training (e.g., O'Neill et al., 2017), team cognitions and emergent states (e.g., Tannenbaum & Salas, 2020), and team-building interventions (e.g., Tannenbaum et al., 1992). These studies have identified numerous variables correlated with team effectiveness (Lepine et al., 2008; Mathieu Let al.,

2008, 2017). However, the literature has primarily focused on predictors and mediators of team effectiveness, often neglecting the study and categorization of the criterion itself (Mathieu & Gilson, 2012). Furthermore, little research has explored the nuances and patterns of team effectiveness and whether teams can achieve high levels across all outcome dimensions typically included in definitions of team effectiveness. This study aimed to address whether a team can produce high-quality output rapidly while remaining viable and ensuring high well-being of members, and if fulfilling one dimension of effectiveness potentially compromises another.

Traditionally, it is assumed that multiple facets of team effectiveness are critical for a comprehensive understanding of team effectiveness (e.g., Hackman, 1990; Kozlowski & Ilgen, 2006) and Hackman's work over the decades (1987, 2002, 2012) demonstrated the importance of considering all three facets of team effectiveness. However, this assumption needed further testing to determine its validity. Are high-performing teams always superior in other measures like viability and well-being, or are there hidden "latent" groups of teams where effectiveness variables manifest differently, such as teams that are highly stressed but still high-performing? In this study, I shifted from predicting team effectiveness as a continuous variable to predicting 'patterns' of team effectiveness, where outcomes coexist and are interdependent. I hypothesize that the data will support five team effectiveness structures (i.e., profiles) when considering three distinct facets of team effectiveness: team performance, team viability, and individual well-being (e.g., Hackman, 2002; Mathieu et al., 2017; Tannenbaum & Salas, 2020).

I hypothesize that each team will exhibit unique patterns of outcomes that describe and illustrate the holistic team experience. In addition, I will explore how differences in covariates are associated with varying patterns of team effectiveness outcomes, offering insights into the factors that contribute to these differences. To achieve this, I analyze the data using latent profile

analysis, an analytical approach aligned with a team-centered theoretical framework (O'Neill & McLarnon, 2018) that identifies subgroup populations within a sample (Nylund-Gibson & Choi, 2018). This approach builds on a movement in team research to employ a team-centered lens (O'Neill et al., 2018; Shuffler et al., 2018) and extends the research body by investigating the criterion side of team research, which has not been extensively explored. To better understand the factors (i.e., covariates) associated with various patterns of team outcomes, and to answer my research question: *"Will team conditions explain significant variance in profile membership?",* I conducted a multinomial regression analysis to determine the relationships between team conditions and team profiles**.** This analysis identified key antecedents to each team profile, elucidating why certain teams uniquely struggle or thrive.

The present study contributes to the literature in three significant ways. First, by exploring the validity and nature of team effectiveness profiles, it advances the science of team effectiveness by helping researchers understand the configurations (captured in a taxonomy) of team effectiveness, addressing the call to define team types in a new way (Benishek & Lazzara, 2019). Second, this study helped clarify whether real teams can and do achieve the multiple outcomes they should strive for in Hackman's model (e.g., 2002). Lastly, by investigating the relationship between team conditions and team effectiveness, we may now better understand the specific conditions that facilitate differing team profiles.

Moreover, this research has practical implications. The insights derived offer crucial information for organizations aiming to manage team development and growth more effectively (Chuang et al., 2016). This evidence may allow leaders to identify strengths within teams to leverage and pinpoint weaknesses that require intervention, facilitating a more tailored and responsive leadership approach. Addressing these needs supports the evolution of organizational

practices to meet contemporary demands, developing capabilities that foster diverse and autonomous teams (Deloitte, 2023). By delivering essential skills and expertise precisely when and where they are needed, organizations can better navigate the complexities of modern work (Deloitte, 2023).

Chapter 2: Literature Review

Team Effectiveness: A Background

Work Teams

The term 'work team' is used quite liberally in organizations, often describing groups of people in the same office space or department, or collections of individuals in a box on an organizational chart, but in the literature the definition that separates groups from teams is much more detailed. Teamwork is described as two or more people who exist to perform and accomplish relevant organizational tasks (Salas et al., 2017). Further, work teams socially interact, have a degree of interdependence in workflow, their goals, and relevant outcomes, have different roles and responsibilities within the team, and have clear boundaries that they must maintain while embedded in an organizational context (Kozlowski & Ilgen, 2006). Work teams are responsible for many outcomes and researchers have sought to understand how well they are at achieving these outcomes through the conceptualization of team effectiveness, or how well a team does its job without wasting unnecessary energy and resources.

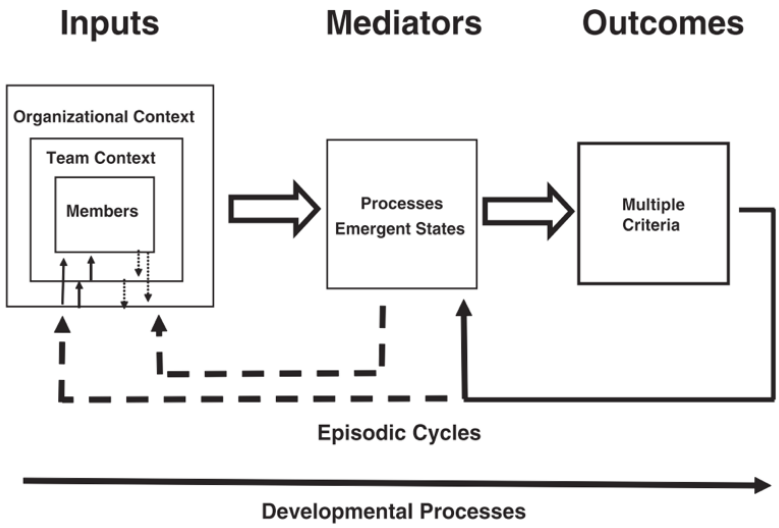
Team Effectiveness Models

Due to the unique idiosyncratic factors of the team as well as the team's interaction with its organizational context, teams evolve into performing units that vary in effectiveness (Hackman, 2002; Wageman et al., 2005). The concept of team effectiveness was derived out of years of research which sought to understand how components of team structure and team processes relate to team performance (Kozlowski & Ilgen, 2006). The I-P-O model (Input-Process-Output) (McGrath, 1984) of teamwork was formed and was dominant in the literature for many years whereby team inputs (I) such as team member competencies, task structure and work context, drove processes (P) or member's behaviors and interactions, leading to team

outcomes (O) (Ilgen et al., 2005; Mathieu et al., 2008). This model developed further into the I-M-O (Input-Mediator-Output, see Figure 1) model which distinguished the cognitive, affective and motivational states (emergent states) as mediating mechanisms (Ilgen et al., 2005; Marks et al., 2001) and the IMOI (input-mediator-output-input) that represented the cyclical nature of how teams function (Ilgen et al., 2005). While most of the focus in the literature has been on inputs, and mediators (Mathieu et al., 2008), there appears to be a gap in definition and development of team outcomes, with researchers using a large number and variety of indicators to measure team effectiveness (Mathieu et al., 2008; Rico et al., 2011), making it difficult to facilitate comparison across studies (Mathieu & Gilson, 2012). While the models described above established a framework for team effectiveness, they did not adequately define which parts are essential to measure to determine if a team is effective or not. Meta-analyses and reviews (e.g., Mathieu et al., 2008. 2017; Mathieu & Gilson, 2012), however, have helped to reveal which outcomes are most critical in determining whether a team is effective or not, with key themes emerging such as the importance of a multi-dimensional approach to evaluating team effectiveness.

Figure 1

Input-Mediator-Outcome (IMO) Team Effectiveness Framework



Note. I-M-O model as proposed in Mathieu et al. (2007).

Multi-Dimensional Frameworks for Team Effectiveness

It appears that the most commonly measured outcomes in the literature fall into two groups- *tangible performance outcomes* and *member affective reactions* (Guzzo & Dickson, 1996; Mathieu et al., 2008; Mathieu et al., 2017). Tangible performance outcomes are the results that teams collectively produce including productivity (e.g., Pepinsky et al., 1959), behavioral and outcome performance (e.g., Beal et al., 2003), creativity (e.g., Kelly & Karau, 1993), quality (e.g., Schneider et al., 2005), and helping behaviors (e.g., Gonzalez-Mulé et al., 2014). Member affective reactions describe the emotional and psychological experience that members have of being on the team and may also offer insight about the sustainability of the team. These include factors such as team satisfaction (e.g., Van der Vegt, Emans, & Van De Vliert, 2001), commitment (e.g., Tesluk & Mathieu, 1999), relationships (e.g., O'Neill et al., 2020), work attitudes (e.g., Pritchard et al., 1988) and team viability (e.g., Druskat & Wolff, 1999; Bell &

Marentette, 2011). Member affective reactions have been hypothesized to be further reduced into two categories – collective or individualistic outcomes (Mathieu et al., 2019). Conceptually, collective outcomes are experienced similarly amongst all team members (e.g., viability, cohesion), whereas individualistic outcomes may fluctuate not only between teams but also within them (e.g., member satisfaction, well-being) (Mathieu et al., 2019). In the literature, both performance and affective reactions have been demonstrated to be critical in determining a team's level of effectiveness, and for this reason, researchers are increasingly advocating for frameworks which better integrate the multi-dimensional environment in which teams operate to determine how effective a team really is (Mathieu et al., 2017; Salas & Tannenbaum, 2020). As team effectiveness is judged based upon both performance and affective member reactions, in order to understand how a team is holistically functioning, a measure of effectiveness that includes these dimensions is critical.

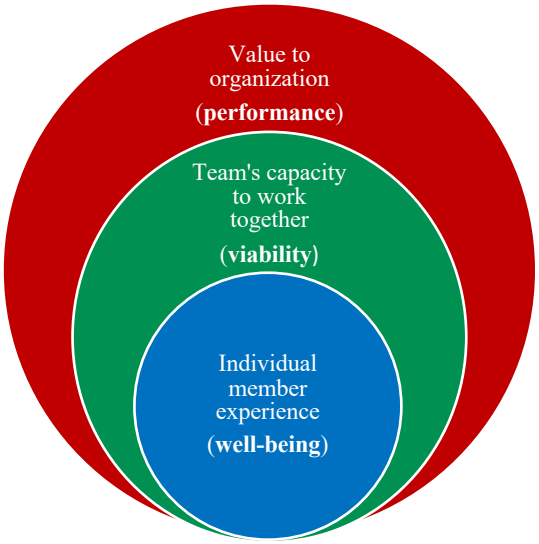
There are notable longstanding theoretical models that already integrate multi-dimensional frameworks for team outcomes, however, in these models, each of these outcomes have traditionally been evaluated distinct and separate from each other. Hackman (1990), for instance, suggested that team effectiveness had three facets that included a measure which was meaningful to the organization, the team, and to the individual. These included performance (i.e., organization), team member satisfaction/viability (i.e., team), and learning and well-being (i.e., individual). These three components, Hackman (1990) argued, were a robust measurement of the dynamic and multi-dimensional outputs that teams were responsible for[1]. Similarly, Mathieu et

[1] Hackman (1990) used the term team satisfaction and viability interchangeably in his research and these two constructs have been found to be highly correlated in the literature at .79 (Druskat & Wolff, 1999) and .76 (Foo et al., 2006), suggesting that they are indistinguishable from each other. Other researchers have also used team satisfaction and viability interchangeably in the literature (e.g., Aubé & Rousseau, 2005; Barrick et al., 1998; Hackman, 1987; Hackman, 1990; Lewis, 2004; Tekleab et al., 2009), suggesting that a team's level of enjoyment working together is a key determinant of their ability to continue growing together as a group.

al.'s (2019) model (adapted from Mathieu et al., 2017) considered team effectiveness to have two outcomes –tangible outputs and influences on team members, further divided into individual and collective responses. Like Hackman (1990), the authors hypothesized that there is a vested interest in tangible outcomes that the team produces, along with the experience of team members themselves including their willingness to work together, and commitment to the team and organization (Mathieu et al., 2019). These two influential frameworks (Hackman et al., 1990; Mathieu et al., 2019) offer direction about how we may clarify critical team outcomes. Both models make clear a need to measure three things - a performance indicator, a measure of the ability of team members to grow their capacity to work together (herein called team viability), and the impact of the team on each individual's personal experience (see Figure 2).

Figure 2

Dimensions of Team Effectiveness



Note. Three dimensions of team effectiveness.

Although these factors may be positively associated with each other – if a team does well

in one area, they often do well in the others (Cohen & Ledford, 1993; Janz et al., 1997; Wageman et al., 2005) – they have been demonstrated in applied settings to be distinct from each other. For example, in a multi-method field study, Wageman (2001) found that in self-managed teams, neither the relationship between performance and the quality of the way that team interacts with each other (viability), nor the way the team interacts with each other and member satisfaction were significant. Performance and member satisfaction (r = .60), however, did correlate significantly (Wageman, 2001), but the correlation is not high enough to suggest that they were measuring the same construct. These results further support the inclusion of these three dimensions to understand the holistic experience of team effectiveness (Hackman, 2002; Mathieu et al., 2019).

While the study of independent factors in which causality flows linearly from input to outcome has led to significant findings, there is limited understanding about how these factors *collectively* function (Mathieu et al., 2008; Mathieu et al., 2017), which a complexity perspective may help mitigate. Borrowing from the conflict literature, in which authors described the difference between a complexity perspective (i.e., outcomes are simultaneously present and influencing both each other and related outcomes) versus a separation perspective (i.e., outcomes are mutually independent and to have mutually independent effects on different team outcomes) (Janssen et al., 1999), the study team effectiveness, similarly, lends itself well to a complexity perspective (O'Neill et al., 2018). The complexity perspective in this case would assume that performance, viability, and well-being are interdependent and influence each other which, along with being intuitive, has been inferred in the literature. This may be observed, for example, in research that explores the effects of team social processes on multiple team outcomes at a time (see Balkundi & Harrison, 2006; Barrick et al., 1998; Sackett & Fitzsimons, 2021, to name a

few). We may also see suggestions of the interdependence between team outcomes by research examining the effect of one dependent variable on another, such as viability on performance (e.g., Foo et al., 2006; Messersmith et al., 2013; Parker & Skitmore, 2005), viability on well-being (e.g., Costa et al., 2015), and the mediating mechanism of member satisfaction on performance (Li et al., 2009). The use of composite measures of performance, or blended composite measures of multiple outcomes that teams perform, suggests that there is an inherent relationship between these outcomes that, when considered collectively, provide valuable insights into team effectiveness (Mathieu et al., 2007). Current work design researchers agree that advancing our understanding of team outcomes requires evaluating multiple outcomes simultaneously and considering the trade-offs among these outcomes (Parker et al., 2017a). The present study aimed to explore these interrelationships.

Performance, Viability, and Individual Well-being

Performance. Performance outcomes are context-specific, meaning that the outcome that is relevant and valued to each organization would, naturally, be different based upon the organization's goals and mandate, as well as the specific purpose of the team (Mathieu et al., 2019). In their review of team effectiveness in the literature, Mathieu et al. (2019) detailed that while we may be able to abstractly compare objective performance of teams, for example, across domains, each industry would have its own meaningful way of measuring the variable, and so it is important for each team to use a meaningful context-specific measure of that outcome (Mathieu et al., 2017). When measuring performance, recent findings by McEwan et al. (2017) suggest that omnibus measures of teamwork, which provide an overall score of teamwork outcomes, are as effective as tools targeting specific dimensions of teamwork. This indicates that the impact of the measurement tool on performance outcomes may be minimal, provided the tool

is a valid measure of the construct.

A factor that may have considerable effect on the measurement of team performance, however, is the source of the assessment. Recent meta-analytic findings reveal notable differences in effect sizes contingent upon whether team performance is evaluated by external raters or through self-assessments by team members, with external ratings yielding larger effect sizes compared to self-ratings (McEwan et al., 2017). These discrepancies demonstrate the importance of selecting appropriate evaluators (i.e., self vs. 3rd party), as this choice can critically impact both the results and their practical implications.

Viability. Team viability is defined as the "capacity for the sustainability and growth required for success in future performance episodes" (Bell & Marentette, 2011, p. 275). Viability captures the shared perceptions of all individual members about the team's future ability to succeed. Based upon what has happened so far on the team and what the demands of the future are, members determine if they are able to work together to achieve a goal in the future. A team that has low viability likely has a reduced probability of continuing to deliver high quality performance outputs and may experience team process, such as communication and coordination, breakdowns. As a result, it is fundamentally foundational to team effectiveness (Bell & Marentette, 2011) that the team becomes increasingly, not decreasingly, capable over time. So often in organizations this criterion is ignored in favor of a sole focus on outputs.

Although viability is future facing, it is shaped by the current state of the team, and we may see variation in team viability due to both current team environment as well as appraisals of future team requirements. Teams that are doing well in terms of their processes and dynamics are likely to both perform better (Marks et al., 2001) and to conclude that based upon their current performance, they will be able to sustain their performance into the future (Bell & Marentette,

2011). This is why the performance-viability relationship is generally be strong and positive (Bell & Marentette, 2011).

Individual Well-Being. By including a separate category of individual well-being/satisfaction (e.g., Hackman, 1990; Mathieu et al., 2019; Tannenbaum & Salas, 2020) in place of grouping this outcome with other team affective member behaviors (e.g., Kozlowski & Ilgen, 2006; Kozlowski & Klein, 2000; Mathieu et al., 2008), we may tap into an outcome that is distinct both empirically and practically. This distinction is highly relevant to today's organizations as companies are discovering the high cost and impact of poor employee well-being (Ott, 2010) and may be inclined to monitor that outcome specifically. Fortunately, the literature offers significant insight into well-being.

Individual well-being has been described in many ways in the workplace literature, but it generally is defined from a hedonic or eudaimonic perspective (Extremera et al., 2010). Hedonic well-being, also described as subjective well-being (SWB), is the experience of more positive than negative emotions and greater satisfaction with life (Deiner, 1984). Distinct from subjective well-being, eudaimonic well-being, or psychological well-being (PWB) is a sense of meaning and fulfillment in life (Ryan & Deci, 2001; Ryff, 1989). It has been hypothesized that both positive emotions and deriving personal meaning and fulfillment are important measures of well-being at work (Hackman, 1990). Hackman (2002) for instance, included both eudaimonic and hedonic measures of well-being in his research. These included internal work motivation (e.g., feeling happy when the team succeeds), satisfaction with growth opportunities (e.g., the team 'stretches' personal knowledge and skills), and general personal satisfaction (e.g., enjoyment of the type of work done on the team) (Hackman, 2002). Based on the literature as well as the implications to real work settings, I argue that a composite measure of both hedonic and

eudaimonic well-being is critical to a full measure of well-being at work. This holistic approach to optimized well-being is captured in workplace Thriving literature (e.g., Porath et al., 2012) in which individual learning (Hackman, 1987) and vitality (Tannenbaum & Salas, 2020) is reflected as key requirements of the highest experience of well-being in the workplace (e.g., Gerbasi et al., 2015; Paterson et al., 2014).

Predictors of Team Effectiveness

To better understand why some teams are more effective while others fail to succeed, scholars have largely studied independent or additive factors (e.g., competency, leadership, conflict, communication, coordination, personality), which have been shown to influence how effective a team is in accomplishing its goals and objectives (Mathieu et al., 2017). In a recent summary of team effectiveness to date, researchers described over 60 inputs, processes and mediators, which have been demonstrated to influence team effectiveness (Mathieu et al., 2019). Adding to the complexity is that inputs include team member characteristics (e.g., ability, personality), team factors (e.g., influence of leader, team structure), and organizational factors (e.g., organizational design) (Guzzo & Dickson, 1996; Mathieu & Gilson, 2012). The literature highlights how complex teams are and how difficult it is to get a clear picture of which features of a group have the most significant effect on team outcomes. Perhaps the insight of teams researchers, Ilgen et al. (2005), describes this problem the best:

> From the outset we note that whereas there seems to be consensus on the need to study affective, cognitive, and behavioral mediational processes, this effort has been somewhat fragmented and noncumulative due to a proliferation of constructs with indistinct boundaries at the conceptual level and item overlap between measures of constructs at the level of individual studies (p. 518).

In an effort to make sense of the many variables that influence teams and to understand why some teams are more effective than others, some researchers have focused their efforts on frameworks that focus on the conditions that underly inputs, group processes and mediators. Hackman (1990), for instance, veered from the traditional identification of causal antecedents in his team effectiveness model. In his research, Hackman (1990) qualitatively and quantitatively studied hundreds of real teams in a variety of different workplace environments, theorizing that it was more important to identify the conditions, or team design factors, that increase the likelihood that a team will evolve into a high performing unit, than try to pinpoint the exact 'causes' of performance outcomes, which may wildly vary depending on context. Hackman's (1990) 'conditions', of which he identified six, have been defined as the factors of a group's structure, context, and team support, that promotes competent work on the task and reinforces excellence. These include (a) real team (i.e., interdependent; bounded) (b) compelling purpose (i.e., clear direction; challenging); (c) right people (i.e., diversity; skill); (d) clear norms of conduct (i.e., clear agreed-upon standards); (e) supportive organizational context (i.e., team-based rewards, resources); and (e) team-focused coaching (i.e., helpfulness; availability) (Hackman, 2002, 2012; Wagemen et al., 2005). Built upon the theory of equifinality (Katz & Kahn, 1978, p. 30) which proposes that groups can arrive at the same endpoint using a variety of pathways, even if two groups have the exact same task, Hackman (1990) theorized that it is more useful and practical for leaders of work teams to focus their energies on creating these enabling *conditions* that support effective performance (elucidated in great detail in Hackman, 2002). These conditions for effective teamwork have been supported in the literature, with teams experiencing good conditions being more effective (e.g., Vinokur-Kaplan, 1995; Wageman et al., 2005). Other researchers (e.g., Campion et al., 1993; Cohen & Ledford Jr., 1994; Goodman et al., 1988; Parker

et al., 2017a; Salas et al., 2015) have agreed with the importance of focusing on the structure and design of teams for improving work-team performance, finding that organizational and team structures explain the most variance in team effectiveness. In other words, research has demonstrated what many intuitively know- better designed teams are more likely to be highly effective, regardless of who is on the team and what the task is (Parker et al., 2017a). However, we still have questions to answer about what conditions are the most important to team life (Hackman, 2012), what different types of teams may be helped more or less by each condition being met (Wageman et al., 2005), and what conditions may be most potent depending on team type (Wageman et al., 2005).

Person and Team-Centered Approaches and its Application to Team Effectiveness

Person-centered approaches in research design, in contrast to variable-centered approaches that assume a single population from which a set of "averaged" parameters can be estimated (Morin et al., 2016), embrace a complexity perspective by recognizing that constructs function as interrelated systems rather than in isolation (Shuffler et al., 2018). In other words, "variable-centered research analyzes covariances to uncover relationships between variables, whereas the latent profile model analyzes covariances to identify relationships between individuals" (Bauer & Curran, 2004, p. 6).

With person-centered approaches, individuals are classified based on the similarity of scores on specified variables, and these individuals are allotted to different 'profiles' (Howard & Hoffman, 2018). Person-centered approaches mitigate some of the challenges of variable-centered limitations by modeling unobserved or unknown population heterogeneity (inferred from the data) and categorizing groups based on their complex patterns of interactions (Hofmans et al., 2020). Nylund-Gibson and Choi (2018) proposed that the use of LPA could be particularly

beneficial for exploring systematic differences or similarities in groupings of factors. Unlike the dominant variable-centered model, which requires arbitrary cutoffs to classify groups, LPA and detects configurations of variables, helping to discover meaningful patterns of responses to the construct(s) of interest (Ferguson et al., 2020). The method involves an iterative modeling process to determine the appropriate number of profiles (i.e., unique population subgroups) and often includes fitting a covariate model to assess the influence of these profiles on outcome variables or to predict which profiles individuals belong to (Ferguson et al., 2020; Sterba, 2013).

The emerging research that uses LCA or LPA, a variant of LCA that uses continuous variables instead of categorical variables (Oberski, 2016) to analyze data, has yielded exciting results. In the literature, LPA and LCA has been used in both individual and team industrial-organizational psychology research across many psychological constructs including team conflict types (O'Neill et al., 2018), team climate profiles (Lee & Yoo, 2020), employee motivation profiles (Howard et al., 2016; Parker et al., 2021), job characteristics profiles (Mäkikangas et al., 2018), and healthcare worker commitment typologies (Gellatly et al., 2014). To illustrate, Howard et al. (2016) conducted an LPA to identify motivation profiles in employees and uncovered profiles (i.e., balanced motivation, autonomous regulation, and amotivation). Their results showed that autonomously regulated profiles were associated with higher performance and well-being, whereas amotivated profiles had worse outcomes (Howard et al., 2021). Lefsrud et al. (2021) used LPA to examine safety climate perceptions across employees in high-risk industries and found four profiles (i.e.,
Optimal, Negligent, Disconnected, and Lip Service), each reflecting unique combinations of management commitment, communication, and risk tolerance dimensions. Recently, Knight et al. (2022) also used LPA to examine work design profiles by integrating job demands-control-

support (JDCS) theory with relational work design characteristics. The researchers identified four distinct profiles (i.e., active connected, passive disconnected, high strain disconnected and controlled disconnected), with the active connected profile associated with increased vigor and social worth. Another interesting study by McLarnon et al. (2022) utilized Bifactor Exploratory Structural Equation Modeling (B-ESEM) combined with LPA to identify four distinct Dark Triad profiles (i.e., Troublemaker, Self-Absorbed, Manipulator, and Exploiter). These profiles demonstrated unique configurations of narcissism, Machiavellianism, psychopathy, and a general malevolence factor, illustrating that person-centered approaches reveal meaningful differences beyond simple quantitative levels, and suggesting that researchers may gather insight into well-validated constructs by analyzing data in a new (i.e., person-centered) way.

While person-centered approaches have been primarily used at the individual level, they have been postulated to occur in teams as well (Shuffler et al., 2018), suggesting that teams may also have unique patterns across several individual, team, and organizational variables. O'Neill et al. (2018) examined team conflict profiles and identified profiles defined by varying levels of task conflict, relationship conflict, and process conflict. Profiles such as task-conflict dominant (i.e., high task conflict, low relationship and process conflict) and dysfunctional (i.e., low task conflict, high relationship and process conflict) demonstrated that the coexistence of conflict dimensions plays a significant role in team outcomes such as performance and innovation and highlighted the utility of a person-centered perspective in understanding team functioning. Similarly, McLarnon et al. (2018) extended this work by using latent transition analysis (LTA) to track changes in conflict profiles over time, providing evidence that teams transitioning from dysfunctional profiles to more balanced configurations experienced improved performance and

innovation, offering insight into the possibility of using conflict profiles to track team changes and development over time.

These studies collectively demonstrate that adopting a complexity perspective and investigating multidimensional patterns offer new insights into team dynamics, processes, and outcomes. By leveraging LPA, my research aimed to investigate the interdependency and complexity of team outcomes and derive new insights into how team effectiveness outcomes occur simultaneously, and perhaps not linearly, on teams. In modelling observed patterns of team effectiveness, we may discover a different story about teamwork than deviates from the spectrum of good to bad. It is possible that some contexts and environments may create conditions in which teams simultaneously achieve one objective while failing to meet others.

Research Questions and Hypothesis

Conceptualization of Team Effectiveness Profiles and Correlates

Conceptualization in Industry. In exploring the concept of team types that are described or measured in industry, clear examples of 'team type' descriptions or assessments based upon team outcomes are not prevalent. However, several organizations have conceptualized team prototypes in different ways including 'team personalities' and employee behaviors and work styles. Mackay (2022) discusses how Truity at Work, a company who specializes in providing personality assessments and other tools to organizations, uses individual personality scores based on the Five Factor Model (FFM) of personality to collectively create team culture prototypes (e.g., thinking versus feeling team cultures). Other organizations, like The Predictive Index, identify team types such as anchoring, exploring, and producing (McCann, 2022). An 'Exploring Team', for example, comprises of individuals who excel at thinking broadly and are willing to take risks, embodying a collective approach that prioritizes innovation

and strategic, high-level thinking (McCann, 2022).

Recently, DORA (DevOps Research and Assessment) used descriptive clustering to assess their own team performance, identifying four distinct team types: User-centric, Feature-driven, Developing, and Balanced (Walsh, 2023). User-centric teams, identified as their top performing teams, excel in software delivery and operations by prioritizing user needs, which significantly enhances organizational performance. Conversely, Developing teams are in a state of progression, striving to attain the characteristics of other team types and although they report high levels of job satisfaction, they are particularly vulnerable to burnout due to the continuous demands of improvement and the requirement to build their skillsets (DORA, 2023). Collectively, these organizations provide evidence of interest, curiosity, and current theorizing about the existence of team types in industry.

Conceptualizations in Research. In the literature, for decades, researchers have theorized and conceptualized team types by variables such as task types (e.g., Cohen & Bailey, 1997; Hackman, 1990; McGrath, 1984), team climate (e.g., Loo & Loewen, 2003), higher-order team characteristics (e.g., boundaries, roles, virtual distribution, see Bell & Kozlowski, 2002), and team effectiveness outcomes (e.g., Hackman, 2002).

In terms of team outcome taxonomies or typologies, which this study is interested in, researchers have suggested that teams may demonstrate different yet systematic configurations in terms of scores across dimensions of team effectiveness. Teams may be high in one area of effectiveness while simultaneously being low in others, or moderately low in all areas of team effectiveness (e.g., Hackman, 1990; West, 2012). However, these groupings or structures have not been empirically sought out. In his book, West (2012) theorized that a ‘complacent’ team may demonstrate poor task effectiveness and average member well-being, whereas a ‘driven’

team may exhibit poor member well-being and only short-term viability. Relatedly, Hackman (1990) compiled years of field research to illustrate the stories of teams from different industries who thrived or failed. He observed, compared, and contrasted teams with differing outcomes based on their enabling conditions, processes, and contextual influences. Hackman (1990) found that highly effective teams appeared to have higher measures of the three dimensions of his team effectiveness model than poorly functioning teams. However, he also described teams that had variability in these measures, such as teams moderately high in performance while concurrently low in viability or well-being. He did not empirically test whether there were any systematic differentiations across the conditions or outcomes of those teams.

Recently, an interesting study by Brahler and Donahoe-Fillmore (2023) investigated more 'holistic' team typologies. Using a mixed-methods approach, four team types were identified: Facilitated, Cohesion, Consensual Validation, and Silo Mentality. The researchers found that Facilitated teams demonstrated effective teamwork and higher-order thinking, whereas Cohesion teams, while socially cohesive, often succumbed to groupthink, leading to less critical evaluation and exploration of alternatives. Consensual Validation teams formed subgroups based on professional similarities, resulting in varied cognitive engagement and divided communication patterns, which hindered overall team performance. In contrast, Silo Mentality teams exhibited isolated work processes and poor communication, leading to the lowest levels of cognitive engagement and ineffective team dynamics, often culminating in suboptimal solutions and a higher potential for errors.

While these researchers provide anecdotal and limited empirical evidence for 'team types,' there is a significant opportunity to further empirically measure and test these concepts. By doing so, we may be able to better diagnose team profiles and have a clearer understanding of

the trade-offs and compromises teams may have to make while managing organizational, team and individual needs and goals.

As mentioned above, I posited that performance, viability, and well-being measures are the most critical team outcomes to measure when examining team effectiveness. In considering high, low, or medium combinations of these three variables, there are 27 potential patterns that could occur. However, it is unlikely, based upon theory as well as empirical limitations, that 27 team effectiveness typologies actually exist. This is in part due to the strong relationships between viability and performance and well-being and viability. In the majority of cases, current performance is positively associated with perceived future team capabilities (Bell & Marentette, 2011), and so we will likely see the relationship between viability and performance to be strong. This being said, in some cases, these two variables may differ due to contextual influences. For example, a team may be given a very challenging task which they perform well, but the task induces strain, leading to higher turnover. As well, it is unlikely that well-being would be high independent of either team viability or team performance, which is further described in the 'unlikely profiles' section below.

Therefore, based upon the in-depth review of the team effectiveness which has been described above, including quantitative research as well as multiple qualitative team case studies (e.g., Edmondson, 1999; Hackman, 1990; Tannenbaum & Salas, 2020; West, 2012), I hypothesized that five potential team effectiveness combinations exist (see Figure 3) and that these patterns of variables exist in levels relative to each other within each team typology (see Figure 4). These five typologies are described in hypotheses one through five.

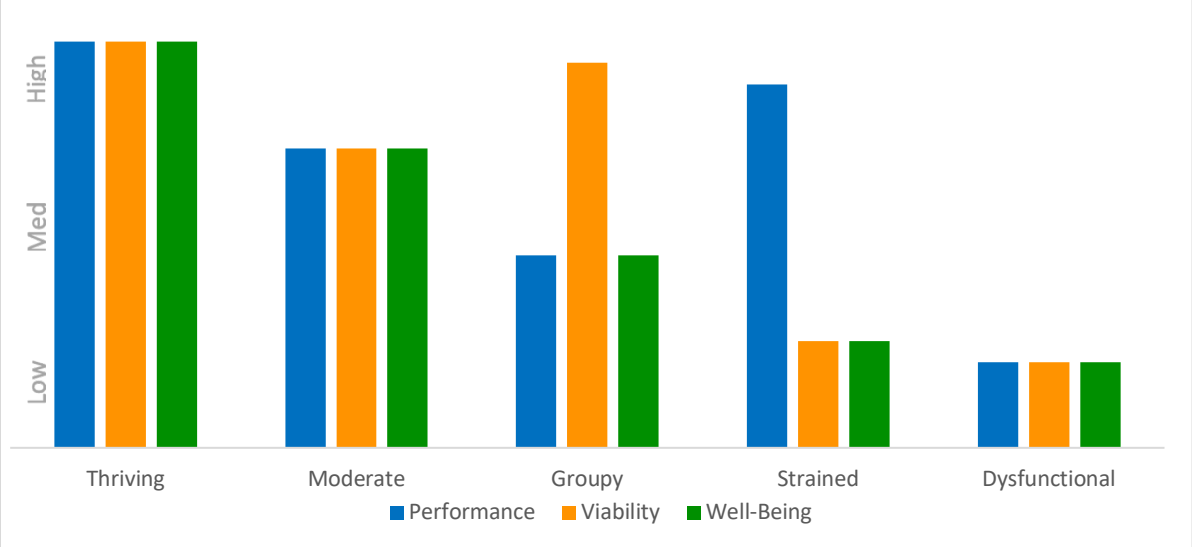
Figure 3

Hypothesized Team Effectiveness Profiles

Note. Hypothesized team effectiveness structures including Thriving, Moderate, Groupy, Strained, and Dysfunctional.

Figure 4

Team Effectiveness Typologies



Note. Expected high-low patterns of performance, viability, and well-being in hypothesized team effectiveness profiles.

Hypothesized Team Effectiveness Profiles

Thriving Teams. In the literature, optimization at work has been described as 'thriving' and is defined by the experience of growing and improving while simultaneously feeling energized, alive, and invigorated at work (Porath et al., 2012; Spreitzer et al., 2005). Consistent with the three-factor model of team effectiveness, in the literature it has been hypothesized that for units to thrive, individual thriving cannot occur at the expense of others or the organization (Spreitzer & Sutcliffe, 2007). Therefore, I expected that it was possible for teams to satisfy performance, team member, and individual member needs simultaneously. This has been supported in the literature, which has found that teams that do well in one area, tend to do well in all (especially when measured at one time point) (e.g., Hackman, 1990; LePine et al., 2008).

A team environment in which team members are highly challenged while also having the personal and team resources to meet or exceed high expectations (Quigley et al., 2018) is likely to produce positive effects in all three team effectiveness outcomes. Thriving teams are not held back by the presence of multiple hindrance stressors, defined as demands or circumstances that interfere with the ability to achieve workplace goals (Boswell et al., 2004). Research has shown that a lack of hindrance stressors, with the availability of appropriate challenge, is likely to yield positive performance results (LePine et al., 2005). It is therefore probable that teams that are performing well, will concurrently see themselves as able to perform in the future together (Marks et al., 2001), yielding a higher perception of viability. This is also likely to positively impact individual well-being as team members feel competent in their work and have a sense of belonging with the people they are working with, resulting in increases to their experience of personal well-being and vitality (Deci & Ryan, 1985; Ryan & Deci, 2000). While this cycle of personal well-being, high team performance, and high team viability may be challenging to

achieve, it is a state that organizations likely strive for with their teams, and likely the referent for the 'high-performance teamwork' concept that organizations refer to and advocate for.

Hypothesis 1 (H1): A high performance, high viability, and high well-being (i.e., Thriving) profile will be identified.

Moderate Teams. In this team profile, it was hypothesized that teams would measure moderately in their performance, viability, and well-being. This profile, which represents the middle ground between thriving and dysfunctional profiles, was likely to occur as in many instances, a slightly lower level on one team effectiveness dimension is expected to influence the other two dimensions in a similar way (Hackman, 1990).

Quigley et al. (2018) hypothesized that teams have five possible performance trajectories over time, including one that was marginally underperforming over long periods of time. The authors suggested that these moderately performing teams likely do not have lofty or impactful goals but are known for consistently meeting objectives, and for this reason are crucial for the organization (Quigley et al., 2018). The authors further describe an empirical example of this team found in Mathieu and Rapp's (2009) study in which teams that created low quality documents of defined team goals, norms, and agreed-upon processes (i.e., team charters) were still able to adequately perform by using high quality performance strategies (Quigley et al., 2018). Correspondingly, Hackman (1990) described a quarter of his teams as mediocre ranging from recreational basketball teams to uninspired flight crews. Many of these teams had the potential for higher team effectiveness (in Hackman's view) but maintained slightly lower levels of all three indicators of team effectiveness, maintaining their state over time. This suggests that this team effectiveness profile may be somewhat 'comfortable' for team members and therefore more sustainable.

Hypothesis 2 (H2): A profile of medium performance, medium viability, and medium well-being (i.e., Moderate) will be identified.

Groupy Teams. In some cases, the team environment may influence the relationship between team viability and both performance and well-being. In the Groupy profile, strong and 'positive' team dynamics and related perceived team viability are associated with detriments in both the performance of the task as well as the well-being and growth of the individuals on the team.

Groupy teams may create a positive experience for group members as the team may compensate for workplace stress (e.g., a highly challenging task or a poor organizational climate) through positive team interaction, or 'team liking', which can create a highly cohesive team environment. This environment can help team members to manage team stress as members act as social supports for each other, mitigating some of the negative influences imposed on the team as well as individuals on the team (De Freese & Smith, 2013). In one study examining the multi-level influences of perceptions of team viability, researchers found that although high levels of individual positive emotion were generally associated with high team viability, some teams were also able to maintain high perceptions of team viability through high team engagement even if individuals on a team had low individual levels of positive emotion (Costa et al., 2015). In effect, the team dynamics were positive enough to 'carry the weight' of lower individual well-being.

Groupy team effectiveness profiles prioritize team cohesion above all else, creating a highly loyal, high tenure environment. This team type may emerge out of environments which performance is not managed effectively, or where there is a 'familial' connection at work, with employees that have been there so long that any type of conflict or pressure could break apart decades-long relationship (e.g., university, utilities). For these teams, it is better to deny that

there are performance issues and instead focus on team cohesion with an ‘us against the world’ mentality.

While team closeness and unity may have a positive effect as teams are able to remain viable (Jehn et al., 2008; Tekleab et al., 2009) even if the task is not especially motivating or growth focused for individuals, this profile has a problematic downside as their social processes limit their ability to engage in feedback and task conflict, leading to lower levels of performance and well-being overall.

Groupy profiles are more subject to groupthink, which is described as a way of thinking in which people who are deeply involved in a cohesive ‘in-group’ strive for consensus at any cost, overriding their appraisal of realistic alternatives (Janis, 1972). Although team members may have divergent opinions and thoughts, they withhold these in the effort to maintain group harmony at all costs (Janis, 1991). In this situation, even though teams perceive that they are viable, they struggle as they experience difficulty giving constructive criticism and feedback (Hardy et al., 2005), challenging team norms, and engaging in task conflict (Bush et al., 2018). These problems may lead to constrained performance (O’Neill et al., 2018) and restrict the ability for team members to contribute fully, likely having a negative impact on the individuals on the team.

Hypothesis 3 (H3): A profile of medium-low performance, high viability, and medium-low well-being (i.e., Groupy) will be identified

Strained Teams. In this hypothesized profile the team environment is a high-pressure system, which results in significant costs to the team. Specifically, achieving performance objectives comes at a cost to the ability to perform at a team’s highest level, and considerable costs to the well-being of individuals on the team, as well as the viability of the team as a whole.

This team effectiveness profile aligns with previous theory about the high cost of productivity (e.g., Siefert et al., 1991) including the increased likelihood of burnout, stress, and anxiety, and the decrease of job satisfaction for highly challenged teams.

The human resource management (HRM) literature has recently identified that higher work intensification/involvement due to increased work demands may threaten well-being and satisfaction of employees (Guest, 2017). While high performance HRM systems which include practices such as skill training, performance appraisal, participative decision making, and information sharing activities, are designed to create a 'win-win' or 'mutual gains' situation in which employees are given resources to enhance well-being and in turn perform better (De Voorde et al., 2012; Ogbonnaya & Valizade, 2014), the research has indicated that this is not always the case (e.g., Macky & Boxall, 2008; Ogbonnaya & Messersmith, 2017).

High-performance work systems (HPWS) and their associated HRM practices are often celebrated for equipping employees with essential resources, leading to enhanced performance (e.g., Appelbaum et al., 2001; Shin & Konrad, 2014) and greater job satisfaction (e.g., Ho & Kuvaas, 2019; Messersmith et al., 2011), but these benefits can come at a significant cost. The high demands of HPWS can elevate stress and workload, resulting in conflicting outcomes. While aiming for peak performance, organizations may inadvertently compromise employee well-being (e.g., Fan et al., 2014), job satisfaction (e.g., Macky & Boxall, 2008), and retention (e.g., Jensen et al., 2013). This paradox arises because methods designed to boost organizational performance can negatively affect employees' physical and psychological health. The strict regulations inherent in HPWSs can exacerbate stress and detract from employees' overall well-being (Han et al., 2019; White et al., 2003).

This research area, which examines the competing views that additional 'positive' work

demands can both help and hinder different worker outcomes (i.e., well-being vs. performance), is aligned with the comprehensive examination of challenge stressors ('good' stressors) and hindrance stressors ('bad' stressors) (Cavanaugh et al., 2000, Parker et al., 2017a).

The challenge/hindrance stressor literature details that people that are given appropriate challenges such as higher workload, time pressure, and responsibility experience more career success, higher performance, more positive job attitudes, and less turnover (Parker et al., 2017b; Podsakoff et al., 2007). However, similar to the HRM literature, researchers have found that while the higher amount of task challenge often has a positive effect on both satisfaction and motivation (Campion et al., 2005), too much challenge has the reverse effect, causing overload and work stress (e.g., Abdel-Halim, 1978; Jamal, 1984, Parker et al., 2017b). Relatedly, if challenges such as hindrance stressors (e.g., lots of busy work, emotional stress) are also present in the job, team members may experience less success, lower performance, negative job attitudes and higher turnover (Parker et al., 2017a; Podsakoff et al., 2007). With Strained teams, a presence of either too many challenge stressors, too many hindrance stressors, or both, may negatively affect the team as any sustained stress, good or bad, has the potential to lead to burnout (Crawford et al., 2010; Podsakoff et al., 2007). In a team that may not have enough resources to handle the stress (i.e., not enough skill, time constraints, too small in size), members may be required to put more time and energy into their work. This may take a toll on the energy resources of individual team members, leading to cynicism and withdrawal (Maslach & Jackson, 1981), and higher turnover even in the midst of being higher performing (Siefert et al., 1991).

Hypothesis 4 (H4): A profile of high performance, low viability, and low well-being (i.e., Strained) will be identified**.**

Dysfunctional Teams. In stark contrast to Thriving teams, Dysfunctional team profiles

are characterized by low levels of performance, viability, and well-being. The presence of low performing teams in an organization is supported with prior theorizing in which low performing teams were hypothesized in two of the five Quigley et al.'s (2018) team performance archetypes. The authors suggest that Dysfunctional teams are likely to emerge out of weak situations such as lack of an organizational strategy or extremely poor team structure (Quigley et al., 2018), suggesting that the team context simply does not provide the support necessary for success (see also Hackman, 2012). Relatedly, it is possible that teams started off positively, but with low-quality performance strategies (e.g., Mathieu & Rapp, 2009), could not create any momentum (Quigley et al., 2018). It is likely that teams that are low performing have an increased amount of stress on both the team dynamic as well as the individuals, creating a chaotic and conflict-heavy team environment. The literature offers evidence that hindrance demands such as relationship or process conflict in combination with reduced performance may have a 'de-energizing' effect, resulting in even lower performance over time, the subsequent attrition of team members (Gerbasi et al., 2015) and burnout (Crawford et al., 2010). This combination of a profile low in performance, viability and well-being is consistent with past research that has demonstrated that both performance and affective team effectiveness indicators have similar relationships to team inputs (e.g., Janz et al., 1997) and team processes (e.g., LePine et al., 2008), and so a profile low in all team outcome variables is to be expected. These are teams that are at risk or are "blowing up", so to speak. Indeed, O'Neill and colleagues have always found a dysfunctional profile for the management of team conflict, suggesting a small portion of teams might also be performing in a uniformly poor manner (e.g., O'Neill et al., 2018; Shoen et al., in press). As these teams employ valuable team resources to manage the chaotic environment of the team, brought on for a variety of possible reasons, there is likely a vicious cycle of poor performance, low viability and

low well-being which continues to feed into itself, creating a very unstable profile.

Hypothesis 5 (H5): A profile of low performance, low viability, and low well-being (i.e., Dysfunctional) will be identified.

Unlikely Profiles. It is unlikely that we would find profiles in which higher individual well-being was not strongly and positively related to either team performance or team viability. This is because high individual motivation, learning and growth (well-being) would likely be either associated with tangible outcomes indicating that learning is occurring by achieving performance goals (e.g., Cotton & Hart, 2006) or through positive team dynamics (viable teams) (e.g., Costa et al., 2015) that are able to influence well-being, regardless of performance. Similarly, we would likely not see high levels of viability along with extremely low levels of performance. It is likely that teams would, at least to some degree, use current performance as a factor in considering if they are increasingly capable of working together as a group in the future (Bell & Marentette, 2011).

Team Effectiveness Profile Covariates: Conditions and Not Causes

As described above, this study hypothesizes that five team typologies would be identified in the data: Thriving, Moderate, Groupy, Strained, and Dysfunctional. Additionally, I proposed that each typology has its own distinct pattern of correlates which vary in levels for each profile.

It has been theorized that team enabling conditions should perhaps receive the most focus as these factors are the most 'useable' for real organizations (see also Hackman, 2012) and are more 'diagnostic' than team processes. In the literature team conditions have demonstrated large influences both directly on outcome variables (e.g., Campion et al., 1993, 1996; Wageman et al., 2001) as well as indirectly through important team emergent states. For example, team conditions such as high-performance managerial practices (e.g., reward contingencies),

leadership, organizational support (e.g., material resources) and work design characteristics (e.g., interdependence, task significance) are some of the most robust and long-standing set of variables that predict the most variance in team emergent states (Parker et al., 2017a) including empowerment (Seibert et al., 2011) and psychological safety (Frazier et al., 2017). These states, in turn, are highly predictive of performance (Seibert et al., 2011) and attitudinal outcomes (Frazier et al., 2017). As an additional benefit, these factors support a 'theory of action' by identifying design factors (separate from the task specifics themselves) that have the potential to be manipulated by team members or the people who are responsible for designing and managing the team (Cohen & Bailey, 1997; Hackman, 2012), making this framework useful to real organizations.

Therefore, to validate the functional implications of each team effectiveness profile and to better understand what promotes each typology, I measured the dimensions of team enabling conditions as proposed by Hackman (1990, 2012) and which have emerged as some of the most powerful conditions in promoting group effectiveness (Hackman, 2002; Wageman et al., 2001, 2005) including (a) real team (b) compelling purpose; (c) right people; (d) clear norms of conduct; (e) supportive organizational context; and (e) team-focused coaching (Hackman, 2012). The six enabling conditions are described below (as per Hackman, 2002, 2012; Wageman et al., 2005)

Real Team. A real team functions as an integrated social system with distinct boundaries, interdependent tasks, and shared accountability for outcomes. Stability in membership is crucial, allowing team members to develop effective working relationships and adapt to collaborative tasks. This involves having clearly defined membership, interdependence for common objectives, and stable composition to foster cohesion and learning. Please note that his condition

was assessed prior to team involvement in the present study, and that all teams in this research were considered a ‘Real Team’ as per Hackman (2002).

Compelling Purpose. A compelling purpose is critical in motivating and directing team members towards achieving a collective goal. This purpose must be challenging, clearly defined, and significant, ensuring it engages team members and influences decisions regarding team structure, support, and coaching. A well-articulated purpose motivates members to extend their capabilities and stay aligned with the team's objectives.

Right People. The composition of a team plays a vital role in its effectiveness. Teams should be optimally sized and composed of members with the necessary expertise and collaborative skills. A balanced diversity within the team is essential, avoiding the drawbacks of both overly large teams and excessive homogeneity, which can impede teamwork. Members should possess both technical knowledge and interpersonal skills to contribute effectively to the team's goals.

Clear Norms of Conduct. Establishing clear norms of conduct is essential for delineating acceptable behaviors within the team. These norms streamline the management of member behavior and promote efficient task execution. Well-defined norms encourage ongoing performance monitoring and the adoption of appropriate work strategies, enhancing overall team functionality.

Supportive Organizational Context. A supportive organizational context provides the foundational resources and support necessary for team effectiveness. This includes a reward system that acknowledges and incentivizes excellent team performance, an information system that delivers critical data and tools, and an educational system that offers necessary technical and educational support. Such a context ensures teams have access to the resources needed to

perform at their best.

Team-Focused Coaching. Leader helpfulness through effective coaching is instrumental in helping teams navigate challenges and leverage their strengths. Coaching should focus on minimizing process losses and maximizing gains, providing guidance and support tailored to the team's needs. Competent coaching is especially beneficial when other enabling conditions are met, enhancing the team's capacity to achieve its objectives.

In a study by Wageman et al. (2001), the researchers found that these structural team conditions accounted for 37% of variation in team performance. These six conditions have been supported in other literature, most notably in Campion et al. (1993, 1996) who examined the relationships between work outcomes and work group characteristics. In their study the authors found that five critical team design themes including job design, composition, interdependence, context, and process, were all moderately and positively related to at least one measured outcome, such as productivity, employee satisfaction, or manager ratings (Campion et al., 1993, 1996). Aside from Hackman's (2012) team norms factor, these themes encompass all of the elements from Hackman's (1990, 2012) model. Cohen et al. (1996) also found, using structural equation modelling, that team conditions influenced multiple team outcomes. For example, the authors found that employee involvement context, such as access to information, recognition, and resources, explained 41% of the variance in manager rating of performance and 32.5% of the variance in quality of work life for self-managed teams. In traditional teams, they found that group task design, such as a team autonomy, task variety, and task identity explained 14.4% of the variance in quality of work life and 37% variance in absenteeism (Cohen et al., 1996), likely signalling higher turnover intentions and lower team satisfaction.

Examining the design features of a team and how this facilitates performance in different

team effectiveness profiles is a logical first step in identifying associations between inputs and team outcomes and may uncover if any of the design factors are more important than others in differentiating profiles. For example, in this research project investigated if having the right people (e.g., skill, right team size) makes a difference in terms of how many outcomes a team can realistically satisfy, and if leadership has an effect on all profiles or only for certain profiles. Therefore, to explore how conditions explain profile membership, the following research question was developed:

Will team conditions explain significant variance in profile membership?

Chapter 3: Method

Sample and Procedure

Leader and Team Member Matched Sample

This study included a total of 55 intact work teams comprising 235 individual team members and their 55 corresponding team leaders. These teams represented diverse sectors: Energy (n = 6), Sales (n = 17), University Administration (n = 20), and University Athletic Coaching Staff teams (n = 12). Inclusion criteria required teams to be currently intact, have been a team for at least six months, and consist of three or more members, including both team members and their respective team leader.

Recruitment Process

The recruitment process was facilitated through convenience sampling techniques deployed across Canada from April 2022- January 2024, leveraging digital platforms including LinkedIn, direct email correspondence, and telephone outreach to engage prospective participants (see Appendix A for scripts). I initiated all opening communication to team leaders

via email or phone and followed a script where we confirmed that (a) teams were interdependent in their work, and (b) were a team of two or more team members and one team leader.

Once team leaders expressed interest, a summary of the study process was emailed to them along with a link to the current study and a letter of information, which provided study details and Research Ethics Board (REB) information. This email was sent directly by me or by a research assistant. At this point, team leaders were asked to provide email addresses of their team members to facilitate study participation. As a motivational incentive, they were offered a comprehensive summary of study outcomes and findings, which were delivered within one month of survey completion. A study coordinator then invited team leaders to participate in the voluntary online survey that included study details, a consent form, and survey questions which included demographic multiple-choice questions and a single question to rate team performance: "On the sliding scale below, please rate the overall performance of your team." Each team leader's corresponding team members were emailed a link to a more extensive voluntary survey which included study details, a consent form, and a multiple-choice survey exploring diverse facets of team dynamics, individual well-being, and team processes (see Appendix B-F for the full surveys).

Of total teams surveyed, eight teams had no team member responses, representing 11.4% of the total number of teams in which surveys were sent. For the remaining teams who had at least one participant, the response rate ranged from 9.1% to 100%, with 48 out of the 55 responding teams having over 50% response rates and 30 out of 55 teams having over a 75% response rate. The resulting overall mean response rate for all participating teams (i.e., at least one respondent) was 72.8%.

To ensure the quality of data collected from the surveys, measures were implemented to identify and exclude teams with insufficient information, as well as individual participants who displayed careless response patterns. First, team and leader surveys were cross-referenced and assessed for eligibility. Teams for which team leaders could not be matched with team members (i.e., either the team leader did not complete a survey, or fewer than one team member completed a survey), or which did not have at least one team member who completed full responses for the three outcome variables, were excluded from analysis (n = 15). Following the team exclusion criteria, individual participants were excluded from subsequent analytical procedures based on a combination of attention check failures and displayed carelessness of responses. Participants who failed the one attention check (n = 21) were investigated with respect to responses to other items on the questionnaire to examine if responses were careless (i.e., repetition, nonsensical responses). Participants who both failed the attention check and exhibited careless responding were excluded (n = 1). In total, three team leaders and ten team members were excluded from the analysis based on careless responses (n = 1) and unmatched samples (n = 12). The resulting sample comprised 290 respondents in total, including 55 Leaders and 235 Team Members (median number of respondents per team = 4, M = 4.36, SD = 2.88).

Demographic Information

Team Member participants were asked to complete several demographic questions, including age bracket, gender, number of years they have been a part of the team, and functional area. Leaders indicated their age bracket, the number of years they had managed or supervised the team, and their functional area.

Age ranges for Leaders (n = 55) in the study included 26-41 years (23.6%), 42-57 years (69.1%), and 58-67 years (7.3%). Leaders reported an average role tenure with their respective teams of 8.33 years (SD = 4.24).

Age ranges within the Team Member sample included 18-25 years (1.3%), 26-41 years (40.9%), 42-57 years (42.6%), 58-67 years (13.2%), and 68+ years (0.4%). Among the participants, 28.9% identified as men, 66.8% identified as women, 1.3% indicated that they did not have an option that applied to them, and 1.7% preferred not to say. Team members reported an average role tenure with their respective teams of 10.36 years (SD = 6.92).

Ethical Considerations

Participants indicated their consent on an informed consent form before completing the survey. The study was approved by the Research Ethics Board (REB).

The survey design, recruitment, and administration included measures to ensure inclusivity, accessibility, and participation through the following actions: (a) participants were recruited from diverse teams across various organizations, representing different roles, responsibilities, and industries to ensure broad representation; (b) email invitations were sent individually to team members rather than through leaders to ensure confidentiality and that every person on the team was included; (c) survey items chosen were as simple as possible so they did not require specific levels of education or prior knowledge, reducing barriers to participation; (d) demographic questions included a “prefer not to say” option to respect privacy; (e) confidentiality was emphasized through multiple communications, including the email invitation, the informed consent form, and reminders at the start of the survey; and (f) flexible completion timelines and extensions were offered to accommodate varying schedules and circumstances.

These measures intended to support participation while promoting accessibility, inclusion, and comfort for individuals with diverse circumstances and backgrounds.

Measures

As the study utilized a sample of working leaders and team members from the field, efforts were made to abbreviate measures whenever feasible, being mindful of the potential impact of survey length on study dropout rates. Three outcome variables were measured for the primary analysis: Performance, Team Viability, and Individual Well-Being.

Performance Rating

Team performance ratings were acquired through Leader ratings using the relative percentile method (RPM) (Goffin et al., 1996, 2009; see Appendix C) and adapted to a team referent. This method involved rating the team in relation to other teams in the organization. The RPM is intended to invoke a mindset of social comparison, and research has demonstrated that this method provides more valid ratings than non-comparative absolute ratings (Goffin et al., 2009). Leaders were asked to indicate their judgment of the performance of their team by moving the slider on the 100-point percentage scale numbered line. A typical team of average effectiveness would appear in the middle of the ranking, with 50% of teams more effective than average and 50% less effective.

Team Viability

Team Viability was assessed using Resick et al.'s (2010) Team Viability Scale (see Appendix D), a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), which includes items such as "I feel like I get a lot out of being a member of this team" and "I wouldn't hesitate to participate on another task with the same team members." The original seven-item scale was modified to five items to accommodate survey length and demonstrated satisfactory

reliability (α =.78). Interrater reliability, intraclass correlations ICC(1) and ICC(2) for Viability supported aggregation at a team level, ICC(1) = .23 and ICC(2) = .55. Survey responses were averaged for each participant, aggregated by calculating the mean of individual responses to represent the team score on Viability as per the direct consensus composition method (Chan, 1998).

Individual Well-Being

Individual Well-Being was assessed using the validated Workplace Thriving Scale (Porath et al., 2012), a Likert scale ranging from 1 (Strongly Disagree) to 6 (Strongly Agree) which is used to measure optimized growth and well-being in the workplace. The Workplace Thriving scale (see Appendix E) was adapted to six items to account for survey length, with adaptations to the team referent (i.e., "To what extent do you agree with the following statements about your own individual needs on this team?"). The scale measured individual affective reactions of being a part of the team through items such as "I see myself continually improving" (learning latent factor) and "I have energy and spirit" (vitality latent factor). Cronbach's alpha coefficient was used to test both the reliability and internal consistency of the six-item Workplace Thriving Scale (α = .86). Interrater reliability, intraclass correlations ICC(1) and ICC(2) supported aggregation at a team level, ICC(1) = .17 and ICC(2) = .44. Survey responses were averaged for each participant, aggregated by calculating the mean of individual responses to represent the team score on Well-being as per the direct consensus composition method (Chan, 1998).

Profile Covariates

The covariates of the team profiles were measured using subscales of the Team Diagnostic Scale (Wageman et al., 2005, see Appendix F). This scale was designed to assess six

categories of enabling conditions within Hackman's (2002, 2012) team effectiveness framework (α = .64-.94). The team member survey included five conditions as covariates of team effectiveness. The goal was to encompass a comprehensive set of items; however, the survey's duration was limited to under 10 minutes due to field data collection constraints, necessitating careful item selection. This selection process was conducted in collaboration with my academic supervisor to ensure content validity while maintaining the survey's integrity and managing its length.

In the current study, five categories were measure in the survey and the sixth category, 'real team' was assessed *prior* to team involvement in the research as a basic qualification and condition that had to be met by each participant to participate.

The items measured and analyzed from the scale in this study included the following: (a) purpose, (b) 'right' people, (c) clear norms, (e) leader coaching, and (f) supportive organization. Items from each scale were chosen to reflect the array of structural influences that may affect teams and number of items reflected a need to have a survey was appropriate in length for this population of working professionals.

Purpose. In this study, the clarity and shared understanding of the purpose of a team was assessed using 5 items from Wageman et al.'s (2005) Team Diagnostic Survey. The Likert scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale included items such as "The team's purposes are so challenging that members have to stretch to accomplish them" and "The team's purposes are specified so clearly that all members should know exactly what the team exists to accomplish." Responses were averaged and aggregated at the team level. The reliability of the scale in this study was found to be relatively low (α =.56) compared to previous research (α =.68-.80, Wageman et al., 2005), which could be partially due to the fact that one item was

removed to manage survey length. Interrater reliability, intraclass correlations ICC(1) and ICC(2) supported aggregation at a team level, ICC(1) = .22 and ICC(2) = .53.

Right People. 'Right People' was measured using a 6-item Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), assessing three key dimensions: team stability, team size, and team skills. Example items included, "This team is quite stable, with few changes in membership" (team stability), "This team is just the right size to accomplish its purposes" (right size), and "Members of this work team have more than enough talent and experience for the kind of work that we do" (right skills). Responses were averaged and aggregated at the team level. The reliability for the Right Skills scale in this study was high ($\alpha = .93$). Reliability estimates were not calculated for Stability, which was measured using a single item, or for Right Size, which was computed using a formula (as per Hackman, 2012; Wageman et al., 2005, see Appendix F). Interrater reliability was assessed using intraclass correlations (ICC). Results supported aggregation at the team level for Stability (ICC(1) = .43, ICC(2) = .75) and Size (ICC(1) = .40, ICC(2) = .73). However, the ICCs for Skills were considerably lower (ICC(1) = .08, ICC(2) = .25), indicating that aggregation was less appropriate for this variable.

Clear Norms. Clear norms of conduct outline acceptable and unacceptable behaviors within the team. In this study, clear norms were assessed by explicitly asking about norms regarding team expectations, behaviors towards each other, and communication practices. A 3-item Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was constructed using expert feedback from leading scholars in the field. This ensured the scale's theoretical foundation, making it a robust tool for capturing the multifaceted nature of workplace norms. Example items included "Our team has clear, agreed-upon norms about what team members can expect of each other that supports high quality teamwork." Responses were averaged and

aggregated at the team level. The reliability of the Clear Norms scale in this study was excellent (α = .94). Interrater reliability, intraclass correlations ICC(1) and ICC(2) supported aggregation at a team level, ICC(1) = .67 and ICC(2) = .89.

Leader Coaching. Leader Coaching was assessed using a 1-item measure on a Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The item used was, "Overall, how helpful is your team leader in building your team's capabilities?" Responses were aggregated at the team level. Interrater reliability, intraclass correlations ICC(1) and ICC(2) supported aggregation at a team level, ICC(1) = .34 and ICC(2) = .67.

Supportive Organization. In this study, four distinct types of organizational support were measured using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree): (a) rewards/recognition, (b) information, (c) education/consultation, and (d) material resources. The Perceived Organizational Support scale included items such as "The organization keeps its teams in the dark about information that could affect their work plans" (R) and "This organization recognizes and reinforces teams that perform well". Responses were averaged and aggregated at the team level. The reliability (α = .799) of the entire Perceived Organizational Support scale in this study was high. Interrater reliability was assessed using intraclass correlations (ICC). Results supported aggregation at the team level for Recognition and Rewards (ICC(1) = .34, ICC(2) = .67), Informational Resources (ICC(1) = .28, ICC(2) = .61), Educational Support (ICC(1) = .22, ICC(2) = .54). However, the ICCs for Resources were considerably lower (ICC(1) = .09, ICC(2) = .29), indicating that aggregation was less appropriate for this variable.

Aggregation

As the team effectiveness metrics of Viability and Well-being, along with all antecedent variables, were collected from each team member, it was crucial to aggregate these responses at

the team level. This aggregation is justified by intra-class correlations (ICCs; Allen & O'Neill, 2015). ICC[1] measures the proportion of total variance attributable to team membership, such that a value of .20 suggests that 20% of the variability is related to group membership. ICC[2] assesses the reliability of the team mean. LeBreton et al. (2023) emphasize the importance of reporting ICC[1] and ICC[2] for all lower-level variables aggregated to higher levels as these values provide insight of the extent to which individual-level scores differ across higher-level units as well as the reliability and transparency of the data.

Researchers suggest that ICC[1] values above 0.05 and 0.20 are sufficient to support aggregation (Bleise, 2000; DeShon et al., 2004). In this analysis, all ICC[1] values fell within the acceptable limits, and were computed using the sample team means for group size (*k*).

Analytic Strategy

Latent Profile Analysis (LPA)

I conducted a Latent Profile Analysis (LPA) which identifies 'hidden' subgroups, or latent classes, that share similar characteristics (Spurk et al., 2020). LPA explored heterogeneity within teams in this study by estimating classes of teams characterized by patterns of team-level performance, viability, and well-being. This approach allows for the investigation of multiple factors simultaneously while mitigating the effects of multicollinearity that is considered problematic in teams research (e.g., Mathieu et al., 2008). The primary goal of LPA is to identify meaningful and interpretable latent profiles rather than to maximize classification certainty alone (Morin et al., 2020; O'Neill et al., 2018; Spurk et al., 2020).

The analysis was conducted using R version 4.0.3 within the RStudio environment version 1.3.1093. The 'tydyLPA' package (Scrucca et al., 2023) was selected for this analysis

due to its capability to work with continuous indicator variables and identify the best-fitting model structure.

Model Fitting and Selection

To determine the optimal number of latent profiles, I began by specifying a single-profile model and incrementally added profiles using the 'mclust' command in R (Scrucca et al., 2023), following the method recommended by leading LPA scholars (e.g., Pastor et al., 2007; McLarnon et al., 2015; Morin et al., 2020). This iterative approach ensures that models are systematically compared to identify solutions that balance statistical robustness with theoretical and practical interpretability (Spurk et al., 2020).

To select the best model for LPA, multiple criteria must be considered to collectively ensure the model's fit and interpretability (McLarnon et al., 2015; Morin et al., 2020; Nylund et al., 2018). LPA scholars, such as Nylund et al. (2007) and Spurk et al. (2020), stress the importance of balancing statistical fit indices with meaningful profile distinctions. Nylund et al. (2007) demonstrated that the Bayesian Information Criterion (BIC) consistently outperforms other fit indices, such as the Akaike Information Criterion (AIC), particularly in smaller samples. Similarly, Spurk et al. (2020) emphasized the need to complement numerical criteria, like BIC and , , with theoretical judgment to ensure profiles are not only statistically optimal but also actionable and meaningful.

To select the best model for LPA, multiple criteria must be considered to collectively ensure the model's fit and interpretability (McLarnon et al., 2015; Morin et al., 2020; Nylund et al., 2018). In this study, model fit was evaluated using several criteria (see Table 1). This included Log-Likelihood (LL; Ferguson et al., 2020), Bayesian Information Criterion (BIC; Schwarz, 1978), Akaike Information Criterion (AIC; Akaike, 1987), sample size-adjusted BIC

(SABIC; Sclove, 1987), Consistent AIC (CAIC; Bozdogan, 1987), Integrated Completed Likelihood (ICL; Biernacki et al., 2000), and entropy.

Previous studies have emphasized the importance of balancing multiple statistical indicators with theoretical considerations when determining the optimal solution, with 67.4% considering fit values *and* content to make decisions (Spurk et al., 2020). In their review, Spurk et al. (2020) examined 46 LPA studies and found that 98.7% reported using multiple fit indices to evaluate models, with BIC emerging as the most consistently applied (78.3%) and preferred criterion due to its robustness and parsimony. SABIC was also commonly used (71.7%) for smaller sample sizes, alongside measures like entropy (67.4%), AIC (58.7%), and CAIC (30.4%) to ensure classification precision and the Lo-Mendell-Rubin (i.e., LMR; 58.7%) or bootstrapped likelihood ratio test (i.e., BLRT; 60.9%) to test significant improvements between models. Posterior classification probabilities were also used about half of the time (47.8%).

In this study, I adhered to these best practices by evaluating model fit using multiple criteria including BIC, SABIC, CAIC, entropy, and the LMR test. These criteria were assessed not only by their numerical values but also through elbow plots that visually demonstrate the point at which adding more classes no longer significantly improved model fit (Morin & Marsh, 2015). SABIC was prioritized in this study as the most reliable indicator due to the small sample size, consistent with Spurk et al.'s (2020) findings. Entropy values, with a threshold greater than 0.8, are commonly used to ensure high classification precision (Marsh et al., 2009), though values close to 0.7 have been viewed as acceptable (see Spurk et al., 2020).

Interpretability of the profiles was the final factor in model selection, as LPA model selection should provide profiles that are useful that have meaningful distinctions between groups (Marsh et al., 2009). This comprehensive approach ensured that the selected model was

both statistically robust and practically meaningful. Decreasing values for LL, BIC, ICL, SABIC, CAIC, and entropy, along with a significant LMR test p-value, evaluation of the elbow plot and while interpretability and utility of the profiles generated (i.e., consistent with the literature) was critical in informing model selection.

Table 1

Model Fit Indices for Latent Profile Analysis

Name	Definition	Interpretation
Log-Likelihood (LL)	This measure assesses model fit by quantifying the degree of agreement between the model and the observed data (Nylund et al., 2007). Comparing LL values across models helps determine the optimal number of latent classes.	Decreasing LL values indicate better fit, though LL typically decreases as the number of profiles increases.
Bayesian Information Criterion (BIC)	BIC balances model fit with complexity, penalizing models with more parameters. A lower BIC value indicates a better fit (Schwarz, 1978). Choosing the model with the lowest BIC to determine a preferred solution is the most commonly used approach in latent class analysis.	Lower BIC values indicate better fit.
Integrated Completed Likelihood (ICL)	ICL also balances goodness of fit with model complexity, combining the goodness of fit (i.e., BIC) with a penalty term for model complexity, reflecting the uncertainty about the true values of those parameters given the observed data	Lower ICL values indicate better fit.
Sample Size-Adjusted BIC (SABIC)	SABIC is an adaptation of the Bayesian Information Criterion (BIC) that adjusts for sample size, making it more accurate for small samples. It imposes a stricter penalty for model complexity, helping to prevent overfitting.	Lower SABIC values indicate better fit.
Consistent AIC (CAIC)	CAIC modifies the traditional AIC to provide more consistent model selection criteria, particularly penalizing model complexity more heavily.	Lower CAIC values indicate better fit.
Lo-Mendell-Rubin Test (LMR)	This test compares the fit of a model with k profiles to a model with k-1 profiles. A significant p-value (less than 0.05) indicates that the k-1 profile model should be rejected in favor of the k profile model, showing a significant improvement in fit (Lo et al., 2001).	A significant p-value (less than 0.05) indicates a significant improvement in fit, favoring the model with k profiles over the model with k-1 profiles.

Note. Fit indices descriptions as per Spurk et al. (2020).

Multinomial Logistic Regression for Antecedents

Following the identification of the optimal LPA model I examine the nomological network (i.e., team conditions) associated with team effectiveness profiles including purpose,

right people, norms, supportive organizational context, and leadership across different team memberships.

To investigate the relationship of team conditions I followed a three-step approach in R, which included (a) building a latent profile model, (b) assigning teams to profiles based on their posterior class membership probabilities, and (c) estimating the association of team conditions to latent profiles with multinomial logistic regression (Nylund-Gibson & Choi, 2018; Vermunt, 2010) using the 'multinom' command in R. The 3-step method adjusts for the uncertainty in class membership and compares each profile to all other profiles (k-1 comparisons, where k is the total number of profiles). The multinomial logistic coefficients obtained from this analysis indicate the likelihood of belonging to one profile versus another. These coefficients are presented as odds ratios (ORs), which reflect the change in the likelihood of membership in a specific profile compared to referent profile for each unit increase in the predictor (Morin et al., 2016; Nylund-Gibson & Choi, 2018). This 3-step process was informed by current research in the field (e.g., Knight et al., 2022; Morin et al., 2016) and adhered to best practices in latent profile analysis as recommended by LPA scholars (e.g., Ferguson et al., 2020; Hofmans et al., 2020; Nylund-Gibson & Choi, 2018; Vermunt, 2010).

Chapter 4: Results

Latent Profile Analysis

Descriptives and Zero-Order Correlations

Table 2 presents the descriptive statistics and zero-order correlations between Viability, Performance, and Well-being. The significant positive correlation between Viability and Well-being ($r = .35$, $p < 0.05$) suggests a moderate relationship between these two variables in contrast with the relationship between Team Performance with Viability ($r = -.03$) and Well-being ($r = .11$) which are nonsignificant.

Table 2

Intercorrelations Between Viability, Team Performance, and Well-being

	1	2	3	*M*	*SD*
1. Viability	1.00	.35*	-.03	4.22	.55
2. Well-being	.35*	1.00	.11	4.76	.65
3. Team Performance	-.03	.11	1.00	75.09	11.63

Note. Pearson correlation coefficients, means and standard deviations among Viability, Well-being, and Team Performance, $n = 55$ *p < 0.05.

Model Fit Indices and Decisions

To determine the optimal number of latent profiles, I evaluated models with one to six clusters using several key fit indices. These indices help assess the model's accuracy and complexity, guiding the selection of the most appropriate number of clusters. Research indicates that the Bayesian Information Criterion (BIC), the Sample-adjusted BIC (SABIC), the Akaike Information Criterion (AIC) or Consistent Akaike Information Criterion (CAIC), and the Bootstrap Likelihood Ratio Test (BLRT) are among the most effective model selection indices

(see Henson, Reise, & Kim, 2007; McLarnon, 2022; Nylund et al., 2007, O'Neill et al., 2016; Spurk et al., 2020). However, researchers generally use a comprehensive approach to assessing model fit, integrating many fit statistics into their final decision (see Spurk et al., 2020 for a detailed review). These indices collectively assess model fit, penalize for model complexity, and evaluate classification quality.

Table 3 presents the model fit indices for the Latent Profile Analysis (LPA). To determine the best fit, I considered all fit criteria, prioritizing SABIC and CAIC as recommended for smaller samples (Hofmans et al., 2020; Nylund et al., 2007; Spurk et al., 2020). While BIC is often regarded as the best criterion for model evaluation (Masyn, 2013; Nylund et al., 2007), SABIC, a variant of BIC, includes an adjustment that penalizes model complexity more heavily for smaller sample sizes, making it particularly useful for this study (Morin et al., 2016. Spurk et al., 2020).

Table 6 presents the results of the fit for the six tested models. I evaluated the models to determine the optimal number of clusters within the dataset, with each model representing a different number of clusters extracted, ranging from one to six. Models 1 and 2 had fit statistics that were far worse than all of the subsequent models, and they were subsequently excluded as the best fitting model. The three-cluster model demonstrated a good fit in terms of ICL (220.972) and CAIC (241.100) and the entropy for the three-cluster model was 0.999, indicating high classification quality.

However, the four-cluster model outperformed the three-cluster model in most of the other critical fit indexes: LL (217.898), BIC (217.898), AIC (163.700) and SABIC (133.055), while maintaining a high entropy of 0.881. The LMR test for the four-cluster model indicated a significant improvement over the three-cluster model ($p < 0.001$), but the weight of profiles (i.e.,

number of teams) was very unbalanced indicating poor separability in the clustering with one cluster encompassing 42 teams (i.e., 76.4% of the teams in the study).

Despite many improvements found in the four-cluster model, the five-cluster model presented an intriguing alternative. Although the BIC (225.911) and ICL (236.620) for the five-cluster model were marginally higher than those for the four-cluster model, indicating a slightly worse fit in these specific criteria, the AIC (159.669) and SABIC (122.214) were lower, suggesting a better fit. Additionally, the LMR test for the five-cluster model was significant (p = 0.022), confirming that the addition of the fifth cluster provided a statistically significant improvement over the four-cluster model. The model with 5 clusters, however, demonstrated moderate entropy (0.756, see Appendix G for plot) compared to the 4-cluster model. While entropy values closer to 0.8 are generally preferred to ensure strong classification quality (Clark & Muthén, 2009; Marsh et al., 2009), values slightly below this threshold are still acceptable, provided that the profiles are theoretically meaningful and supported by other fit indices (Spurk et al., 2020). However, entropy, while useful, should not be the sole determinant of model selection, as slightly lower values may still reflect interpretable and practically significant profiles when balanced with other fit indices (Spurk et al., 2020; Nylund-Gibson & Choi, 2018). This results in totality suggest that adding an additional profile (i.e., increasing the model complexity) could be justified but may not be the most optimal solution.

The model with 6 clusters was deemed overly complex as it identified a profile consisting of only one team, indicating a poorly differentiated profile. The literature on latent profile analysis (LPA) indicates that profiles representing less than 5% of the sample are often considered unreliable and potentially misleading. Their inclusion can undermine the stability and interpretability of the model and such small profiles can skew interpretations of the data (Marsh

et al., 2009; Masyn, 2013). Consequently, this model was excluded from consideration.

Table 3

Latent Profile Analyses Model Fit Results

k	df	LL	BIC	AIC	ICL	LMR	CAIC	SABIC	Entropy
1	9	497.569	497.569	479.503	497.569	-----	506.5688	469.289	-----
2	15	281.652	281.652	251.542	281.652	< 0.001	296.652	234.517	1.000
3	21	220.100	220.100	177.946	**220.972**	< 0.001	**241.100**	154.111	0.999
4	27	**217.898**	**217.898**	163.700	225.771	< 0.001	244.898	133.055	0.881
5	33	225.911	225.911	**159.669**	236.620	0.022	258.911	**122.214**	0.756
6	44	233.381	233.381	145.059	234.579	-----	277.381	95.119	0.670

Note. k = Number of Clusters; df = number of parameters estimated in each model; LL = Log Likelihood; BIC = Bayesian Information Criterion; AIC = Akaike Information Criterion; ICL = Integrated Completed Likelihood; LMR = Lo, Mendell and Rubin Likelihood Ratio Test; CAIC = Consistent Akaike Information Criterion; SABIC = Sample-Size Adjusted Bayesian Information Criterion; Entropy = Entropy. Dashes indicated an absence of results[1]. Best statistical fit in each index is in bold.

After assessing the model fit indices, I also considered the quality of profile assignment, ensuring that each profile had a minimum posterior probability of 0.8 (Muthén & Muthén, 2000; Weller et al., 2020). Posterior probabilities represent the likelihood that a given team belongs to a specific latent profile based on their scores on the defining variables. Teams are assigned to profiles according to these posterior probabilities. Higher values, approaching 1.0, suggest a stronger association between the team's scores and the assigned profile (Weller et al., 2020) (e.g.,

[1] The LMR test results were not available for the 1-cluster and the 6-cluster models. The absence of results for the 1-cluster model is expected, as the LMR test requires at least two clusters for comparison. The lack of results for the 6-cluster model suggests potential issues with model convergence or overfitting. Consequently, the interpretation focuses on the LMR test results obtained for models with 2 to 5 clusters, which provide meaningful comparisons for determining the optimal number of profiles

a posterior probability of .971 indicates a 97.1% chance of belonging to that group). In the five-profile solution, posterior probabilities ranged from 88.7% to 100.0%, demonstrating clear and distinct classification between profiles.

A key part of the process of selecting a best fitting model is to balance statistical fit with theoretical and practical relevance. In other words, it is defensible to pick a lower or higher number of profiles on the basis of interpretation (Oberski, 2016). While statistical indices such as SABIC, CAIC, and the LMR test were critical to model evaluation, the interpretability and utility of the final solution were equally important. In other words, it is defensible to pick a lower or higher number of profiles on the basis of interpretation (Oberski, 2016). After careful evaluation, I ultimately selected the 5-profile model as the best fitting model for the data based on statistical fit (i.e., lower SABIC, AIC, and significant LMR), posterior probabilities, and theoretical relevance as per previous research and literature (see *H1-H5)*.

Five Profiles of Team Effectiveness

The Latent Profile Analysis (LPA) identified five distinct team effectiveness profiles based on Performance, Viability, and Well-being. I named each profile based on its key characteristics, which involved considering both quantitative and qualitative aspects of the profiles, including the mean levels of the indicators (see Table 4), the overall shapes of the profiles, and the differentiation of indicator variables within each profile (Meyer & Morin, 2016; Spurk et al., 2018). These profiles reflect varying structures of team effectiveness and were labeled as follows: (1) Surviving (n = 8, 14.55%), (2) Striving (n = 8, 14.55%), (3) Mediocre (n = 31, 56.4%), (4) Thriving (n = 4, 7.27%), and (5) Groupy (n = 4, 7.27%). As illustrated in Figure 5, the profiles show distinct patterns across the three indicators.

Table 4

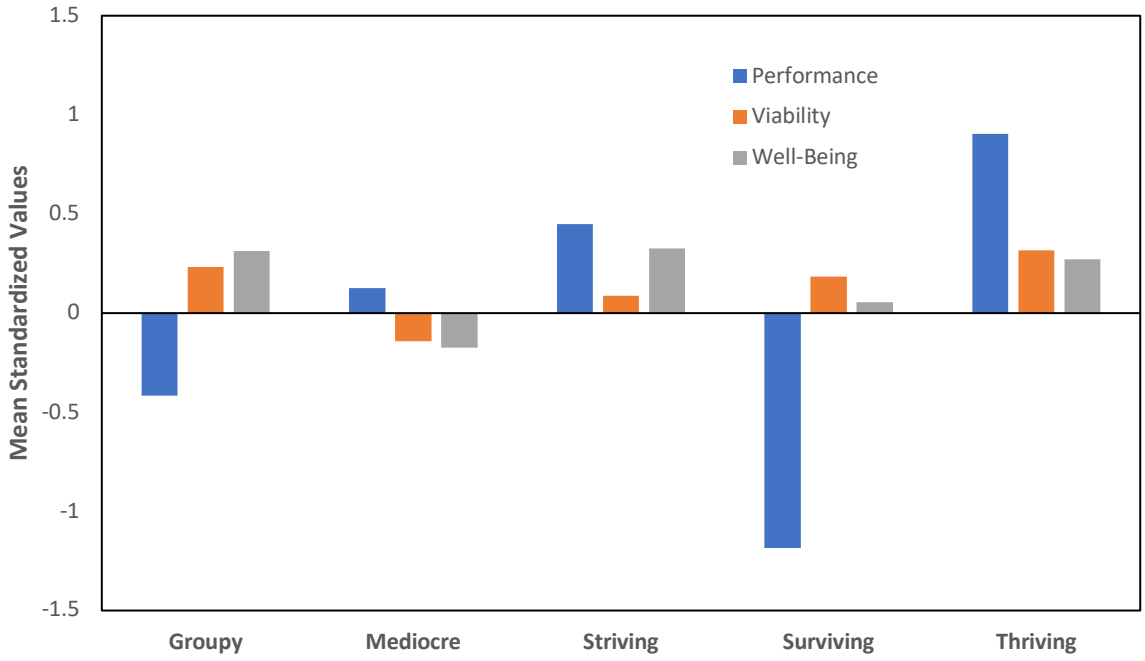
Means of the Variables for each Profile Estimated from the Model with 5 Clusters

	Groupy	Mediocre	Striving	Surviving	Thriving
N	4	31	8	8	4
M Viability	.23	-.14	.09	.18	.32
M Well-Being	.31	-.17	.33	.06	.27
M Performance	-.42	.13	.45	-1.18	.90

Note. N = number of teams in each profile. This table presents the standardized profile means for Viability, Well-being, and Performance across five identified profiles.

Figure 5

Team Effectiveness Latent Profiles



Note. The figure illustrates the mean standardized values for Performance, Viability, and Well-being across five team effectiveness profiles identified through Latent Profile Analysis (LPA): Groupy, Mediocre, Striving, Surviving, and Thriving.

Thriving Profile. Despite its relatively small representation, this profile exemplifies teams with exceptionally high Performance (*M* = .90), along with elevated levels of Viability (*M* = .32) and Well-being (*M* = .27). This profile characterizes the ideal model of team effectiveness and demonstrates that it is possible to achieve these three criteria concurrently. The hypothesis for the Thriving profile (*H1*) was fully supported.

Groupy Profile. This profile was medium-low in Performance (*M* = -.42) and high in Viability (*M* = .23) as hypothesized. However, Groupy teams were higher in Well-being than expected (*M* = .31) rather than the anticipated medium-low relative to other teams. Therefore, the hypothesis for the Groupy profile (*H3*) was partially supported. These results suggest that there are teams that perceive themselves as a strong and healthy unit, even with low managerial performance evaluations.

Striving Profile. Initially hypothesized as 'Strained', this profile includes teams high in Performance (*M* = .45) and low in Viability (*M* = .09), but with higher levels of Well-being than predicted for the 'Strained' profile (*M* = .33). These teams are effective and healthy, though not as exceptional in terms of team viability as the Thriving profile. The hypothesis for the 'Strained' profile (*H4*) was partially supported.

Mediocre Profile. Initially hypothesized as 'Moderate', this profile is the most prevalent in terms of size (*n* = 31) and demonstrates average levels across all three indicators: Performance (*M* = .13), Viability (*M* = -.14), and Well-being (*M* = -.17). Therefore, the hypothesis for the Moderate profile (H2) was fully supported. Teams in this profile show balanced levels of performance, viability, and well-being, reflecting a stable but unexceptional team environment.

Surviving Profile. Initially hypothesized as 'Dysfunctional', this profile was expected to have low levels across all indicators. However, the observed data distinguished teams that were very low in Performance (M = -1.18), coupled with medium-low levels of Well-being (M = 0.06) and medium Viability (M = .18) relative to other teams. Therefore, the hypothesis for the Dysfunctional profile (*Hypothesis 5*) was partially supported. Teams within this profile are labeled as "Surviving" because their low Performance likely threatens their future as a team; however, they are not poor performers across all areas of team effectiveness.

The findings from this exploratory study align with many of the hypothesized profiles, including the anticipated number of unique profiles and many of the expected interrelationships between variables within each team type. However, there are also notable deviations, which will be examined in greater detail in the discussion.

Multinomial Logistical Regression Analysis

Covariates of Team Effectiveness Profiles

To address the research question, which investigates whether team conditions explain significant variance in profile membership, I conducted a multinomial logistic regression (MLR). This analysis examined multiple covariates to determine their impact on categorical profile membership. MLR provides a comprehensive understanding of the correlates of profile membership by assessing the impact of each covariate while controlling for others. This approach, commonly used by other LPA researchers (e.g., Knight et al., 2022; Lee & Yoo, 2020; Morin et al., 2016), incorporates covariates (i.e., team conditions) into the model to evaluate their influence on latent profiles.

In the application of MLR to latent profile analysis, a referent profile is selected, and all remaining profiles are compared against that referent profile, enabling the estimation of the

relative likelihood of membership for each profile. This approach quantifies the influence of predictor variables on the probability of membership in each profile relative to the referent. The regression coefficients represent the expected changes in the log odds of the outcome for every one-unit increase in the predictor variable. As an effect size, odds ratios (OR) are provided, which represent the change in the likelihood of membership in a comparison profile compared to a referent profile for each unit increase in the predictor. For instance, an OR of 1.2 means that each unit increase in the covariate is associated with participants being 1.2 times more likely to belong to the comparison profile compared to the referent profile (i.e., each unit increase in the predictor is associated with a 20% higher likelihood of the odds of being in the comparison profile compared to the reference profile). Conversely, ORs less than 1 correspond to negative coefficients, indicating a decreased likelihood of membership in the comparison profile. For example, an OR of 0.4 means that for each one-unit increase in the predictor variable, the odds of being in the comparison profile relative to the referent profile is 2.5x less likely (i.e., decreases by 60%).

The results of the MLR use the Thriving profile as the referent profile, however, all comparisons (e.g., Striving vs. Surviving) for covariates may be found in Appendix H.

Control Variables

In this study, team size was included as a variable in all the models to adjust the covariate estimates, accounting for the number of team respondents for the effect of each covariate on Latent Profile membership. Table 5 presents descriptive variables and zero order correlations for all research variables including team outcomes and team condition variables (i.e., covariates) and Table 7 presents Cronbach's alpha and reliabilities for all study variables..

I did not control organizational type due to theoretical considerations and empirical findings from a preliminary analysis. The primary focus of this research was to explore the relationship between team structure variables and latent profile membership, and I wanted the analysis to remain tightly focused on the core team structure variables that are hypothesized to directly impact team profiles. However, to validate this decision, I performed a chi-square test of independence and a multinomial logistic regression to examine the association between organizational type and team profiles. The results from these analyses provided evidence that organizational type did not significantly influence team profile membership. A chi-square test of independence revealed no significant association between organizational type and team profiles, $\chi^2(16) = 13.20$, $p = .658$. The p-values from the multinomial logistic regression (all p-values > oleCtte_.05) further indicate no significant association between organizational type and team profiles. These empirical findings justified the decision not to control for organizational type in the multinomial logistic regression analysis.

Interpretation of MLR Results

The MLR conducted in this study was exploratory, with no specific hypotheses being tested; in other words, no predictions were made about which covariates may regress on each team profile. Therefore, nature of this analysis aimed to uncover patterns of relationships (i.e., direction, potential strength of effect), so even significant relationships should be interpreted with caution due to low power and no apriori effect size being calculated.

For interpretation, the odds ratios, confidence intervals (CIs), and p-values offer valuable insights for future research to be built upon. Odds ratios are a measure of the strength of the association between the covariate and the Latent profile. If confidence intervals (CI) include 1.00, the OR is not significant, regardless of its value. When the CI includes 1.00, it suggests the

possibility of a null effect, indicating that there is no statistically significant relationship that exists; in other words, the null hypothesis cannot be rejected, as there is insufficient evidence to conclude that the covariates have any influence on the Latent profiles. The analysis only resulted in one effect size with statistical significance at $p < .05$ (i.e., Purpose on Mediocre). Furthermore, the confidence intervals for the variables were generally wide, indicating large variance within the sample with many CIs including 1.00, suggesting the possibility for no true effect of the covariate on profile membership. The nonsignificance of some covariates, despite large effect sizes, is likely attributable to the limited sample size and the presence of small profile groups within the analysis. A smaller overall sample makes parameter estimates less precise, leading to wider confidence intervals that may include the null value (i.e., 1.00), even when the effect is meaningful (Cohen, 1992). Additionally, the smaller profiles that emerged in the data (i.e., Groupy, Thriving) contribute limited statistical information, which could result in unstable estimates and increased variability. It is likely that the combination of a small overall sample size and the small size of certain profile groups were the strongest contributors to the observed pattern of large effect sizes with some covariates not reaching statistical significance. The findings in this study suggest the necessity for further research to determine *if* these covariates merit deeper investigation, with enough statistical power to validate the magnitude and direction of both the statistically significant associations and large effect sizes found in this study.

Table 5

Descriptive Statistics, Bivariate Correlations and Reliabilities for all Study Variables

Variable	*M*	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	
1. Team Performance	74.82	11.56	1.00	(.89)												
2. Viability	4.22	0.56	-0.03	1.00	(.87)											
3. Wellbeing	4.92	0.65	0.11	0.35*	1.00	(.91)										
4. Purpose	3.80	0.29	0.14	0.12	0.25	1.00	(.85)									
5. Stability	3.65	0.87	0.10	0.18	0.43*	0.21	1.00	(.80)								
6. Size	3.29	0.86	0.09	0.07	0.30*	-0.23	0.27*	1.00	(.75)							
7. Skills	3.75	0.57	0.20	0.24	0.50**	0.06	0.27*	0.27*	1.00	(.88)						
8. Norms	4.04	0.66	0.11	0.43**	0.64**	0.29*	0.35*	0.07	0.59**	1.00	(.86)					
9. Rec/Reward	3.49	0.78	0.07	0.19	0.58**	0.07	0.23	0.40*	0.30*	0.41*	1.00	(.83)				
10. Info	3.49	0.78	0.14	0.30*	0.67**	0.21	0.19	0.32*	0.47**	0.61**	0.69**	1.00	(.82)			
11. Education	3.52	0.76	0.12	0.19	0.52**	0.16	-0.08	0.17	0.42*	0.35*	0.43**	0.66**	1.00	(.84)		
12. Resources	3.44	0.76	-0.01	0.15	0.58**	0.11	0.33*	0.14	0.20	0.42*	0.67**	0.57**	0.46**	1.00	(.81)	
13. Lead Help	4.58	0.53	0.19	0.38*	0.43*	0.21	0.28*	0.20	0.49**	0.61**	0.44**	0.49**	0.35*	0.34*	1.00	(.90)

Note. Team level N = 55 and individual-level N = 235. This table presents the means, standards deviations, and Pearson correlation coefficients among all Team-level variables including Purpose, Stability, Size, Skills, Norms, Recognition/Reward (Rec/Reward), Information (Info), Education, Resources, and Leader Helpfulness (Lead Help). *$p < 0.05$, **$p < 0.001$.

Table 6

Multinomial Regression Results of the Effect of Covariates on Latent Profile Membership

	Surviving				Groupy				Mediocre				Striving			
	b	**SE**	**OR**	***p***	***b***	**SE**	**OR**	***p***	***b***	**SE**	**OR**	***p***	***b***	**SE**	**OR**	***p***
Purpose	-1.156	3.024	0.03	.250	-1.285	3.221	0.016	.200	-2.006*	2.802	0.004	.040	-1.958	3.045	0.003	.050
Stability	0.048	0.954	1.047	.960	-0.142	1.03	0.864	.890	-1.005	0.815	0.441	.310	-0.787	0.896	0.494	.430
Size	0.147	0.778	1.121	.880	0.853	0.859	2.08	.390	0.352	0.669	1.266	.720	0.89	0.789	2.018	.370
Skills	-1.516	1.566	0.093	.130	-1.45	1.619	0.096	.150	-1.738	1.451	0.08	.080	-1.129	1.561	0.172	.260
Norms	-1.128	1.442	0.197	.260	-1.114	1.504	0.187	.270	-1.447	1.334	0.145	.150	-1.173	1.43	0.187	.240
Rec/Reward	-0.258	0.928	0.787	.800	0.09	0.983	1.093	.930	-0.499	0.8	0.671	.620	-0.225	0.918	0.814	.820
Info	-0.487	0.872	0.654	.630	-0.481	0.927	0.64	.630	-0.649	0.755	0.613	.520	-0.2	0.866	0.841	.840
Education	0.012	0.865	1.01	.990	-0.031	0.917	0.972	.980	-0.311	0.744	0.793	.760	-0.035	0.858	0.971	.970
Resources	0.386	0.977	1.458	.700	0.45	1.008	1.574	.650	-0.109	0.808	0.916	.910	-0.506	0.93	0.624	.610
Lead Help	-1.068	3.667	0.02	.290	-0.978	3.817	0.024	.330	-1.254	3.618	0.011	.210	-0.96	3.681	0.029	.340

Note. Coefficients, denoted as *b*, are parameters from multinomial logistic regression that indicate the likelihood of belonging to a specific target profile (Surviving, Groupy, Mediocre, Striving) vs. a Thriving pattern. Odds ratios (OR) are provided to increase interpretability. An OR greater than 1.00 denotes an increased probability of membership in the target profile relative to the referent profiles. Conversely, an OR less than 1.00, corresponding to negative coefficients, indicates a greater likelihood of membership in the referent profile compared to the target profile. If confidence intervals include 1.00, the OR is not significant, regardless of its value.

*$p < .05$.

Table 7

Reliabilities for all Study Variables

	Cronbach's alpha	ICC(1)	ICC(2)
Team Performance	—	—	—
Viability	0.78	0.23	0.55
Wellbeing	0.86	0.17	0.44
Purpose	0.56	0.22	0.53
Stability	—	0.43	0.75
Size	—	0.40	0.73
Skills	0.93	0.08	0.25
Norms	0.94	0.67	0.89
Rec/Reward	0.8	0.34	0.67
Info	—	0.28	0.61
Education	—	0.22	0.54
Resources	—	0.09	0.29
Lead Help	—	0.34	0.67

Note. Team-level N = 55 and individual-level N = 235; This table presents the Cronbach's alpha reliabilies and Intraclass Correlations among all Team-level variables including Team Performance, Viability, Wellbeing, Purpose, Stability, Size, Skills, Norms, Recognition/Reward (Rec/Rew), Information (Info), Education, Resources, and Leader Helpfulness (Lead Help). Cronbach's alpha were not calculated for Rec/Reward, Info, Education, Stability, or Resources, which were measured using a single item, or for Right Size which was computed using a formula. Team performance ICCs not reported because there was no aggregation, and therefore, justification in the form of ICCs is not needed. ICC(1) represents the proportion of variance in individual ratings attributable to team membership, while ICC(2) reflects the proportion of variance in the mean rating.

Purpose

A one-unit increase in Purpose reduces the odds of a team being categorized into the other team profiles. Specifically, for every 1 unit increase in Purpose, there is a 96.97% decrease in the odds of a team being classified as Surviving (OR = 0.03, 95% CI [0, 11.38]), Groupy by 98.40% (OR = 0.02, 95% CI [0, 8.80]), Mediocre by 99.64% (OR = 0.004, 95% CI [0, 0.88]),

and Striving by 99.74% (OR = 0.003, 95% CI [0, 1.01]) compared to being classified as Thriving. All results were non-significant, except Purpose on Mediocre.

Team Stability

In comparison to Thriving teams, the odds of a team being classified as Surviving increases slightly by 4.67% (OR = 1.05, 95% CI [0.16, 6.79]), while the odds of being classified as Groupy decrease by 13.57% (OR = 0.86, 95% CI [0.12, 6.51]), Mediocre by 55.94% (OR = 0.44, 95% CI [0.09, 2.18]), and Striving by 50.61% (OR = 0.49, 95% CI [0.09, 2.86]). All results were non-significant.

Right Size

Overall, higher levels of right-size are associated with increased odds of the team being classified into all other profiles than Thriving. A one-unit increase in a team's perception of being the 'right size' affects the odds of a team being categorized as Surviving by 12.14% (OR = 1.12, 95% CI [0.24, 5.15]), Groupy by 108.02% (OR = 2.08, 95% CI [0.39, 11.20]), Mediocre by 26.56% (OR = 1.27, 95% CI [0.34, 4.70]), and Striving by 101.77% (OR = 2.02, 95% CI [0.43, 9.47]) compared to being classified as Thriving. All results were non-significant.

Right Skills

Higher levels of right skills within a team are strongly associated with a greater likelihood of the team being classified as Thriving rather than any of the other team effectiveness profiles. The results indicate that the odds of a team being classified as Surviving decrease by 90.69% (OR = 0.09, 95% CI [0.004, 2.00]), Groupy by 90.45% (OR = 0.10, 95% CI [0.004, 2.28]), Mediocre by 91.97% (OR = 0.08, 95% CI [0.005, 1.38]), and Striving by 82.82% (OR = 0.17, 95% CI [0.008, 3.66]). All results were non-significant.

Clear Norms

Overall, higher levels of clear norms within a team are associated with an increased probability of the team being categorized as Thriving rather than any of the other team effectiveness profiles. The odds of a team being classified as Surviving decreases by 80.33% (OR = 0.20, 95% CI [0.012, 3.32]), Groupy by 81.26% (OR = 0.19, 95% CI [0.01, 3.57]), Mediocre by 85.49% (OR = 0.15, 95% CI [0.011, 1.98]), and Striving by 81.32% (OR = 0.19, 95% CI [0.011, 3.08]) compared to being classified as Thriving. All results were non-significant.

Recognition and Rewards Support

Overall, higher levels of recognition/rewards (Rec/Reward) within a team are associated with an increased probability of the team being categorized as Thriving rather than any of the other team effectiveness profiles. The odds of a team being classified as Surviving decrease by 21.30% (OR = 0.79, 95% CI [0.13, 4.85]), Mediocre by 32.91% (OR = 0.67, 95% CI [0.14, 3.22]), and Striving by 18.63% (OR = 0.81, 95% CI [0.14, 4.92]) compared to being classified as Thriving. However, the odds of being classified as Groupy increase by 9.28% (OR = 1.09, 95% CI [0.16, 7.51]). All results were non-significant.

Informational-Support

Higher levels of Informational-Support within a team are associated with an increased odds of the team being categorized as Thriving rather than any of the other team effectiveness profiles. With a one unit change of Informational Support, the odds of a team being classified as Surviving decrease by 34.62% (OR = 0.65, 95% CI [0.12, 3.61]), Groupy by 36.01% (OR = 0.64, 95% CI [0.10, 3.94]), Mediocre by 38.74% (OR = 0.61, 95% CI [0.14, 2.69]), and Striving by 15.90% (OR = 0.84, 95% CI [0.15, 4.60]) compared to being classified as Thriving. All results were non-significant.

Education and Consultation Support

Higher levels of Education and Consultation Support within a team are associated have minimal impact for a team being categorized as Thriving rather than any of the other team effectiveness profiles. The odds of a team being classified as Groupy decrease by 2.78% (OR = 0.97, 95% CI [0.16, 5.86]), Mediocre by 20.65% (OR = 0.79, 95% CI [0.19, 3.41]), and Striving by 2.93% (OR = 0.97, 95% CI [0.18, 5.21]) compared to being classified as Thriving. The odds of being classified as Surviving increase slightly by 1.01% (OR = 1.01, 95% CI [0.19, 5.51]). All results were non-significant.

Material Resources Support

Higher levels of Material Resources Support within a team are associated with mixed results on the probability of the team being categorized as Thriving rather than any of the other team effectiveness profiles. With a one unit increase in Material Resources Support, the odds of a team being classified as Surviving increase by 45.75% (OR = 1.46, 95% CI [0.22, 9.88]) and Groupy by 57.38% (OR = 1.57, 95% CI [0.22, 11.35]) compared to being classified as Thriving. However, the odds of being classified as Mediocre decrease by 8.41% (OR = 0.92, 95% CI [0.19, 4.46]) and Striving by 37.57% (OR = 0.62, 95% CI [0.10, 3.87]). All results were non-significant.

Leader Helpfulness

Higher levels of Leader Helpfulness within a team are associated with a greater likelihood of the team being classified as Thriving rather than any of the other team effectiveness profiles. Specifically, a one-unit increase in Leader Helpfulness decreases the odds of a team being classified as Surviving by 98.01% (OR = 0.02, 95% CI [0, 26.37]), as Groupy by 97.61%

(OR = 0.024, 95% CI [0, 42.48]), as Mediocre by 98.93% (OR = 0.011, 95% CI [0, 12.84]), and as Striving by 97.08% (OR = 0.029, 95% CI [0, 39.63]). All results were non-significant.

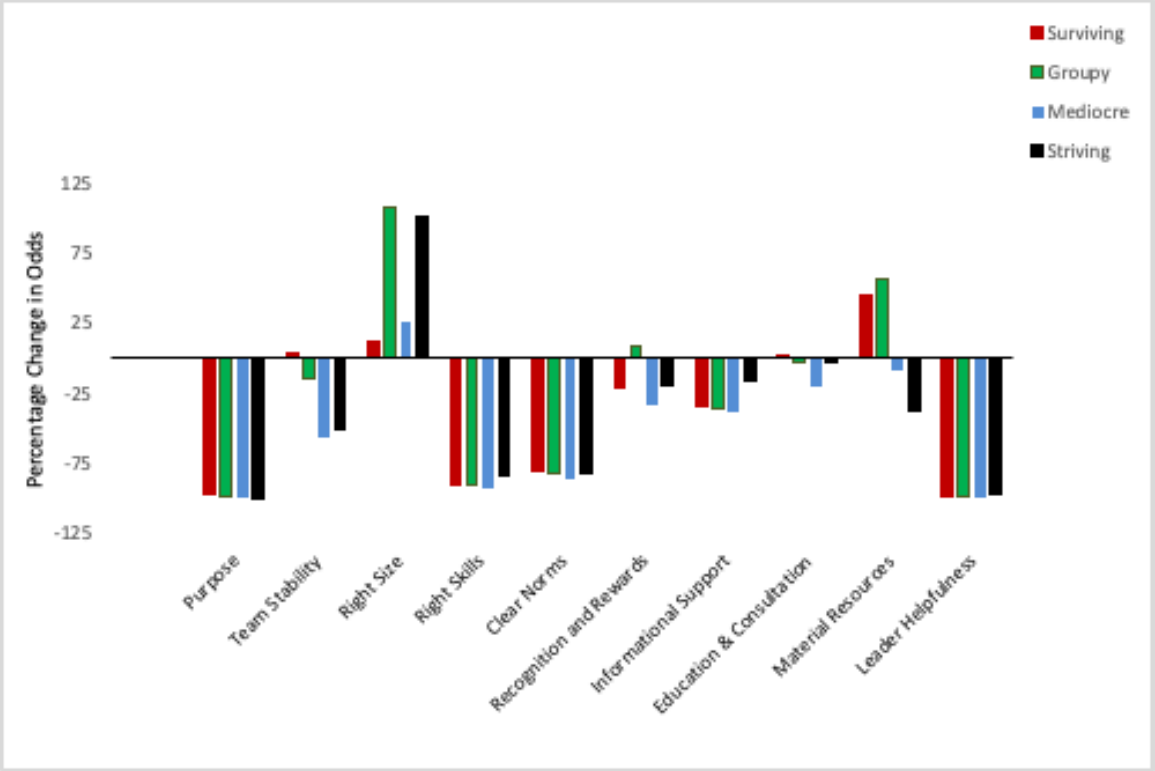
Chapter 5: Discussion

The purpose of this study was to explore and identify the underlying differences in team effectiveness across organizational teams. To systematically explore these differences, Latent Profile Analysis (LPA) was conducted to identify distinct team effectiveness profiles, followed by a Multiple Logistic Regression (MLR) which examined the influence of various covariates on these profiles. This study differentiated five distinct team effectiveness profiles: Thriving, Striving, Mediocre, Groupy, and Surviving. Each profile demonstrated unique patterns and levels of Performance, Viability, and Well-being. Additionally, the MLR explored the influence of covariates on profile membership. Although only one of the effect sizes reached statistical significance (i.e., Purpose), three other conditions - 'Right Skills,' 'Clear Norms,' and 'Leader Helpfulness'- demonstrated relatively larger (but non-significant) effect sizes across profile comparisons. These findings may provide a preliminary foundation for future research, highlighting potential areas for further investigation into how specific team conditions could influence team effectiveness profiles.

Figure 6 shows a summary of the results of covariates on profile membership, with Thriving teams as the comparison group. Note that all except Purpose on Mediocre was non-significant.

Figure 6

Impact of Covariates on the Likelihood of Profile Membership Compared to Thriving Teams



Note. This graph shows the percentage change in the odds of belonging to each target profile (Surviving, Groupy, Mediocre, Striving) compared to the referent profile (i.e., Thriving), for every one-unit increase in the covariate. The only significant result was Purpose on Mediocre. Values above zero reflect an increased likelihood of membership in the target profile, while values below zero indicate an increased likelihood of being in the Thriving profile[2].

[2] For example, an OR 0.5 indicates that the odds of being in the comparison profile (e.g., Striving) are 50% lower than the odds of being in the Thriving profile. An OR 2 means the odds of being in the comparison profile are twice as likely (i.e., a 100% increase) than being in the Thriving profile.

Interpreting Team Effectiveness Profiles: Insights and Challenges

This study applied Latent Profile Analysis (LPA) to identify distinct team effectiveness profiles based on three key indicators: Performance, Viability, and Well-being. The analysis revealed five profiles—Thriving, Striving, Mediocre, Groupy, and Surviving—that reflect varying patterns of team effectiveness. While the Thriving profile demonstrated consistently high levels across all three indicators, other profiles revealed distinct trade-offs. For example, the Groupy profile displayed high Viability and Well-being but lower Performance, suggesting that teams can maintain strong internal team dynamics and a sense of personally thriving even when managerial evaluations of performance are low. Similarly, the Striving profile balanced high Performance with lower Viability, pointing to teams that achieve output at the expense of long-term sustainability.

The most prevalent profile, Mediocre, which included over half of the sample, reflected moderate levels across all indicators. This finding is consistent with prior observations in team research that most teams tend to function within stable but unremarkable ranges of effectiveness, with few achieving exceptional outcomes. Last, the Surviving profile exhibited extremely low Performance, coupled with moderate levels of Viability and Well-being, highlighting that poor team performance does not necessarily translate into dysfunction across all aspects of team functioning.

These findings reinforce the multidimensional nature of team effectiveness, and also suggests that teams effectiveness may be nuanced *within* teams and *between* teams. Additionally, the profiles suggest that trade-offs in team effectiveness (i.e., high performance at the cost of well-being and viability) may be possible, but are not prevalent, at least amongst teams in the current study where 63.6% of teams did fall into profiles that are consistent the

literature- that teams that do well in one area of team effectiveness do well in the others. Lastly, the patterns found in this study suggest that achieving all three dimensions simultaneously, as seen in the Thriving profile, while rare, is possible, but that it may represent an ideal rather than a typical outcome for most work teams.

However, while the LPA successfully identified distinct team profiles, certain limitations must be considered when interpreting these findings. The unequal distribution of teams across profiles raises concerns about their stability and generalizability. The Thriving and Groupy profiles, for example, each contained only four teams, each representing less than 7.3% of the total sample. Small sample sizes within these groups suggest that we should be cautious in interpreting the generalizability of these profiles. Second, the lack of clear differentiation across some indicators complicates the interpretation of these results. While Performance showed substantial variability across profiles (e.g., Thriving vs. Surviving), Viability and Well-being demonstrated less variability. For example, the Groupy and Thriving profiles both exhibited higher levels of Viability and Well-being, despite clear differences in Performance. This may reflect redundancy in the indicators or point to a need to either refine of how these constructs are measured or suggests that analysing the data in a different way (i.e., variable centered approach) may be more appropriate.

Advancing Team Effectiveness Research: Addressing Measurement and Methodological Limitations

Methodological Strengths and Limitations

This study's strength lies in its use of real organizational data as well as multi-source data, achieved by gathering perspectives from both team managers and employees. This approach enhanced the ecological validity of the findings, making them more applicable to real-

world settings because I examined team effectiveness within the actual context in which it occurs. Multi-source data gathering was particularly valuable in addressing common method variance. By ensuring that data collected was not from a single source (i.e., managers and employees), it helped to prevent artificially inflating or deflating the relationships between outcome variables. However, there are limitations of this study which include sample size, the comprehensiveness of data collected, and the use of cross-sectional data.

The small sample size may affect the reliability and generalizability of the findings, particularly within the context of LPA, which relies on a sufficient sample size to accurately identify and validate distinct profiles. Small sample sizes can lead to issues such as overfitting, reduced statistical power, and less stable profile solutions (Nylund-Gibson & Choi, 2018). Although statistical controls were employed to mitigate these concerns, they cannot eliminate the potential impact on the results. Researchers agree that accurately identifying smaller latent classes (i.e., profiles) becomes difficult when the sample size is small and when class prevalences are unevenly distributed (i.e., profiles vary greatly in size) (e.g., Morgan. 2015; Tofighi & Enders, 2008), which was the case in this study. While there are no strict guidelines for determining profile size cutoffs, researchers generally recommend rejecting profiles that represent less than 5% of the sample to ensure sufficient cases for meaningful categorization (Nylund-Gibson & Choi, 2018; Weller et al., 2020). I adhered to this recommendation in my study. However, this approach, combined with my study's small overall sample size, presents a limitation, as it could potentially obscure small yet meaningful classes that are difficult to detect due to their low prevalence (Masyn, 2013). These smaller profiles, though excluded, may hold particular significance in LPA and could likely emerge with a larger sample size. While I took all possible steps to mitigate the limitations posed by my sample size, future researchers should aim

to use larger and more diverse samples to ensure a more robust validation of these findings. Alternatively, cross-validating data from another smaller sample with my findings could enhance the generalizability and validation of team types.

Another limitation in the study was variation in team response rates. In teams research, achieving complete within-team response rates is rare, particularly in field-based studies, where practical constraints often prevent full participation (Rogelberg & Luong, 1998; Rogelberg & Stanton, 2007). While response rates below 100% are accepted in individual and organizational research (Maloney et al., 2010; Nesterkin & Ganster, 2012; Newman & Sin, 2009), the implications for teams research are more complex. This is due to the need to demonstrate within-team agreement and reliability to justify aggregation to the team level (i.e., r_{wG} and ICCs; Maloney et al., 2010), as well as the increase in standard errors of estimation due to reduced sample sizes, which is made worse by the potential for nonresponse bias (Newman & Sin, 2009) in which individuals who choose not to participate (i.e., systematic missing data) skew the relationships between variables.

In the current study, which examined team effectiveness, missing data created two potential risks: (a) incorrectly determining whether it was appropriate to aggregate individual responses to the team level and (b) misidentifying or misinterpreting latent profiles due to incomplete or biased data. The overall response rate was m = 72.8% and median = 77.5%, which exceeds typical levels of missing data reported in organizational research (e.g., median response rate of 57%; Roth & BeVier,1998). However, eight teams (11.4%) that I sent surveys out to did not respond at all, and while I am unable to understand exactly why, there is a chance that it is due to a systematic reason (see Timmerman, 2005). In the current study, for example, high pressure teams that had less time available, complacent teams that did not want to do extra

'work', or uncooperative team members may influence responsive participants, therefore influencing study outcomes. Alternately, dissatisfied members could also be *more* motivated to provide critical feedback, amplifying negative perspectives, and 'happy' team members may be less motivated to voice their opinion about team effectiveness. Either pattern of systematic nonresponse can distort the relationship between the covariates in the study and perceived team effectiveness, or between the three team effectiveness variables themselves, leading to biased or incomplete conclusions.

Decisions about including teams with incomplete responses remain a methodological challenge, with no clear consensus on acceptable thresholds for missing data (Newman & Sin, 2007). Maloney et al. (2010) demonstrated in a Monte Carlo simulation that while establishing agreement and reliability is critical for construct validity, excluding teams with partial responses risks harming internal validity by systematically removing teams that differ on key characteristics. Similarly, Hirschfeld et al. (2013) found that restricting analyses to teams with high participation rates inflated standardized effect sizes (e.g., R^2) and reduced statistical power. In another example, Timmerman (2005) found that when randomly deleted or purposefully deleted (i.e. least cooperative) participants were omitted from the analysis, the regression coefficient was nonsignificant (i.e., random deletion) or steadily declined (i.e., least cooperative participants). All of these examples demonstrate the tension between maintaining construct validity and preserving the generalizability of findings.

Researchers agree that determining whether missing data is random (MCAR) or not-at-random (MNAR) is critical, but nonresponse poses unique challenges since it is difficult to determine why individuals do not participate (Newman & Sin, 2007). Common approaches to handling missing data include (a) adjusting response rate equations and (b) applying retention

rules. Response-rate adjusted equations account for missing data by transforming variables to account for the influence of missing team data on results (Newman & Sin, 2007). Researchers have found that nonresponse likely underestimates or overestimates within-group standard deviations (SD_{WG}) and variability (CV_{WG}) but has minimal influence on ICC[1] (0.3-0.5%) and a larger influence on ICC[2] group mean reliability (5-17%, Newman & Sin, 2009). While corrections may be made to adjust for these, researchers advocating for this approach also identify a risk in overcorrection, which could have equal or worse outcomes in terms of interpretability (Newman & Sin, 2007).

The use of data retention rules, another method in the literature to manage nonresponse, excludes teams with insufficient responses based on arbitrary thresholds (e.g., 40-100%; Allen et al., 2007) and filters out teams that do not meet a minimum response rate. Although this method is frequently used, scholars (e.g., Biemann et al., 2012; Hirschfeld et al., 2013; Newman, 2009) argue for analyzing team-level data using all available responses and applying modern missing data techniques, emphasizing the risks of bias and lost generalizability when only high-response teams are retained (Hirschfeld et al., 2013, Newman & Sim, 2009).

To manage the bias inherent in nonresponse in this study, and consistent with the recommendations in the literature (e.g., Hirschfeld et al., 2013; Newman & Sim, 2009), teams in the current study that had partial participation (i.e., less than 100%) were retained. Data for the LPA were transformed to account for variability of team size and related reliability of the means (ICC2), and a sensitivity analysis using listwise deletion was conducted to assess the potential impact of incomplete responses, though this did not account for non-responders. The sensitivity analysis identified five distinct team types, suggesting that partial team responses did not influence the resulting team profiles. As informed by Hirschfeld et al. (2013), Maloney et al.

(2010), and Newman and Sims (2009), retaining teams with partial responses preserved the representativeness of the sample, and reduce range restriction of data. Hirschfeld et al (2013) notes that consistent findings from sensitivity analyses enhance confidence in the validity of hypothesis testing, even when teams with differing levels of representation are included in the analysis. Although stricter thresholds could have been applied, the use of data retention rules was ultimately rejected due to its potential to introduce new bias.

To ensure higher response rates and minimize participant fatigue, it was necessary to shorten some of the team condition scales in the survey. While this approach effectively increased participation, and the revised scales demonstrated adequate reliability, it may have affected the validity of the measures. I addressed this concern by consulting a subject matter expert to ensure content validity and by making sure each construct included questions covering all its dimensions (as per Boateng et al., 2018). I believe that reducing the number of items was essential to securing participation from real organizations, which was already challenging due to concerns about survey fatigue, perceptions, and privacy. The organizational leaders were particularly sensitive to the survey time demands on team members, with many indicating that a survey longer than 10 minutes would lead them to decline participation, however, while this decision had positive impacts, it is still a limitation.

Another limitation of this study is the reliance on cross-sectional data to measure team profiles. This approach offers only a snapshot of team effectiveness at a single point in time, which may not fully capture the dynamic nature of team effectiveness. Consequently, the structural stability of teams within each profile remains uncertain, therefore limiting the usefulness of the findings. For example, team outcomes may be on a trajectory as proposed by Quigley et al., (2018), and so it is possible that a team is measured at an unstable time point (e.g.,

after a particularly challenging project) and their team profile classification not accurately reflect the experience of the team.

Theoretical Contributions

This research makes two key contributions to the theoretical understanding of team effectiveness: it builds on the complexity approach to teams research by challenging the traditional approach of examining team outcomes in isolation and building on the growing body of team-centered research, as increasingly advocated by leading team scholars (e.g., O'Neill et al., 2018; Shuffler et al., 2018). This study also advances the frameworks established by prominent scholars (as discussed in Chapter 1, e.g., Hackman, 2002; Quigley et al., 2018) by contributing to the development of a refined taxonomy of team types in the context of team effectiveness, and offering a substantive and empirical framework for categorizing and understanding team differences.

First, this research advances the existing literature on team effectiveness by moving beyond traditional approaches that have typically examined team outcomes as distinct and separate constructs, expanding on the complexity perspectives supported by recent scholars (e.g., Mathieu et al., 2017; O'Neill et al., 2018; Rico et al., 2011; Shuffler et al., 2018). Foundational frameworks, such as those proposed by Cohen and Bailey (1997) and Hackman and Morris (1975), have provided valuable insights into the multidimensional nature of team effectiveness, however, these frameworks have often treated these dimensions independently when measuring and analyzing them. As a result, team research has frequently relied on unidimensional measures that focus on singular aspects of team effectiveness, such as performance or affective outcomes (see Mathieu et al., 2017). This approach may be limiting, as it oversimplifies the inherent complexity of the multiple outcomes that teams are responsible for, leading to an incomplete

understanding of what truly constitutes an effective team. By providing evidence for the within-team variation in outcome variables (i.e., teams are not universally good or bad), this research builds on existing theory by supporting the notion that team effectiveness is best understood as an interconnected, multidimensional construct and suggests that to achieve a holistic understanding of teams, all relevant outcome variables (e.g., performance, affective outcomes) should be measured. The current study also contributed a complexity perspective to the literature by adding the body of literature using team-centered theoretical frameworks through LPA. Variable-centered research has been the dominant approach in the literature and operates under the assumption that that we can generalized the effects of different variables across teams. While this approach can provide valuable insights, it oversimplifies the complexities of team dynamics by failing to account for how multiple variables interact *within* the unique context of each team. The analytic approach of the current study addresses these limitations, identifying five meaningful and distinct team types and providing evidence for within team differences of the levels and patterns of outcome variables, offering a richer, more nuanced understanding of team effectiveness. Moreover, this research opens the door to generating new knowledge about teams through team-centered approaches. By examining other team variables using this approach, future researchers may uncover other important patterns and relationships that remain hidden when using a variable centered approach. For example, future studies could reveal that specific combinations of predictors are more effective at distinguishing between different types of teams than team outcomes. Consequently, the findings of this study illustrate the utility and potential of person-centered analysis for advancing our understanding of complex organizational phenomena.

While this study contributes to a multidimensional ‘complex’ view of team effectiveness outcomes, there are limitations in its interpretation because teams were measured at a single

point in time. This study did not investigate temporal dynamics, which have been widely recognized in the literature as essential to advancing a complexity perspective on teams. Scholars such as Humphrey and Aime (2014) and Rico et al. (2011) have criticized the static treatment of team processes and states, calling for research that captures their complexity and dynamic nature. Similarly, Mathieu et al. (2019) and Maloney et al. (2016) have emphasized the importance of exploring how team constructs and contextual factors evolve over time. While this study does examine complexity by using a person-centered approach to reveal variability across teams, it does not employ a longitudinal design; however, it does offer a foundation for future exploration of team profiles over time. Demonstrating that meaningful variability can be identified at a single point in time represents a critical step toward advancing research that takes a complexity approach to both team functioning and temporal dynamics, such as exploring how these team states may change, transition, and follow different trajectories over time or across team event episodes (see Morgeson et al, 2015; external disruptions as critical drivers of team dynamics).

These findings also advance research on team typologies by expanding research beyond traditional differentiations of teams, such as through structural features (e.g., cross-functional teams; Lovelace et al., 2001), task demands (e.g., extreme action teams; Klein et al., 2006; production teams; Sundstrom et al., 1990), and experience levels (e.g., student vs. professional teams; Peeters et al., 2006). I-O researchers have long sought effective methods to categorize teams, with the goal of enhancing the interpretation and organization of team research and central themes in these categorizations include skill differentiation, authority differentiation, and temporal stability (Hollenbeck et al., 2012). Recently, a mixed-method study evaluated complex team processes and structure, (e.g., behaviors, structure, interactions, decision making, leadership) which led to the development of a healthcare team taxonomy to explain variations in

outcomes (i.e., medical errors; Brahler & Donahoe-Fillmore, 2023). This study demonstrates the practical value of analyzing teams from a complexity perspective and the authors' validation of team types through the literature, despite using a different method and analysis, revealed profiles that closely align with those identified in my research, (e.g., Cohesion typology, Silo Mentality Typology).

By analyzing team outcomes to form typologies, this study builds on previous research by introducing a novel taxonomy for comparing teams based upon the outputs that matter most to teams, advancing our understanding of within team differences and the variables that influence them. This approach also equips organizations with evidence-based taxonomy to better comprehend and support their teams, helping them to make more informed and streamlined decisions about potential interventions, resource allocation, and team development, ultimately improving the effectiveness of their teams.

Practical Implications for Organizations

The practical implications of these findings, particularly if validated in future research, are useful for organizations seeking to enhance team effectiveness in the following ways: The identified typologies provide a method for describing teams within the organization, offer a novel approach to evaluating team effectiveness and identifying patterns of teamwork, and enable more strategic prioritization of resources to support and develop teams effectively. However, as a note, the approach used in this study is cumbersome and would require an LPA expert to assess team effectiveness states in its current form. Until a user-friendly interface is developed that allows organizations to conduct LPA without needing an LPA specialist, applying this method in practice may remain limited to academic or I-O psychologists consultants skilled in analyzing data in this way (i.e., LPA).

The use of team profile names and categories can provide shared language for describing and assessing team states, which could simplify the understanding and communication of team effectiveness through a structured typology. This common language allows leaders, team members, and other stakeholders to quickly and effectively identify and discuss the specific characteristics and needs of different teams. By referring to clearly defined profiles such as Thriving or Groupy teams, discussions around team performance, challenges, and development needs become more actionable. This shared vocabulary may help ensure that everyone involved has a consistent understanding of the team's current state and potential areas for improvement.

The structured typology provided by these team profiles could also enable organizations to systematically assess and compare teams across various dimensions of effectiveness. Instead of relying on vague or subjective descriptions of team outcomes, teams can be categorized based on agreed-upon team effectiveness criteria, allowing for more accurate benchmarking and evaluation, and supporting more informed and consistent decision-making.

Furthermore, a key practical implication of this research is for informing team development efforts so organizations may strategically allocate resources based on the specific team profile, while being mindful of their environment (e.g., ‘Right Skills’ may be impossible to change in a unionized environment). By identifying whether a team falls into the Thriving category or another profile, organizations can customize development initiatives to address the unique strengths and challenges associated with that profile. For example, Thriving teams, characterized by high levels of performance, satisfaction, and well-being, might benefit from leadership development programs that focus on sustaining their momentum and avoiding complacency. Conversely, teams that fall into less optimal profiles, such as Striving teams, which exhibit high performance and well-being but lower team dynamics, could benefit from

targeted interventions in those struggling areas. This targeted approach not only maximizes the return on investment in team development but also ensures that teams are equipped with the right tools and support to achieve their potential within their particular team and organizational context.

As with other evaluation tools in the workplace, the use of this tool could have ethical consequences too. Misuse of classifications systems, such as employing team assessments for punitive purposes, neglecting lower-performing teams, or supervisors 'gaming' the system, could undermine trust in the tool as well as negatively influence organizational culture. To mitigate these risks, organizations must ensure transparency in the assessment process, communicate the purpose and methodology clearly, and involve teams in interpreting results and designing interventions. Classification into team profiles should serve as a starting point for team and leader development with practitioners integrating contextual insights to guide decision-making, rather than a label by which to 'typecast' teams. Similarly, a tool such as Team Typologies should be intended for team development and decision making to better support high team effectiveness without having impact on individual performance and appraisal. This would be a misuse this tool in which team performance is oversimplistic as it is gathered through one single metric and one rater, and there are administrative tools that have been well validated in the literature (i.e., performance management, performance appraisal) which should be relied on for any assessment that could have significant impact to the outcomes for an individual or team. The utility of a tool such as the survey employed in this study full depends on the ethical implementation of it as well as communication; Organizations would need to be clear about the intention of the survey (i.e., improving team effectiveness) and the anonymity of participants (i.e., team leaders should not have access to results) and should train all leaders about its

limitations (i.e., how the results should be used, potential for results to be an oversimplification of teams) to ensure that the tool is not being misused.

To maximize the utility of team classifications, it is critical to consider when assessments are conducted and account for the evolving nature of teams over time. Without acquiring data at multiple time points in a team lifecycle, it would fall into a major limitation that exists of much of the teams research which relies on cross-sectional designs, failing to account for the dynamic nature of team processes (Parker et al., 2017a; Weingart, 1997).

Researchers have suggested the need for longitudinal approaches to better understand team functioning and examine how constructs change over time (DeChurch et al., 2013; Kozlowski et al., 2015; Larson et al., 2020). In the current study, it is particularly important from a practical perspective as team effectiveness measurement would be only valuable if it is collected at the right time and evaluated over time to determine if interventions are working.

The timing of team effectiveness measurement through this survey tool could best be informed by a recent study by Larson et al. (2020) which theorized team process trajectories, suggesting that team processes (i.e. strategy and planning, monitoring goal progress, and cooperative conflict management) change in patterns over time leading up to an identified team goal or objective. Larson et al. (2020) found that team processes intensify as teams approach deadlines, and that team processes are often overlapping and continuous, challenging the assumption that these processes occur in distinct phases.

Therefore, in terms of assessing team effectiveness and determining intervention fit, it would be important to conduct evaluations at regular intervals, either around project milestones, performance review cycles, major goals, or before and after interventions would allow organizations to monitor changes in team effectiveness and help them to intervene at the right

time (i.e., add resources, take away resources, or change resources) while accounting for the dynamic nature of teams. By incorporating multiple assessments over time, organizations may track team changes, adapt interventions, and also reinforce the dynamic nature inherent in teamwork, also ensuring that teams are not labelled indefinitely after one single assessment.

While this section outlines the vision and potential opportunities offered by the profile approach, it is important to acknowledge a significant limitation: there is currently no evidence to suggest that these profiles will hold up in future research or across different contexts. In fact, the findings from this study indicate that the variable-centered approach may offer a clearer and more reliable framework for understanding team effectiveness. Therefore, while this research highlights the conceptual promise of the profile approach, it represents an early and exploratory step in its development - one that highlights the need for further validation and replication to advance this methodology in a meaningful and practical way.

Future Research Directions

Further Exploration of Covariates

Although this study focused primarily on team structure inputs, the exploratory MLR analysis yielded almost no significant findings, indicating that other factors may better explain the observed team profiles, that the study had too low of power or that the methodology was not better than traditional variable centered teams research.

To gain a deeper understanding of team types, it would be valuable to investigate other covariates, such as team processes, such as communication and collaboration, emergent states, such as psychological safety and conflict, as well as different leadership behaviours which may influence team effectiveness profiles.

Additionally, while the exploratory MLR results indicated non-significant effect sizes, specific hypotheses were not developed or tested. Future research should use results from this study to inform the formulation of effect sizes so specific hypotheses can be tested, with sufficient power to detect significant relationships between relevant covariates and team effectiveness.

Longitudinal and Contextual Validation of Team Profiles

Profiles that are both stable over time and consistent across various contexts are likely to be more useful for organizations, as they offer reliable frameworks for assessing and improving team effectiveness in different settings and over extended periods, and this was not tested in the current study.

A significant limitation of this study is its reliance on cross-sectional data, which captures only a snapshot of team effectiveness and does not account for the likely dynamic nature of team effectiveness profiles. To address this, future research should focus on longitudinal studies to explore the stability and evolution of team profiles over time. Analytic methods such as Latent Transition Analysis (LTA) may provide valuable insights into how stable the profiles are, whether teams transition into other profiles, and if so, identifying the factors or interventions that influence transitions between different profiles. Future work could address this by adopting longitudinal approaches to study the emergence and development of team profiles, particularly in relation to changes in team environments or interventions. Moreover, there may be other variables influencing profiles that were not examined in this study, such as team processes and emergent states (e.g., conflict, psychological safety).

Future research could benefit from applying LPA profiles to established frameworks, such as the Taxonomy of Team Processes (see Introduction; Marks et al., 2001), in two ways.

First, interventions could be targeted at different stages of team processes (i.e., transition, action, and interpersonal) to assess their impact on team profiles. For example, poor transition processes (i.e., mission analysis, goal specification, and strategy formulation) might result in teams being classified in all profiles except Thriving – in this case researchers could introduce an intervention to determine if improvements in transition processes (Marks et al., 2001) result in transition from one profile to another. Second, it would be valuable to explore the likelihood of teams being associated with specific profiles based on the processes they are currently engaged in, rather than solely the quality of those processes. For instance, Striving, Surviving, and Thriving profiles might be more common during action phases, when pressure is higher, while teams may be more likely to be classified as Mediocre or Groupy profiles during transition phases, when team agreement needs to be high, and teams are recovering from action phases. These approaches could provide deeper insights into how team processes influence profile membership and transitions over time.

Additionally, to enhance the generalizability of these findings, it is critical to validate the identified team profiles across different contexts and cultures. Utilizing frameworks such as Hofstede's (2001) Cultural Dimensions, which consider six key cultural factors (i.e., power distance, individualism vs. collectivism, motivation toward achievement and success, uncertainty avoidance, long-term orientation, and indulgence), could provide valuable insights. While this study explored various organizational contexts, future research should propose specific hypotheses regarding the prevalence of different team profiles in diverse environments. For instance, Groupy and Mediocre teams might be more prevalent in highly bureaucratic or unionized settings, such as government agencies and universities, or in cultures characterized by higher collectivism (i.e., prioritizing loyalty and cohesion over individualism) and higher

uncertainty avoidance (i.e., preferring clear rules and stability). Conversely, Striving teams may be more common in high-stakes, pressure-filled environments, such as multinational corporations and national sport organizations, as well as in cultures with higher individualism, motivation toward achievement and success (i.e., competitiveness, material success), and higher indulgence (i.e., societal freedom to fulfill individual desires). Additionally, further research into team typologies like those in this study could be particularly valuable in the sports context, where team effectiveness and performance are critical, yet advanced research on team dynamics has not been as extensive as in the organizational psychology literature.

Validating the team types found in this study and determining if they emerge in different industries and environments and across already well-established frameworks in the literature would be a clear next step in terms of advancing this research. By combining longitudinal analysis with contextual validation, future research can offer a more comprehensive understanding and utility of team effectiveness profiles.

Standardization of Team Effectiveness Measures

This study was informed by an extensive review of common measures of team effectiveness, aiming to identify the most used constructs in the literature. Building consensus among researchers on consistent measures of team effectiveness has been recommended to advance the field (Hollenbeck et al., 2012; Rico et al., 2011). The identification of performance, team viability, and well-being as constructs for the holistic measure of team effectiveness in this study not only promotes consistency in how team effectiveness is measured but also lays the groundwork for a more nuanced analysis. Therefore, future researchers should continue to build upon a shared holistic definition of team effectiveness and the consistent measurement of it to

better understand the complexity of team effectiveness and to compare across studies and samples.

Advancing Team Effectiveness Research Through Integrated Approaches

Future research on team effectiveness can advance by integrating variable-centered and person-centered methods to capture the complex and multidimensional nature of team dynamics. Combining these approaches addresses limitations in both approaches, and would enhance the ability to identify and interpret distinct team profiles. McLarnon's (2022) dark triad work demonstrates the potential of such an integrated approach, which refined inputs for LPA, yielding more robust profiles. For example, SEM could help clarify the relationships between team conditions and team effectiveness outcomes by separating shared variance from unique variance, ensuring that factors are distinct and well-defined. These refined factor scores could then serve as high-quality inputs for person-centered methods like LPA or MLR, leading to valid profiles and better interpretability. If profiles are validated in future research, we may also use this approach to investigate how what conditions may lead to the formation or transition of specific profiles. By combining the strengths of both variable- and person-centered methods, future research may integrate past research with new analyses to gain more robust and generalizable knowledge.

Conclusion

The identification of distinct team profiles empirically supports the notion that team effectiveness is not a monolithic concept but rather a complex interrelation of multiple factors that can vary within a team in distinctive ways. Five team effectiveness profiles were found in the LPA including Surviving, Striving, Groupy, Mediocre, and Thriving. However, there were major limitations in the interpretability of these results due to sample size and related power

constraints, as well as that profiles were not validated through significant findings in the MLR. In the subsequent MLR, the only team condition variable that had a significant association with a found profile was Purpose on Mediocre teams. This highlights the need for future researchers to validate the results of this study in future studies.

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Appendix A

Example Recruitment Messages

General Emails

(Email to organizational team leads to provide information about the study)

Project Title: Typology of Performance in Teams

Invitation to Participate:

You are invited to participate in this study on team effectiveness because you are either a

member or a leader in an organizational work team. The study will examine how individual perceptions and experiences affect team effectiveness.

Purpose of this Study:

The purpose of this study is to investigate what causes different types of team experiences. Your unique experiences working in a team will provide valuable insight to the science of high-performance teamwork.

What would I have to do?

You will be invited to take part in an online questionnaire about team effectiveness. This will include items related to team dynamics, team design, team conflict, psychological safety, and individual well-being. This is expected to take around 10-12 minutes.

Criteria for Participation:

- You must belong to or lead an intact work team in an organization, defined as a group of individuals working interdependently in tasks and/or outcomes to achieve a common goal.

Possible Risks:

There are no significant risks associated with your participation in this research. Any risks in the research will be those risks similar to those encountered in everyday life and everyday employment. If at any time you are not comfortable with proceeding with the questionnaire, you may withdraw from the study. Your relationship with your employer or supervisor will remain unaffected by your decision regarding participation, non-participation or withdrawal. Your employer and supervisor will not be aware of your personal decision to participate, your individual responses will never be shared with your employer or anyone outside the research team, and only aggregate results that cannot identify individuals will be shared.

Benefits:

Possible benefits of participating in this study include learning about team dynamics, well-being, and performance, and having the opportunity to receive feedback detailing your team's scores and the implications of these scores.

Do I have to participate?

No, this study is voluntary and you may withdraw from the study at any time.

Do I have to pay for anything?

You will not be paid for your participation.

Interest to participate:

If you are interested in having your team participate in the current study by completing a 8-10 minute survey, please contact leah.pezer@ucalgary.ca, and include a list of the team member names and email addresses.

Questions/Concerns

The University of Calgary Conjoint Faculties Research Ethics Board has approved this study (REB21-1909). If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Direct Emails to team lead/manager (after agreement to participate):

You are invited to participate in this study on team effectiveness because you are a leader in an organizational work team at TBD. The study will examine how individual perceptions and experiences affect team effectiveness.

The purpose of this study is to investigate what causes different types of team experiences. Your unique experiences working in a team will provide valuable insight to the science of high-performance teamwork.

The link below will take you to an online letter of information, consent form, and questionnaire about team effectiveness. This survey should take 2-3 minutes to complete.

Follow this link to the Survey: TBD

For the survey, please use the following information to fill out team information:

Team Name: TBD

Team Number: TBD

Questions?

The University of Calgary Conjoint Faculties Research Ethics Board has approved this study (REB21-1909). If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Email to team members (after agreement to participate:

You are invited to participate in this study on team effectiveness because you are either a member or a leader in an organizational work team at UBC. The study will examine how individual perceptions and experiences affect team effectiveness.

The purpose of this study is to investigate what causes different types of team experiences. Your unique experiences working in a team will provide valuable insight to the science of high-performance teamwork.

The link below will take you to an online letter of information, consent form, and questionnaire about team effectiveness. This will include items related to team dynamics, team design, team conflict, psychological safety, and individual well-being. This is expected to take around 8-10 minutes.

Follow this link to the Survey: TBD

For the survey, please use the following information to fill out team information:

Team Name: TBD

Team Number: TBD

Please complete the survey no later than TBD

Questions?

The University of Calgary Conjoint Faculties Research Ethics Board has approved this study (REB21-1909). If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Appendix B

Demographic Information

1. Age (18-25, 26-41, 42-57, 58-67, 68+)
2. Gender – Team Members Only (Male, Female, You don't have an option that applies to me. I identify as, Prefer not to say)
3. Function within the organization (Customer Service, Communications/Marketing, Engineering, Finance, Human Resources, IT/Technology, Operations, Regulatory Affairs, Sales, Sport, Other (please indicate)

4. Team tenure (years on team) – Team Members only
5. Team stability (number of years on the team)- Team Members only
6. Team management/supervision tenure (years) – Leaders Only
7. Team size (number of people)- Leaders only

Appendix C

Team Performance

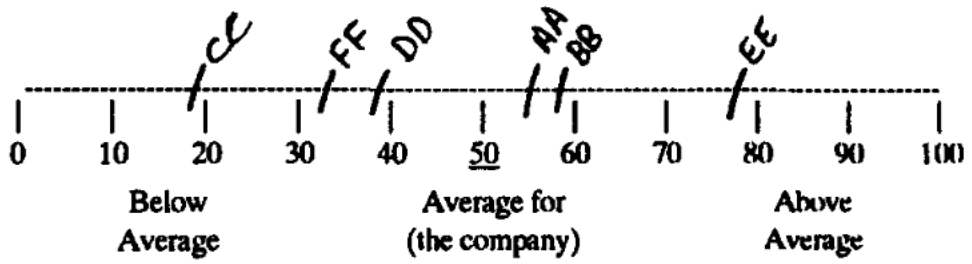
In principle, the on-the-job performance of the team could be measured and used to rank them from most effective to least effective A typical team of average effectiveness should appear in the middle of the ranking. Thus, 50% of teams would be more effective than average and 50% would be less effective.

For the following judgments, we ask you to estimate the relative performance of each of the teams in comparison to all teams at your company. Indicate each judgment by placing a mark

on a numbered line using a 100-point percentage scale. Note, this form will be revised to reflect teams.

Example:

"Please rate managers AA, BB, CC, DD, EE, and FF on how effective they are in *food production*."



In the example, Manager AA is estimated to be slightly above average in food production effectiveness, being more effective than about 55% of all (company) managers but less effective than the rest. Manager BB is judged to be quite similar to AA in effectiveness but is seen as marginally higher on this dimension of performance. Manager CC, on the other hand, is estimated to be quite low in food production, being more effective than about only 19% of all managers. Note that the low rating for Manager CC does not necessarily imply that the person's performance is inadequate. The rating is only a judgment relative to all managers currently employed by the company.

Appendix D

Team Viability Survey

Team-level reliability for this measure has been reported at $\alpha = .90$ (Resick et al., 2010).

Questions rated on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (5)

1. I get along with the people on this team.
2. I feel like I get a lot out of being a member of this team.
3. I'm very happy that I am a member of this team.
4. I wouldn't hesitate to participate on another task with the same team members.
5. If I could leave this team and work with another team, I would. (R)

Appendix E

Individual Workplace Thriving Scale

Questions rated on a 5-point scale ranging from *strongly disagree* (1) to *strongly agree* (6)

Learning Latent Factor

I find myself learning often

I see myself continually improving

I am developing a lot as a person

Vitality Latent Factor

I have energy and spirit

I do not feel very energetic (R)

I am looking forward to each new day

(Porath et al., 2012)

Appendix F

Team Diagnostic Survey

Team-level reliability for this measure has been reported at (α = .64-.94) for total scale.

Real Team

A team's score for this construct is computed by averaging member responses.

Stable

1. This team is quite stable, with few changes in membership.

Compelling Purpose

A team's score is computed by averaging member responses on subdimensions that assess the degree to which team direction is clear, challenging, and consequential.

Clear

1. There is great uncertainty and ambiguity about what this team is supposed to accomplish. (R)
2. This team's purposes are specified so clearly that all members should know exactly what the team exists to accomplish.

Challenging

1. This team's purposes are so challenging that members have to stretch to accomplish them.

Consequential

1. The purposes of this team don't make much of a difference to anybody else. (R)
2. This team's purposes are of great consequence for those we serve.

Right People

Subdimensions that are combined to assess the quality of a team's composition are (a) the degree to which the size of the team is appropriate for the work to be accomplished (i.e., neither too large nor too small), and (b) the level of member skills, including interpersonal skills.

Size

1. This team is larger than it needs to be. (R)
2. This team has too few members for what it has to accomplish. (R)
3. This team is just the right size to accomplish its purposes

The composite score for team size is an algebraic combination of respondents' scores on the previous items, not a simple average as is computed for most other TDS scales. Specifically, the difference between the first two items is computed to assess the degree to which the team size is viewed as appropriate; this score can range from –4 (too small) to +4 (too large), with a score of 0 being optimum (neither too small nor too large). The absolute value of that difference score is then subtracted from 5 and aver- aged with the third item to produce a summary measure of team size that ranges from 1 to 5, with higher scores being more favorable

Skills

1. Members of this work team have more than enough talent and experience for the kind of work that we do.
2. Some members of this team lack the knowledge and skills that they need to do their parts of the team's work. (R)

Supportive Organizational Context

A team's score is computed by averaging member responses on subdimensions that assess the availability of team rewards/recognition, information, training/technical consultation, and basic material resources. Items are worded to provide descriptions of the organization in

general, not just the proximal context of the focal team.

Rewards/Recognition

1. This organization recognizes and reinforces teams that perform well.

Information

1. This organization keeps its teams in the dark about information that could affect their work plans. (R)

Education/Consultation

1. Teams in this organization have to make do with whatever expertise members already have—technical training and support are not available even when needed. (R)

Material Resources

1. Teams in this organization can readily obtain all the material resources that they need for their work.

Team Focused Coaching

Respondents are asked "Overall, how helpful is your team leader in building your team's capabilities?" The 5-category response scale ranges from (1) unhelpful to (5) quite helpful.

Clear Norms of Conduct

This scale was developed by the current study author. Team norms are defined as agreed-upon behavior about how team members should behave and what team members can expect of each other. A team's score is computed by averaging member responses on the following items.

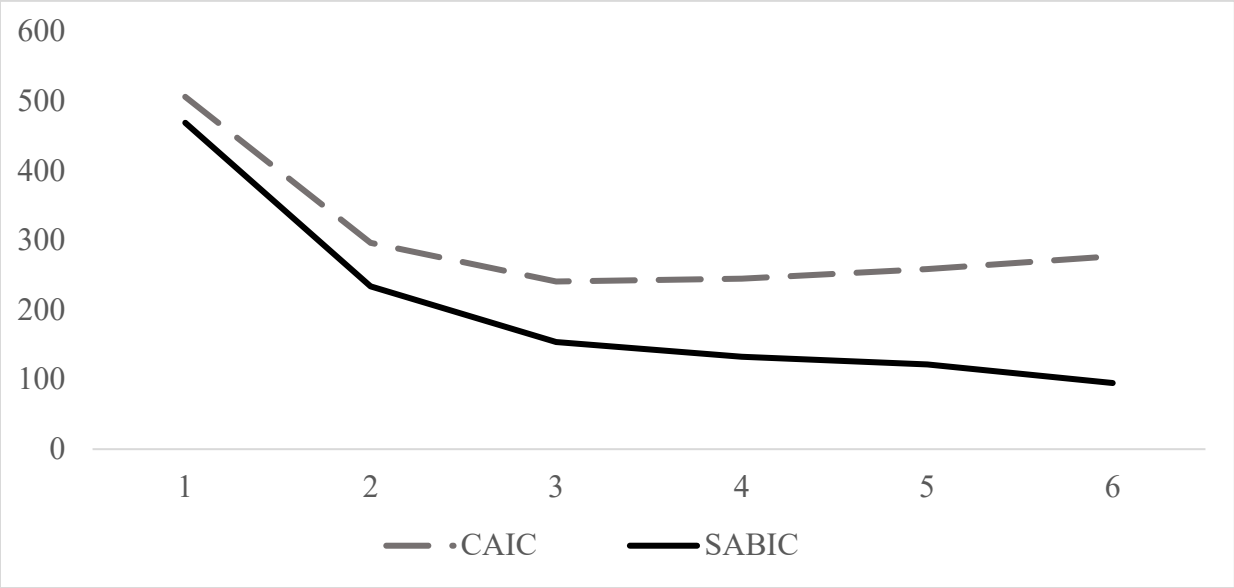
1. Our team has clear, agreed-upon norms about what team members can expect of each other that supports high quality teamwork
2. Our team has clear, agreed-upon norms about how we communicate to each other that supports high quality teamwork

3. Our team has clear, agreed-upon norms about how we will behave towards each other that supports high quality teamwork

(adapted from Wageman et al., 2005)

Appendix G

Latent Profile Analysis Plot



Note. Comparison of CAIC and SABIC Fit Indices Across Latent Profile Solutions

Appendix H

Estimated Odds Ratios from Multinomial Logistical Regressions

Table H1

Estimated odds ratios of each class versus Mediocre with a one-unit change in the Covariates

Class	Covariate	*OR*	*SE*	*b*	*p*-value
Striving	Purpose	0.712	1.477	-0.230	0.818
Surviving	Purpose	8.254	1.744	1.210	0.226
Groupy	Purpose	4.274	1.978	0.734	0.463
Thriving	Purpose	288.573	2.812	2.015	0.044
Striving	Stability	1.121	0.487	0.235	0.814
Surviving	Stability	2.375	0.622	1.391	0.164
Groupy	Stability	1.962	0.708	0.952	0.341
Thriving	Stability	2.273	0.816	1.006	0.314
Striving	Size	1.594	0.515	0.905	0.365
Surviving	Size	0.886	0.509	-0.238	0.812
Groupy	Size	1.644	0.601	0.826	0.409
Thriving	Size	0.790	0.669	-0.352	0.725
Striving	Skills	2.140	0.833	0.913	0.361
Surviving	Skills	1.159	0.797	0.186	0.853
Groupy	Skills	1.191	0.836	0.209	0.835
Thriving	Skills	12.426	1.450	1.737	0.082
Striving	Rec/Reward	1.213	0.563	0.343	0.732
Surviving	Rec/Reward	1.173	0.581	0.274	0.784
Groupy	Rec/Reward	1.628	0.658	0.741	0.459
Thriving	Rec/Reward	1.491	0.800	0.499	0.618
Striving	Lead Help	2.732	0.931	1.080	0.280
Surviving	Lead Help	1.874	0.842	0.745	0.456
Groupy	Lead Help	2.155	1.307	0.587	0.557
Thriving	Lead Help	94.814	3.629	1.254	0.210

Note. Coefficients, denoted as *b*, are parameters from multinomial logistic regression that indicate the likelihood of belonging to a specific target profile (Surviving, Groupy, Mediocre, Striving) vs. a Thriving pattern. Odds ratios (OR) are provided to increase interpretability. An

OR greater than 1.00 denotes an increased probability of membership in the target profile relative to the referent profiles. Conversely, an OR less than 1.00, corresponding to negative coefficients, indicates a greater likelihood of membership in the referent profile compared to the target profile.

Table H2

Estimated odds ratios of each class versus Groupy with a one-unit change in the Covariates

Class	Covariate	*OR*	*SE*	*b*	*p*-value
Surviving	Purpose	1.879	2.446	0.258	0.796
Mediocre	Purpose	0.226	1.984	-0.750	0.453
Striving	Purpose	0.160	2.325	-0.787	0.431
Thriving	Purpose	63.291	3.224	1.287	0.198
Surviving	Stability	1.210	0.886	0.215	0.830
Mediocre	Stability	0.510	0.708	-0.953	0.341
Striving	Stability	0.571	0.813	-0.688	0.491
Thriving	Stability	1.157	1.031	0.142	0.887
Surviving	Size	0.539	0.740	-0.835	0.404
Mediocre	Size	0.608	0.601	-0.826	0.409
Striving	Size	0.970	0.730	-0.042	0.967
Thriving	Size	0.481	0.859	-0.853	0.394
Surviving	Skills	0.974	1.077	-0.024	0.981
Mediocre	Skills	0.840	0.836	-0.208	0.835
Striving	Skills	1.798	1.103	0.532	0.595
Thriving	Skills	10.437	1.618	1.449	0.147
Surviving	Rec/Reward	0.720	0.821	-0.399	0.690
Mediocre	Rec/Reward	0.614	0.658	-0.742	0.458
Striving	Rec/Reward	0.744	0.806	-0.366	0.714
Thriving	Rec/Reward	0.915	0.983	-0.090	0.928
Surviving	Lead Help	0.870	1.493	-0.094	0.926
Mediocre	Lead Help	0.464	1.307	-0.587	0.557
Striving	Lead Help	1.270	1.538	0.155	0.877
Thriving	Lead Help	42.273	3.793	0.987	0.324

Note. Coefficients, denoted as *b*, are parameters from multinomial logistic regression that indicate the likelihood of belonging to a specific target profile (Surviving, Groupy, Mediocre, Striving) vs. a Thriving pattern. Odds ratios (OR) are provided to increase interpretability. An OR greater than 1.00 denotes an increased probability of membership in the target profile relative to the referent profiles. Conversely, an OR less than 1.00, corresponding to negative

coefficients, indicates a greater likelihood of membership in the referent profile compared to the target profile.

Table H3

Estimated odds ratios of each class versus Striving with a one-unit change in the Covariates

Class	Covariate	*OR*	*SE*	*b*	*p*-value
Mediocre	Purpose	1.385	1.477	0.220	0.826
Surviving	Purpose	11.459	2.098	1.162	0.245
Groupy	Purpose	5.935	2.321	0.767	0.443
Thriving	Purpose	406.628	3.057	1.965	0.049
Mediocre	Stability	0.892	0.487	-0.235	0.814
Surviving	Stability	2.110	0.722	1.034	0.301
Groupy	Stability	1.749	0.813	0.688	0.491
Thriving	Stability	2.030	0.897	0.789	0.430
Mediocre	Size	0.627	0.515	-0.905	0.365
Surviving	Size	0.556	0.654	-0.898	0.369
Groupy	Size	1.031	0.730	0.042	0.967
Thriving	Size	0.496	0.789	-0.890	0.373
Mediocre	Skills	0.467	0.833	-0.914	0.361
Surviving	Skills	0.542	1.041	-0.589	0.556
Groupy	Skills	0.556	1.103	-0.532	0.595
Thriving	Skills	5.807	1.560	1.128	0.259
Mediocre	Rec/Reward	0.825	0.563	-0.342	0.732
Surviving	Rec/Reward	0.967	0.736	-0.046	0.964
Groupy	Rec/Reward	1.343	0.806	0.366	0.715
Thriving	Rec/Reward	1.229	0.918	0.224	0.822
Mediocre	Lead Help	0.366	0.931	-1.081	0.280
Surviving	Lead Help	0.683	1.151	-0.332	0.740
Groupy	Lead Help	0.792	1.540	-0.151	0.880
Thriving	Lead Help	32.738	3.647	0.956	0.339

Note. Coefficients, denoted as *b*, are parameters from multinomial logistic regression that indicate the likelihood of belonging to a specific target profile (Surviving, Groupy, Mediocre, Striving) vs. a Thriving pattern. Odds ratios (OR) are provided to increase interpretability. An OR greater than 1.00 denotes an increased probability of membership in the target profile relative to the referent profiles. Conversely, an OR less than 1.00, corresponding to negative

coefficients, indicates a greater likelihood of membership in the referent profile compared to the target profile.

Table H4

Estimated odds ratios of each class versus Surviving with a one-unit change in the Covariates

Class	Covariate	*OR*	*SE*	*b*	*p*-value
Groupy	Purpose	0.522	2.445	-0.266	0.790
Mediocre	Purpose	0.120	1.745	-1.213	0.225
Striving	Purpose	0.086	2.099	-1.169	0.242
Thriving	Purpose	34.986	3.033	1.172	0.241
Groupy	Stability	0.826	0.887	-0.216	0.829
Mediocre	Stability	0.421	0.622	-1.391	0.164
Striving	Stability	0.472	0.723	-1.039	0.299
Thriving	Stability	0.956	0.955	-0.047	0.962
Groupy	Size	1.855	0.740	0.835	0.404
Mediocre	Size	1.129	0.509	0.238	0.812
Striving	Size	1.799	0.654	0.898	0.369
Thriving	Size	0.892	0.778	-0.147	0.883
Groupy	Skills	1.027	1.077	0.024	0.981
Mediocre	Skills	0.863	0.797	-0.186	0.853
Striving	Skills	1.846	1.041	0.589	0.556
Thriving	Skills	10.721	1.565	1.515	0.130
Groupy	Rec/Reward	1.389	0.821	0.400	0.689
Mediocre	Rec/Reward	0.853	0.581	-0.273	0.785
Striving	Rec/Reward	1.034	0.736	0.046	0.963
Thriving	Rec/Reward	1.271	0.928	0.258	0.796
Groupy	Lead Help	1.125	1.482	0.079	0.937
Mediocre	Lead Help	0.539	0.840	-0.737	0.461
Striving	Lead Help	1.498	1.154	0.350	0.726
Thriving	Lead Help	46.951	3.613	1.065	0.287

Table H5

Estimated odds ratios of each class versus Thriving with a one-unit change in the Covariates

Profile	Covariate	Coefficient	*SE*	*p*-value	OR	CI low	CI high
Surviving	Purpose	-1.16	3.02	0.25	0.03	0.00	11.38
Groupy	Purpose	-1.28	3.22	0.20	0.02	0.00	8.80
Mediocre	Purpose	-2.01	2.80	0.04	0.00	0.00	0.88
Striving	Purpose	-1.96	3.05	0.05	0.00	0.00	1.01
Surviving	Team-Stability	0.05	0.95	0.96	1.05	0.16	6.79
Groupy	Team-Stability	-0.14	1.03	0.89	0.86	0.11	6.51
Mediocre	Team-Stability	-1.01	0.82	0.31	0.44	0.09	2.18
Striving	Team-Stability	-0.79	0.90	0.43	0.49	0.09	2.86
Surviving	Size	0.15	0.78	0.88	1.12	0.24	5.15
Groupy	Size	0.85	0.86	0.39	2.08	0.39	11.20
Mediocre	Size	0.35	0.67	0.72	1.27	0.34	4.70
Striving	Size	0.89	0.79	0.37	2.02	0.43	9.47
Surviving	Skills	-1.52	1.57	0.13	0.09	0.00	2.00
Groupy	Skills	-1.45	1.62	0.15	0.10	0.00	2.28
Mediocre	Skills	-1.74	1.45	0.08	0.08	0.00	1.38
Striving	Skills	-1.13	1.56	0.26	0.17	0.01	3.66
Surviving	Norms	-1.13	1.44	0.26	0.20	0.01	3.32
Groupy	Norms	-1.11	1.50	0.27	0.19	0.01	3.57
Mediocre	Norms	-1.45	1.33	0.15	0.15	0.01	1.98
Striving	Norms	-1.17	1.43	0.24	0.19	0.01	3.08
Surviving	Rec/Reward	-0.26	0.93	0.80	0.79	0.13	4.85
Groupy	Rec/Reward	0.09	0.98	0.93	1.09	0.16	7.50
Mediocre	Rec/Reward	-0.50	0.80	0.62	0.67	0.14	3.22
Striving	Rec/Reward	-0.22	0.92	0.82	0.81	0.13	4.92
Surviving	Information	-0.49	0.87	0.63	0.65	0.12	3.61
Groupy	Information	-0.48	0.93	0.63	0.64	0.10	3.94
Mediocre	Information	-0.65	0.75	0.52	0.61	0.14	2.69
Striving	Information	-0.20	0.87	0.84	0.84	0.15	4.59
Surviving	Education	0.01	0.87	0.99	1.01	0.19	5.51
Groupy	Education	-0.03	0.92	0.98	0.97	0.16	5.86
Mediocre	Education	-0.31	0.74	0.76	0.79	0.18	3.41
Striving	Education	-0.03	0.86	0.97	0.97	0.18	5.21
Surviving	Resources	0.39	0.98	0.70	1.46	0.21	9.88
Groupy	Resources	0.45	1.01	0.65	1.57	0.22	11.35
Mediocre	Resources	-0.11	0.81	0.91	0.92	0.19	4.46
Striving	Resources	-0.51	0.93	0.61	0.62	0.10	3.87
Surviving	Lead Help	-1.07	3.67	0.29	0.02	0.00	26.37
Groupy	Lead Help	-0.98	3.82	0.33	0.02	0.00	42.48
Mediocre	Lead Help	-1.25	3.62	0.21	0.01	0.00	12.84
Striving	Lead Help	-0.96	3.68	0.34	0.03	0.00	39.63

Note. Coefficients, denoted as *b*, are parameters from multinomial logistic regression that

indicate the likelihood of belonging to a specific target profile (Surviving, Groupy, Mediocre, Striving) vs. a Thriving pattern. Odds ratios (OR) are provided to increase interpretability. An OR greater than 1.00 denotes an increased probability of membership in the target profile relative to the referent profiles. Conversely, an OR less than 1.00, corresponding to negative coefficients, indicates a greater likelihood of membership in the referent profile compared to the target profile.