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It takes two flints to make a fire

Understanding work engagement at the team level

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Para o Nuno, a Sofia e @ bebé que aí vem,
a equipa para a qual reservo a mais visceral energia e o mais terno envolvimento.

ABSTRACT

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The main goal of the present thesis is to propose, validate and understand the construct of team work engagement. The thesis includes one theoretical article and five empirical articles. Theoretically, team work engagement is defined as a shared emergent state that mediates the relationship between interpersonal team processes and team effectiveness. In studies 1 and 2, we aimed at validating the construct. Our results indicate that work engagement can be empirically assessed at the individual and team levels. Moreover, the findings support the proposed mediation role of team work engagement. Study 3 was aimed at investigating a specific interpersonal team process variable, team conflict, in the relationship between team resources and team effectiveness. Results show that task and relationship conflict are contextual variables that have a negative impact on team work engagement. Task conflict, however, can strengthen the positive relationship between team work engagement and team performance. In study 4 we investigated the cross-level influence of team work engagement and individual positive emotions on perceptions of team viability. Our results indicate that team-level states have a "protective" effect on this specific outcome. Finally, study 5 takes a qualitative look at team members' interactions, looking for patterns that characterize highly engaged teams. We found that positive affective interactions are frequent within these teams, but that the relationship between affective interactions and team objective performance is not linear. This work contributes to our understanding of teamwork, particularly its affective properties. The thesis also feeds the discussion of multilevel phenomena in organizational life, highlighting relevant clues for managing teams.

Keywords: Team work engagement, teamwork, employee engagement, interpersonal team processes.

PsycINFO Classification Categories and Codes: 3660 Organizational Behavior; 3020 Group & Interpersonal Processes

RESUMO

RESUMO

A presente tese tem como objectivo propor, validar e explorar a emergência do constructo de "work engagement" de equipa. Apresenta-se uma proposta teórica, e cinco estudos empíricos. Teoricamente, define-se "work engagement" de equipa como um estado emergente partilhado, mediador da relação entre processos interpessoais de equipa e a eficácia da mesma. Os dois primeiros estudos procuraram validar o constructo. Os resultados mostram que este é distinto ao nível individual e de equipa, e suportam o referido papel mediador. O estudo 3 analisa um processo interpessoal específico, o conflito, na relação entre os recursos da equipa e a sua eficácia, mediada pelo "work engagement" de equipa. O conflito relacional e de tarefa apresentam uma relação negativa com o "work engagement" de equipa. Porém, o conflito de tarefa influencia positivamente a relação entre o "work engagement" de equipa e o seu desempenho. No estudo 4 investigou-se a influência "cross-level" entre o "work engagement" de equipa e as emoções positivas individuais para a percepção da viabilidade da equipa. Os resultados indicam que os estados colectivos têm um efeito "protector" para esta variável. Finalmente, o estudo 5 apresenta uma abordagem qualitativa, procurando padrões de interacção que caracterizam equipas de elevado "engagement". Estas equipas demonstram frequentes interacções afectivas com valência positiva, mas a relação entre estas e a performance objectiva das equipas não é linear. Este trabalho contribui simultaneamente para a compreensão do trabalho em equipa, nomeadamente da sua dimensão afectiva, e para a discussão de constructos de natureza multinível, salientando pistas relevantes para a gestão de equipas.

Palavras-Chave: "Work engagement" de equipa, trabalho em equipa, "engagement" dos colaboradores, processos interpessoais de equipa

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CHAPTER I.

GENERAL INTRODUCTION

1. GENERAL INTRODUCTION

In 1868, Louise May Alcott wrote "it takes two flints to make a fire" (p. 715). When we think about work teams in organizations, whether in industrial plants, surgical rooms, laboratories or schools, we want them to succeed in creating a strong, long-lasting and remarkable "fire". That is, we want them to be effective. Many modern organizations are structured in work teams, and those teams are considered its building blocks (e.g., Campion, Medsker, & Higgs, 1993). Consequently, understanding what may enhance the ability of teams to be effective must be a serious concern for researchers and practitioners. Teams are composed of more than two "flints" that, taken together, can have the potential to generate a successful bonfire, with beneficial consequences for both organizations and individuals. This fire does not only correspond to team effectiveness in a broad sense, where teams attain their assigned goals. Instead, organizations flourish with teams who are able to go beyond what is formally required from them - they need engaged employees with high levels of vigor while working, dedication towards their job and absorption in their tasks (Bakker, 2011). How should the many "flints" work together to start a fire? What happens when they hit each other and create fire-inducing sparks?

During the last decade, several studies have shown that work engagement (WE) is an important predictor of effectiveness outcomes at the individual level (e.g., Halbesleben, 2010) and is now an established and solid construct. Recently, Bakker, Albreicht and Leiter (2011) have argued that engagement can be understood within the circumplex model of affect (Russell, 1980), as a state of a positive affect and of high activation. Thus, the conceptualization of work engagement highlights the importance of the affective space of individuals. Nonetheless, affect has often been overlooked in the organizational behavior literature and little is known specifically about its implications for teams and teamwork.

Considering the relevance of work engagement at the individual level, the present work departs from the question of whether engagement can exist at the team level – is it possible to have energetic and involved teams, as collectives? From this central question, other ramifications arise: what are its implications for team effectiveness and how does this particular collective state appear within teams?

Exploring these questions implies looking at both the specificities of collectives and at the affective dynamics of teams.

This work contributes to answering those questions, presenting the construct of team work engagement. Theoretically, it proposes a definition of team work engagement and develops a rationale and a model for understanding both its emergence within teams and its nomological network. Empirically, the model is tested in different samples. Taken together, this thesis proposes a new, validated construct useful for different areas such as groups and teams, organizational psychology and management. It also contributes to the multilevel research methods domain, considering individuals within teams.

This work is organized as follows: the first part covers a review of the main theories on teamwork, outlining what must be taken into consideration when reflecting on teams and on team effectiveness. Second, we offer an overview of the theories on work motivation and affect, in what the group level is concerned. From these two broader fields, we move to the specific area of work engagement. We start with a summary of what is known so far about individual work engagement and then present our theoretical framework and empirical work. Five empirical studies are presented, showing evidences for the validity of our theoretical model. Finally, a common discussion encompassing all of the studies offers a comprehensive approach to the new construct and suggests avenues for future research.

CHAPTER II.

TEAMS AND TEAMWORK

2. TEAMS AND TEAMWORK

Teams provide a wide field of research to scholars on work psychology and organizational behavior. Their unique characteristics, complex dynamics, and structure have long puzzled and attracted researchers, particularly considering that many organizations depend on teams to attain their goals and succeed. In this section, we present a necessarily brief summary of the state of the art in what teams and teamwork is concerned.

2.1. Definition and key features

First and foremost, and following Guzzo and Dickinson (1996), work teams are groups within the organizational context. The distinction between the concepts of team and group is contextual and hence we use the words group and team interchangeably throughout this work.

According to Alderfer (1977), a group is an intact social system, complete with boundaries, interdependence for some shared purpose, and with differentiated member roles. These ideas are found in most of the definitions of teams, considering their organizational context. For example, according to Salas, Dickinson, Converse and Tannenbaum (1992), teams are complex entities consisting of two or more individuals who interact socially and adaptively, with shared common goals and meaningful task interdependencies. They are hierarchically structured, have a limited life span, encompass roles and expertise that are distributed among its members, and are embedded within an organizational context that influences and is influenced by on-going processes and performance outcomes. Kozlowsky and Bell (2003) define teams as "collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity" (p. 334). To these features, Guzzo and Dickinson (1996) add that work groups perform tasks that affect others (costumers and co-workers).

Overall, the definitions of teams agree that they are complex, adaptive, and dynamic systems (Arrow, McGrath & Berdhal, 2000). Interdependency of team members, where members depend upon one another in pursuing a collective purpose, is a critical feature (Salas, Rosen, Burke & Goodwin, 2009). These definitions imply that

it is possible to distinguish members of teams from non-members and that teams are perceived as entities by both (Hackman, 2012; Hackman & Katz, 2010). In what team outputs are concerned, they can be legitimately attributed to the group as a unit (Hackman & Katz, 2010).

To sum up, six continua criteria may be used to determine the extent to which a system of relationships is a group or team (Arrow et al., 2000): (1) whether people involved consider themselves as part of a group; (2) whether they recognize one another and distinguish members from non-members; (3) whether members coordinate their behavior in pursuing collective projects; (4) whether members coordinate their use of shared set of tools, knowledge and other resources; (5) whether members feel connected to other members and projects of the group; and (6) whether members share collective outcomes based on their interdependent activity on the group.

Ultimately, organizations need interdependent work to be effective in accomplishing their goals. Even if there are different kinds of teams facing distinct demands and, as a consequence, that function differently (Mathieu, Maynard, Rapp & Gilson, 2008), they all work towards accomplishing something (a product, a service, a project, and so on). The degree to which a team is considered effective is, then, a relevant evaluation.

For some authors, this evaluation is related to the assessment of how well the results of performance meet objective or subjective standards (Salas, Rosen, Burke & Goodwin, 2009). However, and since the seminal proposal of Hackman (1987), team effectiveness comprises three factors (Hackman, 1990, 2002). On the one hand, it is indicated by the outputs produced by the group and by the extent to which the group meets the standards of quality, quantity or speed of the people who receive and/or use that output. Second, team effectiveness encompasses the enhancement of the team's capability to work together interdependently in the future. Some authors call this "team viability": the ability to adapt to internal and external changes while staying together over time, and to sustain effective levels of performance over time (e.g., Behfar Peterson, Mannix, & Trochim, 2008, Kozlowski & Bell, 2003; Rousseau & Aube, 2010). Finally, effectiveness in teams is indicated by the effect a team has on its member's growth, learning and personal well-being.

The work of many researchers on teams and teamwork has been the development of models and frameworks that help to explain and understand what leads teams to being effective.

2.2. Models of team effectiveness

In 1964, McGrath proposed the IPO model (input-process-output) as the guiding framework for studying teams. This proposal departs from the general systems theory (e.g., von Bertalanffy, 1956) and is, according to Salas, Stagl, Burke and Goodwin (2007), the most prevalent model within the team effectiveness literature. The basic proposal of IPO models is that there is a set of inputs (e.g., resources, knowledge and skills) that lead to processes (e.g., coordination, definition of goals), which, in turn, lead to outputs (e.g., team effectiveness).

The theoretical developments within the field encompass notions from the complex systems approach and highlighted the importance of time. Therefore, teams are nowadays considered complex systems with more than unidirectional cause-effect relationships, existing in a context and with a past and a future, changing and adapting overtime. As a consequence of this conceptualization, outputs can, recursively, be fed back into input variables in a subsequent time moment of time.

Marks, Mathieu and Zaccaro (2001) name the distinguishable periods of time over which performance accrues and feedback is available as performance episodes. Performance episodes are sets of inputs-processes-outputs, each with its relative importance. Over time, team performance is best viewed as a series of related IPO episodes (cf. Figure 2.1). Each team may be simultaneously involved in more than one performance episode, depending on their goals and tasks, and processes are likely to vary in importance across episodes. According to Marks and colleagues, each task that teams perform encompasses action and transition phases, each of which comprises an IPO performance episode. Action phases refer to the moments when teams engage in actions that directly contribute to goal accomplishment, whereas in transition phases the focus is on planning and evaluating activities. The IPO models developed in recent years take into account these temporal matters and consider that the tasks of individuals and groups are embedded in a dynamic temporal context and characterized by cyclical and phasic patterns throughout (McGrath & Tschan, 2004).
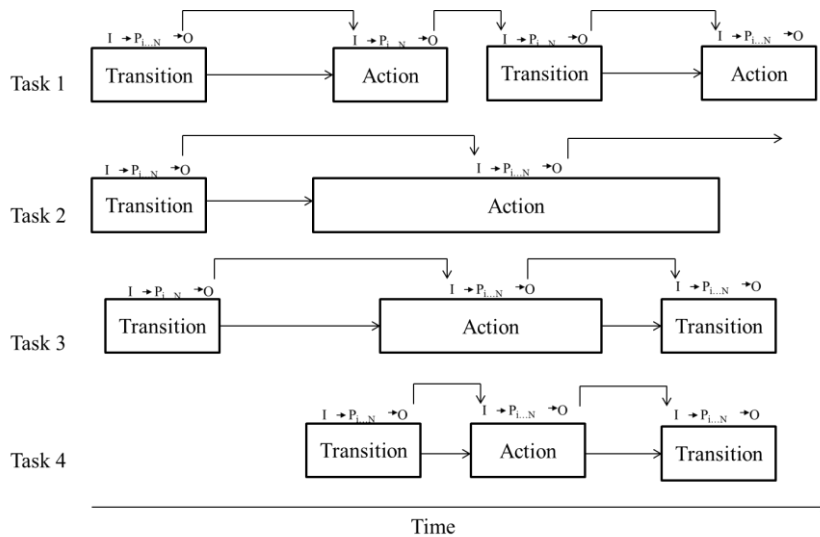
Figure 2.1. Temporally based team task accomplishment

(adapted from Marks, Mathieu & Zaccaro, 2001, p. 361)

The IPO framework set the stage for the development of many different models, each with its own inputs, processes and outputs. Generically, inputs are the antecedent factors that can both enable or constrain the interactions between team members. Integrating 11 different proposals, Salas and colleagues (2007) defined four major classes of inputs: (1) individual characteristics such as personality or competencies (knowledge, skills and abilities of individual team members); (2) team characteristics such as power structure, climate and culture; (3) task characteristics, namely task complexity and type; and (4) work structure (e.g., team norms, work assignment). This model does not intend to be exhaustive, since the specific constructs under each "umbrella" can differ from study to study. In a similar proposal, Mathieu and colleagues (2008) suggest that team inputs can be organized in three major categories: (1) individual team member characteristics (e.g., personality, demographic or functional diversity); (2) team-level factors (interdependence, technology/virtuality, team leadership, etc.); and (3) organizational/contextual factors (e.g., human resource systems, environmental complexity). In general, team inputs reflect the team's "potential" for productivity (Essens, Vogelaar, Mylle, Blendell, Paria, Halpin & Baranski, 2009) that will be translated to team effectiveness as a function of team processes.

Outputs are the results of team activity and traditionally include team performance, team viability, and team members' affect or satisfaction. Some authors find it relevant to distinguish between individual and team performance outcomes (e.g.,

Salas et al., 2007). Individual performance outcomes are related to the traditional perspectives on performance (for example, the quantity or the quality of the products). Team performance outputs, on the other hand, reflect collective states of teams that emerge from team interaction, such as collective efficacy or cohesion. According to Marks and colleagues (2001), these emergent states characterize properties of the team that are typically dynamic in nature and that describe cognitive, motivational and affective states of teams. The recent conceptualization of IPO models considers that both individual and team outputs produce system feedback and become inputs available for subsequent performance episodes.

Finally, team processes are "members' interdependent acts that convert inputs to outcomes through cognitive, verbal and behavioral activities directed towards organizing taskwork to achieve collective goals" (Marks et al., 2001, p. 357). Again, more than one typology of team processes can be found in the literature (e.g., Fleishman & Zaccaro, 1992; Cannon-Bowers et al., 1995; Marks et. al., 2001). They all have in common the fact of considering team processed dynamic, simultaneous and episodically enacted overtime. Considering the overlapping of these proposals, Salas, Sims and Burke (2005) proposed five processes believed to be central to the interdependent action: team leadership, team orientation, mutual performance monitoring, backup behaviors, and adaptability. Together with coordination mechanisms such as closed loop communication or shared mental models, these five components are considered the "Big 5" of teamwork.

Despite the fact that research has provided promising findings in what the mediating role of group interaction processes are concerned (Hackman, 2012), an alternative proposal to IPO models was put forward by Ilgen, Hollenbeck, Johnson and Jundt (2005). These authors consider that team processes are not the only mediator factors between team inputs and outputs, and that emergent states should also be considered as such. They suggest the term IMOI (input-mediator-output-input) as a more accurate framework for understanding and studying teamwork. Both processes and emergent states are considered variables with important mediational influences between inputs and team performance and viability. Within these mediators, researchers have explored concepts such as transactive memory (e.g., Moreland, 1999), team learning (e.g., Decuyper, Dochy, & Van Den Bossche, 2010) or behavioral integration (e.g., Hambrick & Mason, 1984).

This model also includes the notion of cyclical causal feedback, where the outputs of one performance episode become the inputs for subsequent ones. Moreover, Ilgen and colleagues (2005) add that the linkages between inputs, mediators and outputs may be conditional or nonlinear, and not merely additive. Within this framework, other mediators, considered a blend of team processes and emergent states have also been suggested (Mathieu et al., 2008).

2.3. The "black box" of the mediators

As a consequence of the assumption of the non-linearity in the conceptualization of teams as complex systems, conceptual and empirical works have been conducted on team processes and emergent states. Researchers aim at explaining, how and why certain inputs affect team effectiveness, and this effort implies looking in detail to the interactions between team members – to "what happens", "how it happens" and "when it happens". Indeed, the dynamic systems approach to studying teams entails the tracking of team-level variables over time, examining their qualitative patterns. These patterns, then, should be related to the rules of interaction among team members, as well as to aspects of the group context (Arrow et al., 2000). Analysing the interaction between team members is, then, essential to understand the global structure or pattern generated by that interaction. For example, it is relevant to know how team members divide their tasks to understand task coordination – is it explicitly done? Does everyone express their opinion?

Interaction occurs, by definition, when team members are involved in team processes. Zaccaro, Rirman and Marks (2001) distinguish four major groups of processes: cognitive (e.g., shared mental models, Cannon-Bowers, Salas, & Converse, 1990), motivational (e.g., group cohesion, performance norms), affective (e.g., affective climate), and coordination (e.g., orientation, systems monitoring) processes. Marks et al. (2001) divide team processes in three categories, illustrating different performance phases of teams (cf Table 2.1). Transition phase processes are executed between performance episodes and have a dual focus: reflecting on previous action and consequences and preparing for future actions. Action phase processes encompass activities developed while pursuing the team's objectives. Finally, interpersonal processes occur throughout the action and transition phases. They are considered the foundations for the effectiveness of the other processes and are related to the management of interpersonal relationships within the team.

Table 2.1. Typology of team processes of Marks and colleagues (2001)

Transition processes	Action processes	Interpersonal processes
• mission analysis	• monitoring progress	• motivation and confidence building
• goal specification	• systems monitoring	• affect management
• strategy formulation and planning	• team monitoring and backup responses	• conflict management
	• coordination activities	

However, the study of exactly how these processes occur within teams is scarce. Tracking the patterns of the behaviors of one system is an extremely labour-intensive undertaking (Ilgen et al., 2005) and has no formal guidelines to it. The work of Bales (1950) was pioneer in developing a methodology for assessing group interaction (Interaction Process Analysis – IPA). This methodology details a coding system for group interaction, where each communication act is coded. Codes referred to task areas (asking or answering questions) and socio-emotional areas (positive and negative reactions). His work led to some relevant findings in what team interaction is concerned. Bales found that the task and the socio-emotional needs of groups are often in conflict. In order to reach an adequate equilibrium between the two, there should be a cyclic pattern of interaction where a movement forward in what the task is concerned is followed by socio-emotional communication.

Emotions and affective states have been disconnected from the organizational sciences research for a long time. Nonetheless, as we can see, working in a team involves interaction and interpersonal relationships. These, in turn, imply more than just cognitive or behavioral components. Emotions and affective states are inherent to our human condition. Each and every one of us has experienced fear, joy, anger, embarrassment or pride, with more or less intensity, in several moments of our lives. The lack of a systematic focus on the affective experiences at work can be attributed to various reasons (Briner, 1999). First, work and organizations have a history of being seen as rational, logical and, therefore non-emotional. Indeed, in the past (and since the work of Taylor in the beginning of the 20th century), the experience of emotions at work was seen as something that could be an obstacle to successful task completion, as the focus was in organizations as rational systems. Second, research agendas of

organizational scholars depend, to a great extent, on the interests of managers and on economic pressures that have other priorities (seen as directly related to productivity or effectiveness). Finally, there seems to be a general tacit acknowledgement that organizational researchers are already studying affect in the work context, since they deal with concepts such as stress or satisfaction. Finally, it's not counter intuitive to recognize that emotions and affective states present a greater methodological challenge to researchers than do other, more stable constructs such as attitudes. By definition affective states are subjective, transient, dynamic and, sometimes, not directly accessible to consciousness or with no behavioral clear expression. Academics and practitioners alike seemed to follow a rather tayloristic approach and consider affect or emotion as something personal, feminine and irrational. Therefore, after the 1930s and after the emergence of affect at work as a valid scientific concern (Brief & Weiss, 2002), the behaviorist and rational tradition dominated the field for the most part until the 1990s, when affect was rediscovered by organizational scholars.

2.4. Summary

The study of work teams presents numerous theoretical and methodological challenges to researchers. One of the most prominent challenges is the study of team processes and emergent states. It encompasses looking at team members' interaction over time in order to understand "what happens" but essentially also "how it happens". These interactions involve the communication and perception of emotions, not as something that only occurs within an individual's mind, but as a social entity with a communicative function (Hareli, Rafaeli & Parkinson, 2008). Interpersonal relationships are, then, intrinsically connected to the emotions and affective states, which, in turn, pose new complex challenges.

The central construct of the present thesis – work engagement – has a strong motivational nature, both at the individual and team levels. Simultaneously, it is considered highly related to the affective space of individuals (Bakker & Oerlemans, 2011). Moreover, and as stated above, affect at work has been less systematically approached by researchers. Our aim is, then, to explore the affective component of work engagement in teams, and consequently to start looking at the two "black boxes": the "black box" of the mediators of team effectiveness models and the "black box" of the affective dimension of work.

The affective and motivational aspects of work that impact the interpersonal relationships within teams will be addressed in the next section. Considering the focus of the present work, a more in-depth review will be presented on work affect.

CHAPTER III.

MOTIVATION AND AFFECT IN TEAMS

3. MOTIVATION AND AFFECT IN WORK TEAMS

3.1. Team motivation

Working together in teams may have consequences for employees' motivation through different pathways. On the one hand, it may influence individual-level motivation. On the other hand, teams may have different and specific motivational processes operating.

Researchers have reported both detrimental and facilitating factors for individual motivation. Some studies have reported evidence for social loafing, defined as the deliberate reduction of effort exerted in working towards a goal when individuals are working together, as opposed to working alone (e.g., Karau & Williams, 1993). Following this reasoning, working in a team could lead to decreased motivation and, consequently, to decreased productivity. Specifically, this productivity loss is more likely to occur when individuals perceive that the costs of their contribution are excessive or that there is no contingency between their contributions and achieving a given goal (Sheppard, 1993). However, the social psychological literature highlights the motivational value of wanting to project a positive self-image when in the presence of others (e.g., Zajonc, 1965). Social identity, or "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership" (Tajfel, 1970, p. 69), may also explain a facilitating role of teams in what individual motivation is concerned. Indeed, a strong social identity with the work group may lead individuals to invest effort in pursuing their teams' goal (e.g., Riketta & Van Dike, 2005).

Despite these contributions to understand how working on a team might influence individual motivation, little is known about how motivation works at the team level, which motivational forces are found at the team level, and whether these forces are different across levels (Kozlowski & Bell, 2003). To our knowledge, only one model has specifically address the issue of team motivation.

Chen and Kanfer (2006) proposed that motivation processes are similar across levels, in terms of their functionality: to generate goals and to pursuing them. However, the complexity of the team level implies that both of those activities occur through coordinated and collective actions. They define team motivation as "the collective system by which team members coordinate the direction, intensity, and persistence of their efforts" (Chen & Kanfer, 2006, p. 233), and posit that two interrelated

motivational systems may be involved: team processes related with generation and commitment to a collective goal and team processes related to collective actions that support goal achievement. Additionally, they argue that proximal emergent motivational states (namely collective efficacy), as well as feedback on collective and individual outcomes will affect team-level motivation. Finally, following Marks and colleagues (2001), Chen and Kanfer relate goal generation and goal striving to teams' transition and action processes.

Both individual and team motivation comprise goal generation, goal striving and motivational states. However, team motivation can be differentiated from individual motivation because of the context of social interaction that characterizes teams. Whereas individual motivation relies on cognitive-behavioral processes, at the team level it is manifested through social-behavior ones (Chen & Kanfer, 2006): "there is a larger social component to team motivation, and a larger cognitive component to individual motivation" (p. 236). This means that team members need to agree on the objectives to pursue and coordinate their actions to achieve them. Plus, we know that establishing specific and difficult goals is related to increased intrinsic motivation (Wegge, 2004, 2009). Within teams, this goal-setting theory is related to better communication during team processes and less use of inefficient task strategies.

Motivation then can be conceptualized as a multilevel construct, functionally equivalent between levels. Moreover, cross-level motivational influences between individual and team goal generation, goal striving, and motivational states are expected to exist. The equivalence between individual and team motivation in what their components are concerned is likely to be also found in the relationship between team motivation and team affect, where the latter influences the processes of the former.

3.2. Team affect

Some scholars have proposed and tested the existence of group-level affect, as a collective state shared by all the group members. An important milestone for the study of collective affect is the work by Hatfield, Cacciopo and Rapson (1994). These authors coined the term "emotional contagion" to designate the tendency of individuals to reproduce and synchronize the facial expression, vocalizations, posture and movements to the ones of another person or group with whom they are interacting. Whether this mimicry is automatic or more conscious (by trying to "walk in the other's shoes"), it

will influence the subjective emotional experience of individuals that end up by experiencing a similar emotion to the one they are reproducing.

In 1996, George suggested the concept of "group affective tone", defined as a "consistent or homogeneous affective reactions within a group" (p. 77), reflected in the experience of similar kinds of affective states. According to this author, the group affective tone can be either related to positive affective states (e.g., exited, strong, enthusiastic, proud, alert, inspired, determined, attentive, active) or to negative ones (e.g.,: distresses, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, afraid). Parkinson, Fisher and Manstead (2005) discuss possible reasons for intergroup similarities in members' emotional experiences: they are more likely than a randomly assembled sets of people to be exposed to the same kind of emotional objects and events; they interact with each other daily and thereby exert mutual influences on each other's appraisals, emotions, and expressions; they are likely to share some norms and values that will promote similarities in the ways they appraise emotional events and express or talk about their emotions; members are likely to define themselves as members of the group (membership may be a significant component of their identity) and a group may define itself around the notion of expressing-experiencing a particular emotion.

Some factors may contribute to the development of this collective affectivity within work teams. First, and according to attraction-selection-attrition framework (Schneider, 1987), teams are likely to be composed of individuals with similar personality traits. Group leaders or supervisors my select members based on specific criteria, leading to choices of similar individuals. Also, placement may depend on decision-makers judgments of who will get along with whom. Finally, individuals who find themselves at odds with the modal personality type of the group might seek a transfer to other teams or units. Therefore, if teams are indeed composed of individuals with similar personality traits, they will be more likely to experience similar affectivity. Second, the socialization processes inform newcomers about how things should be done within the team. Thus, new members learn what are the expected behaviors, goals and norms, and are likely to strive to comply with them in order to become part of that team. Third, teams share a set of tasks and of outcomes. Going back to the ideas of the Affective Events Theory (Weiss & Cropanzano, 1996), the work events that arise from performing the tasks or receiving feedback are therefore shared among team members. Notwithstanding individual characteristics, sharing the same work events is likely to

promote similar affective experiences, especially in individuals who have some degree of similarity. Fifth, the emotion contagion processes described above are also present in work teams.

Other authors (Bartel & Saavedra, 2000) suggest the term "collective mood". For these authors, a collective mood arises not only due to emotional contagion but also by means of emotional comparison processes. Facing ambiguous situations, when individuals do not know how the situation should be evaluated and are unsure about its meaning, they tend to turn their attention to the reactions of others, considered similar to themselves. After observing and understanding significant others' reactions, individuals will likely adopt the same type of reaction and evaluation. Bartel and Saavedra (2000) propose some characteristics of groups that will foster emotional convergence. Groups composed of members with long tenure and with a higher degree of familiarity between them are more likely to develop a common mood. These people will have the tendency to interact more, to share a higher degree of intimacy and will also decode the affective expressions of others more easily. The existence of norms of emotional display also facilitates the transmission and interpretation of affective states which will promote a higher degree of emotional convergence. Finally, the more often team members interact, the more opportunities they have to perceive their co-workers emotional state (Bakker & Xanthopoulou, 2009). The degree of interaction is, in turn, dependent on the type of task (some tasks need more coordination and communication than others), on the quality of the interpersonal relationships between team members, and on their cohesion, as a proxy for social influence processes, promoting conformity in thought, behavior and action. Indeed, George (1996) had already put forward that the group affective tone's existence was dependent on on-going social influence, with groups that are physically separated having less opportunities to develop this shared state.

Empirically, the existence of a common affective state, as well as its antecedents and consequences, has found some support. For example, the work by Anderson, Keltner and John (2003) showed the emotional convergence in dyads (couples and roommates). These dyads progressively reported similar answers in emotional scales over a year period. The same study also found that, in what romantic couples are concerned, individuals with the lower power within the relationship are the ones that tend to move towards the other person's emotional state. The work of Peter Totterdell and colleagues also provides support for the existence of a shared emotional state within teams. Totterdell, Kellett, Teuchmann and Briner (1998) reported a significant

relationship between nurses' individual mood and the collective mood of their colleagues, and this relationship was independent of the existence of daily hassles. The same results were found with a sample of accountants. Further, Totterdell (2000) reported similar results with cricket teams. Some characteristics seem to help in the transfer of moods within a team, according to both of these studies: being older, a high degree of interdependence between team members, and satisfaction with the team, resulting in higher commitment and perception of a better team climate.

A comprehensive model for understanding group emotion was proposed by Kelly and Barsade (2001), integrating several other authors' contributions. For these authors, the group's affective state depends on both bottom-up and top-down factors. Bottom-up influences are individual-level affective factors: dispositional affect, moods, emotions, emotional intelligence, and sentiments. These are shared implicitly and explicitly within teams. Implicit emotional sharing processes are emotional contagion, already mentioned, vicarious affect and behavioral entrainment. The first one is related to the socialization processes mentioned by George (1996) and has to do with the observation of emotional display by someone considered as a model and with the subsequent learning of that particular display. The second one has to do with a nonconscious process of altering one's behavior in order to coordinate or synchronize with someone else. Explicit emotional sharing processes are intentional affective induction (e.g., the use of charisma by leaders) and impression management (a surface acting emotion regulation strategy, by which one individual displays a socially desired emotion). The top-down factors that influence group affect consists of the affective context where groups are embedded. Kelly and Barsade (2001) highlight the emotion norms (both at the organization and at the group level) and the group's emotional history.

Considering that teams develop collective affective states, it is relevant to consider whether its valence, positive or negative, might impact their effectiveness.

3.3. The influence of positive psychology

Positive states have become popular in psychology research. In recent years, occupational health psychology and the organizational behavior literature have shifted toward a positive focus. The emergence of positive psychology (Seligman & Csikszentmihalyi, 2000) has turned researchers' attention away from the negative states and their consequences and, therefore, nowadays' interest is more on the positive states

and qualities that have the power to improve individual's well-being in numerous contexts. In work context, positive psychology aims at understanding human strengths and how they can be promoted in the workplace, enhancing productivity and well-being.

After their review of the literature, Staw and Barsade (1993) concluded that positive affect is related to greater cognitive effort and the ability to engage in more complex logical reason. Some years later, and following the trend of positive psychology, Fredrickson (2001) proposed the "broaden-and-build" theory of positive emotions. According to this theory, positive emotions widen the array of thoughts and actions available, resulting in more behavioral flexibility, generativity and adaptability. Moreover, overtime, the benefits of the broader repertoires of thought and action will, as a consequence, build enduring personal resources, such as coping mechanisms, social connections and environmental knowledge. The benefits of positive affect have already been documented and range from resilience and physical and mental health (Fredrickson, Tugade, Waugh, & Larkin, 2003) to happiness (Fredrickson & Joiner, 2002) and increased intuition (Bolte, Goschkey, & Kuhl, 2003), and creativity (Isen, Daubman, & Nowicki, 1987).

These positive effects of positive affectivity may also be found at the team level. Empirically, emotional contagion of positive emotional states/positive group affect has been related to several positive outcomes when positive emotions are spread among team members, such as prosocial behavior (George & Brief, 1992), or more costumer helping behavior George (1991). Barsade (2002) reported a significant influence of emotional contagion not only on individual-level attitudes but also on group processes: the positive emotional contagion improved cooperation and decreased conflict between the group members, and increased task performance.

In order to understand the mechanism through which collective emotions influence group outcomes, Rhee (2008) proposes interaction amongst members as the mediator of that relationship. In what positive emotions are concerned, this proposal is based on the broad-and-build theory of positive emotions and on the construct of playfulness, as a manifestation of psychological well-being translated into positive exchanges such as complementing and validating each-others' ideas and opinions. According to Rhee (2008), positive emotions such as joy and happiness and the consequent tendency to approach others derive from interactions such as building on each other's ideas (e.g., using other people's ideas as the basis for generating another

idea, moving the idea forward), morale building communication through gestures and comments (e.g., communicating positive and encouraging comments on group performance as a whole by acts of encouragement such as high-fives or clapping), and affirmation of each other's ideas (e.g., acceptance and support for each other's' ideas and opinions, namely through uttering positive, supportive comments). These interactions and the positive emotions they engender have the power to generate will be related to positive group outcomes such as group creativity, member learning and satisfaction with the group.

Despite the mounting evidence on the relationship of positive affect and performance, some authors also point to the need to consider the detrimental implications of positive emotional states, particularly in what decision making is concerned. Rhee (2008) argues that a high level of positive emotions might reduce the quality of group decisions and lead to groupthink. This results in a tendency to conform to the opinions of the group members, therefore limiting the possibility of divergent lines of thought. Also, it leads to little expectation of challenging comments and criticism. Individuals with negative emotional states, on the other hand, are more likely to consider the negative aspects of a situation and are less susceptible to escalation of commitment (e.g., continuing to support a given idea or course of action in the face of critics to that same idea or course of action) (Kammeyer-Mueller & Judge, 2008).

3.4. Summary

Work motivation and work affect can be considered multilevel constructs. These are fertile areas for the understanding of organizational behavior, both at the individual and at the team levels. Due to their team members' interaction, teams are able to develop collective affective states that will impact the way they are able to work together in the pursuit of their goals. They also interact in defining goals and courses of action to attain them.

Work engagement is one construct that has received a lot of researchers' attention in the last decade, and that is inseparable from the literature on both work motivation and work affect. In the next part, we present a comprehensive review on work engagement, ending with a summary of its relationship with affective states.

CHAPTER IV.

WORK ENGAGEMENT

4. WORK ENGAGEMENT

This fourth part of this work tapers to a more specific work related construct, work engagement. We aim at reviewing the most important theoretical proposals and empirical findings at the individual level, before moving on to conceptualizing engagement at the team level. First, we present its definition and delimit its theoretical space and conceptual model. Next, and in line with the intention to explore the affective component of engagement, we highlight what is known so far on this issue.

4.1. *The conceptual space of work engagement*

The change in perspective brought by positive psychology opened new avenues of research from previously studied and negatively connoted concepts to their positive counterparts. One paradigmatic example is the works on burnout and on work engagement. Burnout is defined as a negative three-dimensional syndrome (Maslach, 1999), which components are emotional exhaustion, depersonalization/cynicism, and reduced personal accomplishment. It is seen as the consequence of prolonged exposure to chronic stressors in the job. While it has initially been restricted to "person" jobs (nursing, teaching, client service, etc.), burnout is now acknowledged to exist in a multitude of work contexts (Demerouti, Bakker, Nachreiner & Schaufeli, 2001).

The positive antipode of burnout has been labelled work engagement (WE). The concept of work engagement has been flourishing within the literature on organizational behavior throughout the past decade. A search on the ISI Web of Knowledge database using "work engagement" as key words (in May 2014) yields 9.555 results. Using PsychINFO database, 1.331 results are presented (374 if searching for "work engagement" in the title). Likewise, it is possible to find several books on this subject (e.g., Leiter & Bakker, 2010; Salanova & Schaufeli, 2009). The interest in studying WE is partially due to its relevance for individual performance and well-being (Halbesleben, 2010). Yet, and as it is often the case with important constructs (such as organizational identification, to name one), we can find more than one definition. For example, Macey and Schneider (2008) use a very broad definition of engagement and suggest that it is a "desirable condition that has an organizational purpose and connotes involvement, commitment, passion, enthusiasm, focused effort and energy" (p. 4). Kahn (1990) considers that an engaged employee brings his/her full affective, physical and cognitive self to the workplace. Maslach, Jackson and Leiter (1996) consider it a direct opposite

of burnout, characterized by energy, involvement and efficacy. Despite these differences between schools of thought, the most commonly used definition of work engagement is Schaufeli, Salanova, González-Romá and Bakker's (2002). Accordingly, work engagement is a positive, fulfilling, work-related state of mind characterized by vigor, dedication and absorption. Two of its core dimensions are shared with burnout: an energy dimension (from vigor to exhaustion), and an identification dimension (from dedication to cynicism).

Originally, work engagement was framed as a pervasive and enduring affective-motivational and cognitive state (Schaufeli & Bakker, 2010) that is work related. Its behavioral-energetic component, vigor, is characterized by high levels of energy and mental resilience while working, willingness to invest effort in one's work and persistence even in the face of difficulties; dedication, an emotional component, implies being strongly involved in one's work and experiencing a sense of significance, enthusiasm, pride, inspiration and challenge. Lastly, absorption is a more cognitive component that relates to being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties detaching oneself from work.

This conceptualization of engagement has gained support over the last decade, not only in what concerns its importance to understanding employees' behaviors and performance in organizational context, but also in what pertains to establishing engagement as a separate construct. Schaufeli and Bakker (2010) as well as Rigg (2013) summarize both theoretical and empirical arguments that differentiate work engagement from related constructs such as extra-role behavior, personal initiative, job involvement, organizational commitment, job satisfaction, flow, positive affectivity, and workaholism. Theoretically, for example, job satisfaction is related to the appraisal of the affect *about* or *toward* work and connotes satiation (e.g., serenity, relaxation), whereas work engagement connotes activation (e.g., enthusiasm) (Macey & Schneider, 2008) and is more concerned with individuals' affect *at* work. Also, satisfaction is positive and low on activation, whereas engagement is positive and high on activation (Bakker & Oerlemans, 2011). Another theoretical distinction between work engagement and extra-role behaviors states that the former are related to performing employees' main role responsibilities at work, while the latter are related to performing beyond those responsibilities. Therefore, engaged employees may or may not express extra-role behaviors.

Empirically, the difference between work engagement and workaholism was supported by a study with 587 managers (Schaufeli, Taris & van Rhenen, 2007). The authors performed structural equation modelling and multiple regression analysis and concluded that, despite being correlated, the constructs represent different kinds of employee (high or low) well-being. Another study by Hallberg and Schaufeli (2006) empirically differentiates engagement from job involvement and organizational commitment by means of confirmatory factor analysis. Work engagement was also the one construct that related significantly and negatively to all of the health complaints included in the study.

Perhaps the most controversial conceptual distinction regarding work engagement encompasses its relationship with burnout. The many conceptual connections among the two have led some authors to question whether work engagement is a separate construct from burnout (Cole, Walter, Bedeian & O'Boyle, 2012) or whether researchers are overlooking the law of parsimony that should prevail in scientific work. Theoretically, and according to Maslach (1999), job engagement and burnout are opposite states that should be considered in a continuum: engagement consists of state of high energy (rather than exhaustion), strong involvement (rather than cynicism) and a sense of efficacy (rather than a reduced sense of personal accomplishment). Schaufeli and Bakker (2004) consider exhaustion and vigor to as belonging to a same dimension (activation) and cynicism and dedication as belonging to another (identification). However, "burnout and engagement both include a third constituting characteristic: reduced professional efficacy and absorption, respectively" (p. 295).

Empirically, Schaufeli and Bakker's (2004) proposal received support. With a total sample of 1698 individuals and through structural equation modelling, burnout and work engagement were found not only to be negatively related but to have different predictors, therefore justifying the need for both constructs within organizational behavior literature. Offering a different perspective, a study by Chambel and Peiró (2011) simultaneously examined the patterns of both burnout and engagement on a sample of four different professional groups: nurses, teachers, fire fighters, and soldiers. They found four possible configurations of burnout and engagement, showing that the constructs may not be the exact opposite. For example, some workers in their study showed, at the same time, high levels of engagement and medium levels of exhaustion or high burnout and medium levels of engagement. Carrasco, Martínez-Tur, Peiró,

García-Buades and Moliner (2011) also found a different pattern of relationships between engagement and burnout and the display of positive emotions in two samples of frontline employees. The attempt to empirically establish redundancy between engagement and burnout by Cole and colleagues (2012) was inconclusive, despite the substantial cross loadings between engagement and burnout factors. One of the reasons why this distinction may be harder to make is related to the existence of a common theoretical model framing both constructs (Cole et al., 2012). This model is presented next.

4. 2. A theoretical framework of work engagement – the Job Demands-Resources model

In the same way work engagement was conceptualized somewhat in parallel with the components of burnout, its relationships with important organizational inputs and outcomes have also been studied using the same parsimonious model. The Job Demands-Resources (JD-R) model was introduced by Demerouti and colleagues (2001) and was first developed to frame the concept of job-burnout. The model posits that whereas every occupation may have its own specific risk factors associated with job stress, these factors can be classified in two general categories, demands and resources (Bakker & Demerouti, 2007). Job demands refer to those physical, social or organizational aspects of the job that require sustained physical or mental effort and are therefore associated with certain physical and psychological costs (e.g., exhaustion). Job resources refer to those physical, psychological, social or organizational aspects of the job that may (a) be functional in achieving work goals, (b) reduce job demands and the associates physiological and psychological costs, (c) stimulates personal growth and development (Demerouti et al., 2001). Job resources are usually operationalized as feedback/results, job control/autonomy, social and supervisory support (e.g., De Lange, De Witte & Notelaers, 2008; Mauno, Kinnunen & Ruokolainen, 2007).

Originally focused on burnout, the model proposed that the development of well-being follows two routes (Figure 4.1) with two different psychological processes underlying them. On the one hand, the demanding aspects of the job can be considered as stressors and lead to exhaustion when meeting those demands requires sustained high effort from which the employee has not adequately recovered. On the other hand, there is a motivational process where lack of resources set hurdles to meeting those job demands and may therefore lead to a withdrawal behavior and disengagement from work. The motivational potential of job resources may act in an intrinsic way (resources

fulfil human basic needs such as autonomy, competence and relatedness) and also in an extrinsic way (they allow individuals to attain relevant goals). It is proposed that job demands are more related to exhaustion whereas job resources tend to be more associated with levels of engagement.
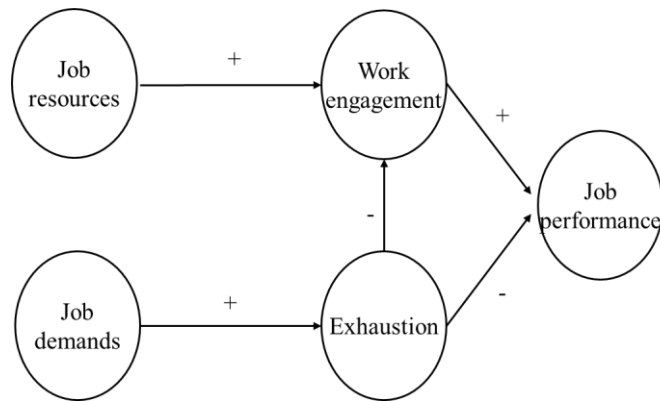
Figure 4.1. The Job Demands-Resources model, simplified (Bakker & Demerouti, 2007, adapted)

Many researchers have used the model to study burnout and work engagement and its basic assumptions have been tested in various contexts with positive empirical evidence for the dual process preposition. Empirical evidences supporting the dual process model have been found in multiple settings and samples: call-centers (Bakker et al., 2003a), nutrition production employees (Bakker et al., 2003b), teachers (Hakanen et al., 2006), and several different organizations (Bakker et al., 2004; Bakker et al., 2005; Demerouti et al., 2001). The JD-R model is probably the theoretical framework that is more often used to study WE (Hakanen & Roodt, 2010)

These studies have yielded some model developments, essentially about the interaction between demands and resources in different contexts. It is now assumed that job resources act as buffers of the relationship between job demands and strain (e.g., Bakker et al., 2005). In addition, one central proposition of the JD-R model is that job resources particularly influence motivation or work engagement when job demands are high (e.g., Bakker et al., 2007; Billings, Folkman, Acree, & Moskowitz, 2000; Hakanen, Bakker & Demerouti, 2005). The JD-R model is a model of employee motivation, where work engagement is a psychological state that mediates the impact of job resources and personal resources on organizational outcomes (Schaufeli & Bakker, 2010). The outcomes range from affective-motivational ones such as organizational

commitment to cognitive-behavioral ones (personal initiative and extra-role behavior), and finally to more objective measures of performance (Bakker, Demerouti & Verbeke, 2004; Bakker, Van Emmerik, & Van Riet, 2008; Demerouti, & Cropanzano, 2010). Nonetheless, most of these outcomes have been measured heavily through self-reported measures. Recent researchers call attention to the need of using more objective measures of performance when studying its relationship with work engagement. Namely, Bakker and Demerouti (2007) refer the need to move from self-report measures to objective outcomes such as business unit performance, customer satisfaction, sickness absenteeism, sales, etc.

Going back to the discussion on the theoretical space of work engagement and burnout, considering other antecedents different from job demands and job resources may be useful. Cole and colleagues (2012) suggest that affectivity (positive or negative) may help researchers to better understand each construct. For these authors, negative affectivity is more likely to be a predictor of psychological distress and burnout, whereas positive affectivity may be more strongly related to work engagement. The next section presents a review on what we know so far regarding work engagement and affective states.

4.3. Work engagement and affective states

Despite the molar motivational nature of work engagement and of the JD-R model, the affective component of the construct has gained researchers' attention by the examination of the influence of personal resources on work engagement.

Recently and again echoing the background of positive psychology, personal resources have also been studied as variables facilitating work engagement, either taking a mediator or moderator role. These resources have been studied under different definitions and in studies focusing on specific resources or in "packs" of resources and their theoretical relevance is essentially rooted on Weiss and Cropanzano (1996) theory of emotions on the workplace, conservation of resources theory (Hobfoll, 1989) and Fredrikson's (2001) broad-and-build theory of positive emotions. It is expected that personal resources will enhance individuals' stress resiliency and impact positively on their well-being either directly or through their impact on the emotional state of individuals.

One of these proposals comes from Xanthopoulou, Bakker, Demerouti and Schaufeli (2007). They posit that personal resources are aspects of the self, linked to

resiliency and to the individuals' perception of their ability to successfully control and impact upon their environment. For Xanthopoulou and colleagues (2007), personal resources are fundamental components of individual adaptability (Hobfoll, 2002). These include self-efficacy (defined as individuals' perceptions of their ability to meet the demands they are supposed to meet), organizational based self-esteem (or the individuals' belief that fulfilling their organizational roles will also fulfil their individual needs) and optimism (i.e. the tendency to believe that one will experience good outcomes in life, generally). The authors propose a reciprocal relationship where work characteristics may function as antecedents of personal resources, work engagement and exhaustion, but also where personal resources, in turn, may function as antecedents of work characteristics: "not only may personal resources be promoted by a manageable and comprehensive environment, but they may also determine the way people perceive or formulate this environment and how they react to it" (p. 125-126). Their empirical research supported a mediator effect of personal resources between job resources and engagement as well as an impact of personal resources on the perception of those job resources. Based on the JD-R model, they conclude that the existence of job resources triggers feelings of efficacy and of significance in employees, as well as an optimistic view of the future that leads them to stay engaged in their work. The link between job and personal resources has been included in recent formulations of the JD-R model (Bakker & Demerouti, 2008; 2014).

A similar proposal is offered by Sweetman and Luthans (2010). They suggest the four variables constituent of the psychological capital (PsyCap) construct as antecedents of work engagement. These variables are self-efficacy, optimism, hope (i.e. perseverance while working towards a certain goal and redirection of their actions when necessary in order to achieve it) and resilience (i.e. the capacity to bounce back or beyond when affected by adversity). Their proposal not only states a direct effect of PayCap on engagement but also highlights explicitly the mediator role of positive emotions. The theoretical reasoning is supported by the AET (Weiss & Cropanzano, 1996) and Fredrickson's (2001) broad-and-build (B&B) theory of positive emotions. Employees' appraisals, expectations and believes are a source of emotions. If those appraisals and expectations are positive (i.e. hope, optimism, self-efficacy and resilience), then employees will experience positive emotions that will, overtime, translate in work-related attitudes and behaviors – such as vigor, dedication and

absorption. Therefore, the consequences of positive affectivity mentioned in the previous section may transfer into to work engagement.

According to Salanova, Schaufeli, Xanthopoulou and Bakker (2010), the relationship between personal resources and work engagement is one of reciprocal causation, since both may be perceived as dynamic and unfolding overtime. They propose that both constructs may positively reinforce each other cyclically overtime through the concept of gain spirals. Indeed, we have already some empirical evidence for these processes, particularly when explained by the broaden-and-build theory of positive emotions (Fredrickson, 2001). In a synthesis of the relationship between work engagement and the broaden-and-build theory, Salanova and colleagues distinguish three different functions of work engagement. First, it is a "distinct positive affective-motivational state" (p. 126) that may, by itself, broaden employees' thought-action repertoires and build their enduring personal resources. Hakanen, Schaufeli and Ahola (2008) empirically demonstrated this effect in a sample of finish doctors: experiencing work engagement predicted their future levels of personal initiative and, simultaneously, the reversed-causal relationship was found. Second, engagement may trigger positive emotions, since positive emotional states are brought by pleasant situations – engaged employees derive pleasure and fulfilment from their work tasks and perceive work demands as challenging. Empirically, it has been found, for example, that high levels of engagement are related to the experience of more momentary states of enthusiasm (Xanthopoulou et al., 2008). Finally, engagement may be the outcome of positive emotions, as depicted in the proposal of Sweetman and Luthans (2010). Empirical evidence for this relationship was found, for example, in Schaufeli and Van Rhenen's (2006) study with a sample of managers. In this study, positive affect partially mediated the relationship between job resources and work engagement. Indirectly, experiencing positive emotions may lead to work engagement through the broadening if personal, situational and job resources. Engaged employees will actively intervene in their environment trying to successfully attain their goals, gathering resources. Following the conservation of resources (COR) theory (Hobfoll, 1989), those who have more resources will, in turn, be able to gain even more, accumulating "resources caravan". This theory states that people are constantly looking to create, develop and protect the quantity and quality of the resources they have. Stress happens when resources are loss, threatened or when individuals' significant effort in attempting to gather resources is not effective. Within the COR framework, burnout emerges from a

slow depletion of individual resources in a context where he or she is unable to replenish them or gaining other resources. On the other hand, engagement results from resources gain (either real or anticipated) and from the consequent enhancing of energetic resources (Gorgievski & Hobfoll, 2008). Therefore, the existence of personal resources and consequent feeling of positive emotions may lead employees to actively gather more (job) resources, contributing to their levels of engagement.

4.4. Summary

Work engagement is a positive motivational state with both cognitive and affective constituents that facilitates both employees' well-being and performance. Theoretically, job resources are a key factor for its development in individuals, especially in demanding and challenging work contexts. Moreover, positive affective states are closely reciprocally related to work engagement, contributing to its development and also arising from an engaged state.

The previous three parts of this work summarized the specific dynamics of teamwork and also the relevance of affect and motivation for employees' effectiveness and well-being. More specifically, work engagement was described, as one construct reflecting both of those aspects. It is now time to consider our team-level proposal.

CHAPTER V.

MAIN GOALS OF THE THESIS

5. MAIN GOALS OF THE THESIS

This thesis aims at transposing the construct of work engagement from the individual level of analysis to the team level, considering not only the literature on work engagement, but also what is known about the specific dynamics of team work and work groups. Our purpose is to discuss the construct taking into account the theoretical and methodological concerns involving collective constructs and emergent phenomena, in order to provide a solid theoretical background to our research. More specifically, we want to investigate the differences between engagement at the individual and team levels, to understand the interpersonal dynamics responsible for team work engagement emergence and the relationship between team work engagement and team effectiveness – team performance, satisfaction and team viability (Hackman, 1987). In order to do so, we have developed a theoretical framework for Team Work Engagement (TWE) and five empirical studies. Table 5.1 summarizes the fundamental research questions and the studies conducted.

Table 5.1. Research questions and studies of the thesis

Study	Research question(s)	Methodology
Theoretical proposal	Does work engagement exist at the team level?	Integrative literature review
Study 1	Is TWE a construct that is distinct from individual work engagement?	Scale validation; Confirmatory Factor Analysis
Study 2	How does TWE emerge within teams? What is TWE's relationship with team effectiveness?	Structural Equation Modeling
Study 3	How do conflicted interactions influence TWE?	Correlational study; Moderation analysis
Study 4	Do TWE and individual positive states interact in predicting team viability?	Multilevel analysis
Study 5	What are the specific interactions between team members that occur in highly engaged teams?	Qualitative video data analysis

In the *theoretical proposal*, we develop a model that guides all subsequent studies. Considering that studying a construct at a higher level is more than merely conducting statistical analysis with aggregated data, we develop a theoretical model of team work engagement that attempts to merge different literatures: theories of emergence of collective constructs (e.g., Kozlowski & Chan, 2012), the Input-Process-Mediators-Output model of team effectiveness (Ilgen et al., 2005), the temporally based framework of team processes (Marks et al., 2001), and the work engagement literature (e.g., Bakker & Leiter, 2010). The end product of this reflection is a set of testable propositions.

Study 1 was conducted in order to determine whether we can distinguish individual and team-level engagement constructs, i.e., whether we can consider that they are distinct variables. With two different samples, one of undergraduate students and workers from diverse organizations and another of participants of a management simulation, we explore that hypothesis. Simultaneously, we compared the factorial structure of the construct at both levels and empirically validated a scale for the assessment of TWE.

Studies 2 and 3 intended to validate the theoretical model and to understand the emergence mechanisms of TWE. *Study 2* was conducted with a simulation sample, and *study 3* one with a real-world sample of research teams. Taken together, these studies provide support for our theoretical proposal. First, they show a significant link between TWE and team effectiveness. Second, they highlight the relevance of interpersonal processes for the development of TWE. *Study 4* takes a more detailed look at a particular type of team members' interaction: conflict. It explores two distinct types of conflict – relationship and task conflict – and considers their influence in both proximal outcomes (TWE) and distal outcomes (team effectiveness).

Study 4 takes into account individual and team-level influences for predicting the teams' desire to remain working together in the future. We found a cross-level interaction between individual positive emotions and TWE, which demonstrates how teams' outputs depend on the interplay of those two levels' influences.

Finally, *study 5* presents a qualitative analysis of teams' interaction, with six teams involved in the same decision making process, all of witch with high levels of TWE. After videotaping their interactions, we submitted the videos to two separate coding systems. We analyze the degree of the teams' activation and emotional valence, as well as the frequency of occurrence of specific team interpersonal processes.

These studies will be presented in the next chapters. Prior to presenting empirical data, we provide the theoretical framework for all of those works.

CHAPTER VI.

TEAM WORK ENGAGEMENT: A MODEL OF EMERGENCE

6. TEAM WORK ENGAGEMENT: A MODEL OF EMERGENCE[1]

The last decade has established work engagement as an important construct for both employee performance and well-being (Halbesleben, 2010). Engaged employees display a positive attitude towards work and high energy levels, which leads them to actively intervene in their work environment. They tend to show high levels of self-efficacy (Bakker, 2009), and of organizational commitment (Demerouti, Bakker, de Jonge, Janssen, & Schaufeli, 2001). In addition, engaged workers are inclined to work extra hours (Schaufeli, Taris & Rhenen, 2004) and help their colleagues if needed (Halbesleben & Wheeler, 2008); they also manage to stay healthy in stressful environments (Demerouti, Bakker, Nachreiner & Schaufeli, 2001).

Parallel to the studies on work engagement at the individual level, some researchers have also started to explore the construct at the team level (e.g., Bakker, Emmerik & Euwema, 2006; Salanova, Llorens, Cifre, Martinez & Schaufeli, 2003; Torrente, Salanova, Llorens & Schaufeli, 2012a, 2012b). These studies suggest that, at the team level, work engagement has positive relationships with task and team performance, collective positive affect and efficacy beliefs. Team work engagement is also positively related to individual work engagement.

Despite the acknowledgement of its relevance in the context of work teams, the vast majority of studies have not presented a theoretical model framing the construct and explicating the mechanisms responsible for its existence. This is one major gap in the work engagement literature. The one commendable exception is the work by Torrente et al., (2012) that proposes team social resources (supportive team climate, teamwork and coordination) as possible antecedents of team work engagement. The latter idea is tightly linked to the literature on individual work engagement, and rooted in the Job Demands-Resources model (Bakker & Demerouti, 2007), the conceptual model for individual work engagement. To our knowledge, there have been no scholars reflecting on whether and how team work engagement can be equated within the specific literature on groups and teams[2], teamwork, and team effectiveness, which

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[2]Following the work by Guzzo and Dickson (1996), we use the terms groups and teams interchangeably throughout the article.

would allow for a better understanding of teamwork, and create the theoretical rationale for studying team work engagement. The goal of the present paper is to present a model for the emergence of team work engagement, embedded in the literature on teams. It provides a theoretical model for the emergence of the collective construct that accounts for both team inputs and outputs and for team processes, highlighting their dynamic interplay overtime.

The dialogue between the two domains of individual work engagement and team effectiveness contributes to several positive outcomes. First, it will strengthen the theoretical conceptualization of work engagement at the team level, accounting for what is already known in terms of team functioning and enriching its nomological network. Second, it will address legitimate concerns related to eventual construct proliferation (e.g., Cole, Walter, Bedeian & O'Boyle, 2012), distinguishing team work engagement from other team-level constructs and from individual work engagement, by presenting a specific team-level model of engagement. Third, the present article will set the stage for future research on work engagement in teams, providing a model that may be tested empirically. Finally, it will allow for importing the knowledge acquired by team scholars in designing interventions to foster collective engagement.

6.1. Theoretical Background

Work engagement is a positive, fulfilling state of work related well-being. Following Schaufeli and Bakker (2010), we define work engagement as an affective-cognitive state characterized by vigor, dedication and absorption. Engaged employees are energetic and enthusiastic about their work, which leads them to perform better than non-engaged employees, and to invest more effort in work than is formally expected (e.g., Halbesleben & Wheeler, 2008). The most often used framework for studying engagement is the Job Demands-Resources model (Bakker, 2011; Bakker & Demerouti, 2007). Studies using this model have shown that job demands and resources trigger two different psychological processes that are the roots of work engagement and burnout: an energy impairment process caused by excessive job demands, and a positive motivational process that is triggered by job resources. Job resources such as performance feedback, job control/autonomy, and supervisory support are then conceptualized as the major antecedents of work engagement (e.g., Hakanen, Bakker & Schaufeli, 2006; Richardsen, Burke & Martinussen, 2006; Schaufeli & Bakker, 2004), and they appear to enhance engagement especially when job demands are high (Bakker,

Hakanen, Demerouti & Xanthopoulou, 2007). In addition to job resources, personal resources have also been found to predict work engagement (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007). Examples of these personal resources are personality traits such as high extraversion and low neuroticism (Langelaan, Bakker, van Doornen & Schaufeli, 2006); and lower-order personality characteristics including self-efficacy, optimism, hope and resilience (Sweetman & Luthans, 2010; Xanthoupoulou, Bakker, Demerouti & Schaufeli, 2007).

Thus, work engagement is particularly influenced by resources in the work environment and in the person. These resources have the strongest impact on engagement when job demands are high. Work engagement, in turn, is an important predictor of positive attitudes towards the organization and job performance. In other words: engagement mediates the impact of job and personal resources on organizational outcomes (Schaufeli & Bakker, 2010), such as organizational commitment, personal initiative, and extra-role behavior (Bakker, Demerouti & Verbeke, 2004).

6.1.1. Team Work Engagement

Teams are "a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal /objective /mission, who have been assigned specific roles or functions to perform, and who have a limited life-span of membership" (Salas, Dickinson, Converse & Tennembaum, 1992, p. 4). Working in a team has specificities that distinguish it from working alone. Team members need to coordinate and synchronize their actions and every member has a critical role for their collective action. Consequently, the success of teams is dependent on the way team members interact with each other to accomplish the work (Marks, Mathiew & Zaccaro, 2001).

These major differences between working alone and working in a team should account for conceptualizing work engagement and team work engagement differently. Whereas individual work engagement is essentially dependent on job resources and demands, team work engagement, as a collective construct, is dependent on the individual actions and cycles of interaction responsible for creating a shared pattern of behavior (Morgeson & Hofmann, 1999). Therefore, with the same resources and in an equally challenging environment, some teams might develop a higher level of engagement than others, because the affective, cognitive and motivational outcomes of different patterns of interaction are likely to be different. Commenting enthusiastically

on new equipment or energetically inciting team members to suggest new marketing strategies after the entrance of a new competitor in the market is significantly different from neutrally informing team members of that same equipment acquisition and angrily referring to that new competitor.

Despite these variances, the existing research on team work engagement has failed to incorporate these team phenomena and processes. Studies either do not account for the differences between individual and team work engagement, or do not put forward specific team-level models of engagement. For example, Tyler and Blader (2003) depart from the engagement definition developed by Kahn (1990) –engaged employees bring their full affective, physical and cognitive self to the workplace – and propose that a strong identification with the group will lead members to invest personal energy to aid group success. This identification, in turn, depends on the respect and pride team members have for their team. Tyler and Blader's proposal on group engagement is heavily based on social identity theory (Tajfel & Turner, 1979), and does not present any distinctive features of team work engagement that represent specific team dynamics. Early studies such as the one by Salanova and colleagues (2003) and the one by Bakker and colleagues (2006) lack a clear definition of the team-level construct. The first one frames team work engagement as a "positive aspect of collective well-being in work groups" (p. 48), and analyzes the results considering the three dimensions of individual work engagement: vigor, dedication, and absorption. The second one measures collective engagement with the individual-level scale (Schaufeli & Bakker, 2003) and the percentage of engaged employees per team is used as a representation of collective engagement. The absence of a team specific definition, framed by the knowledge from the literature on teams, may lead researchers to question whether team work engagement does exist as a distinct construct from work engagement.

Nonetheless, work engagement is likely to be relevant at the team level, as a molar motivational construct that comprises affective and cognitive components. Accounting for individual trait differences, work events and the work environment are likely to influence team members in a similar way, not only in terms of the affective experiences but also in what motivation is concerned. Team members usually share the same resources, the same team leader, the same customers, the same events, the same co-workers, and even the same workspace. According to affective events theory (Weiss & Cropanzano, 1996), it is likely that people experiencing the same events have similar

affective experiences. Some evidence has been reported on mood convergence between people who work together: group affective tone (George, 1996), mood linkage (Totterdel, Kellet & Briner, 1998), or emotional contagion (Hartfield, Cacioppo, & Rapson, 1994). Norms of emotional expression (Sutton, 1991), that are conveyed to everyone in the same team, may also be considered relevant for the emergence of a common affective state, facilitating ("everyone should be cheerful and energetic") or inhibiting ("we do not talk about our feelings, good or bad") its development. Finally, several theories of work motivation highlight the interaction of person and situation, arguing that some work characteristics might foster motivation (e.g., Hackman & Oldham, 1976; Lawler, 1994). When sharing working characteristics it is likely, then, that the level of motivation of team members will converge.

Considering these ideas, it is not unlikely that team members develop similar affective, cognitive and motivational states. However, should researchers consider that work engagement at the team level is qualitatively different than the weighted mean of individual work engagement?

Some authors have already started to consider certain dynamics and variables that may characterize engagement at the team level. Bakker, Albrecht and Leiter (2011) propose that collective engagement refers to the engagement of the team/group (team vigor, team dedication, and team absorption), as perceived by individual employees, and that it might exist due to emotional contagion (Hatfield et al., 1994) among team members. This perspective on team work engagement highlights essentially an affective dimension of the collective construct, and not so much a cognitive or motivational one. Torrente and colleagues (2012) also state that emotional contagion could be the mechanism underlying team work engagement. They further propose a specific definition of team work engagement as a positive, fulfilling, work-related and shared psychological state characterized by team vigor, dedication, and absorption. Through structural equation modelling, and using 62 teams from 13 organizations, they reported evidence for a mediation role of team work engagement between social resources (supportive team climate, coordination, and teamwork) and team performance, as assessed by the supervisor. This model is the first one that accounts for team-level variables in explaining the existence of team work engagement and for its relationship with team performance. Even so, previous research had already linked some social resources with individual work engagement. For example, Hakanen et al., (2006) report higher levels of work engagement in Finnish teachers with high levels of social

resources, such as supportive social climate. Schaufeli, Bakker and Van Rhenen (2009) replicated this finding among managers from a Dutch telecom company in a longitudinal study. These findings suggest that social resources are not an exclusive antecedent of team work engagement. Also, the model of Torrente et al. (2012) fails to integrate what we already know about team processes and team effectiveness, and essentially represents a homologous (Kozlowski & Klein, 2000) transposition of the individual-level model of engagement, therefore overlooking possible important differences between levels.

Overall, previous research on work engagement in teams has some limitations. Most studies do not present a clear definition of the construct or a theoretical model for team work engagement that accounts for variables exclusively relevant in the context of teams. Even when considering team-relevant variables and team members' interaction, research on team work engagement has not yet been integrated within the specific literature on teams. In the next section, we attempt to overcome these limitations, by presenting a model for team work engagement emergence based on the existing team effectiveness literature.

6.2. Defining team work engagement

Team work engagement is as a shared, positive and fulfilling, motivational emergent state of work related well-being. Just like individual-level work engagement (Schaufeli & Bakker, 2004, 2010), team work engagement is proposed as a multidimensional construct characterized by affective and cognitive dimensions: team vigor, team dedication, and team absorption. Team vigor stands for high levels of energy and for an expression of willingness to invest effort in work and persistence in the face of difficulties (e.g., conflict, bad performance feedback); for example, team members enthusiastically encourage demoralized colleagues, and explicitly express their desire to continue working. Team dedication is a shared strong involvement in work and an expression of a sense of significance, enthusiasm, inspiration, pride and challenge while doing so; for example, team members talk to each other and to others (external to the team) about the importance of their work and about the thrill they feel concerning their work. Team absorption represents a shared focused attention on work, whereby team members experience and express difficulties detaching themselves from work; such as, team members talk about their work during breaks, commenting on time passing quickly and not engaging in non-work related interactions when working.

Keeping functional equivalence with the work engagement definition proposed by Schaufeli and Bakker (2003) this emergent state will lead to team effectiveness. However, this definition allows for the conceptualization of a different construct's structure, based on the interaction patterns among the team members and reflects two essential constructs rooted in the literature on teams and teamwork: emergent states and shared constructs.

6.2.1. Emergent states

Whereas Torrente et al., (2012) define team work engagement as a shared psychological state, we propose that team work engagement is an emergent state, something that is exclusive to teams and cannot be found in individuals. The idea of an emergent state has been explored in theories of chaos, self-organization, and complexity as important to understand how individuals contribute to organizational effectiveness (Kozlowski, Chao, Grand, Braun & Kuljanin, 2013; Kozlowski & Klein, 2000). Marks et al., (2001) distinguish between team processes and team emergent states, discriminating two different aspects of the life of work teams fundamental for their understanding. Team processes are "member's interdependent acts that convert inputs to outcomes through cognitive, verbal and behavioral activities directed towards organizing taskwork to achieve collective goals" (p. 357). Team processes involve the interaction of team members with each other and with their task environment and are used to direct, align and monitor what members are doing. For example, strategy formulation, coordination, and tracking resources are team processes. On the other hand, emergent states are properties of the team that are dynamic in nature and that vary as a function of: team context, inputs, processes, and outcomes. Emergent states describe cognitive, motivational and affective states of teams. Constructs such as collective efficacy, cohesion or team potency are emergent states (Kozlowski & Chao, 2012) because they refer to team qualities that represent members' attitudes, values, cognitions and motivations and not interaction processes.

Team work engagement is considered an emergent state that "originates in the cognition, affect, behaviors, or other characteristics of individuals, is amplified by their interactions, and manifests at a higher-level" (Kozlowski & Klein, 2000, p. 55). Its structure depends on team experiences, namely on their members' interactions during team processes. For example, a certain sales team may have a low level of team work engagement (e.g., low motivation to work, low levels of persistence, and low pride in

their work) in a context of a diminished amount of sales, constant conflicts between team members, a lack of feedback and orientation, and aggressive and depreciative comments from the leader. The same team's level of engagement may start to increase when one of those elements change: a new leader who is capable of clear goal setting and who tends to display an energetic mood, a boost of the sales, a better management of the conflicts, among others. These changes in team work engagement are not directly dependent on objective events, but rather on the changes those events bring to the interaction between team members.

It is the fact of being an emergent state that departs the construct of team work engagement from individual level work engagement – it does not depend on job resources but essentially on the complex interplay of team's inputs, processes, and outputs, and on team members' interactions. This conceptualization of team work engagement is more complex than the ones previously presented in the literature. Yet, it reflects the complexity inherent to human systems and is embedded in actual models for conceptualizing teamwork.

6.2.2. Shared

The second main difference between team and individual work engagement is the assumption of sharedness, already present in previous definitions of team work engagement. The implication of being a shared state is that team members must have similar perceptions about their collective degree of work engagement. According to Kozlowski and Klein (2000), emergent constructs may be the result either of composition (following additive or averaging combination rules), or compilation (following nonlinear combination rules such as proportion or indices of variance) processes. The combination rules of the lower-level units to form the higher level emergent state should be consistent with the previous theoretical conceptualization of emergence. In the case of team work engagement, its conceptualization reflects a composition process, because it is assumed that every team member is influenced by what is happening to and within the team in a similar way.

When assessing their collective energy and involvement, team members must consider the behavior of all team members and how they all interact during team processes. Therefore, every member is assessing a common observable experience and not how they, individually, feel. Team members all base their judgement on the same cues and, thus, are likely to display a common understanding of what they perceive. For

example, if they attend a meeting where one team member is highly exited when describing a new product, while many others are absently looking at their phones or tablets, all are able to perceive that, collectively, their energy and dedication is not very high. This is what Kozlowski and Klein (2000) define as "convergent emergence": contextual factors and interaction processes constrain emergence in such a way that individuals contribute the same type and amount of elemental content (the perception of their team's level of engagement). It follows logically that the conceptualization proposed in this paper is not an isomorphic transposition of individual work engagement levels to the team level, but rather from the perceptions of team work engagement from the lower units (individuals) to the higher unit (the team).

Using individual levels of engagement to compute team work engagement (either through composition or compilation) would be misleading. It would not to represent a team property and researchers cannot assume its sharedness, because each member could make a different contribution to the collective engagement level. Instead, the referent-shift composition model (Chan, 1998) is consistent with the proposed rationale. This is a composition model that uses within group consensus (the agreement of team members' on their team's level of work engagement) to compose the collective construct, by asking individuals collectively formulated items (e.g., "we").

Proposition 1. Team work engagement is a shared motivational emergent state characterized by team vigor, team dedication, and team absorption.

6.3. A Model for the Emergence of Team Work engagement

Considering team work engagement as a shared emergent state not overlapping with work engagement allows for proposing a model of emergence that considers other variables, different from the job demands-resources model, as its antecedents and correlates. Our model (cf. Figure 1) is based on the input-mediator-output-input framework, or IMOI (Ilgen, Hollenbeck, Johnson & Jundt, 2005). This framework considers team processes and emergent states as mediating mechanisms between team inputs and team outputs. We depart from the assumption that teams go through a series of IMOI iterative episodes over time where the outputs of one episode may become inputs of subsequent ones. For example, a decrease in the amount of sales at the end of one month, an outcome, may be important input information for planning the next month's commercial action.

We do not overlook the fact that individual and contextual variables may influence the way team members interact and, consequently, team processes. Nonetheless, we argue that the emergence of team work engagement is essentially linked to team interpersonal processes and less related to individual and contextual variables. In similar environments, with similar tasks and organizational structure, the emergence of team work engagement will rely heavily on team interpersonal processes. In the next section, we develop these ideas in depth.

6.3.1. Inputs

Since Gladstein's (1984) inputs–processes–outputs model of team effectiveness, the last 30 years of research have provided scholars and practitioners with a multiplicity of useful models to understand teams and teamwork. However, "while there exists a general consensus about the nature of the broad categories of input variables, the specific constructs proposed to be encapsulated within these categories varies" (Salas, Stagl, Burke & Goodwin, 2007, p. 219). When integrating the different proposals, four major umbrella variables are most commonly put forward: individual characteristics, team characteristics, task characteristics, and work structure (cf. Figure 6.1). All of these input variables can be considered for the emergence of team work engagement, either having a more direct influence or an indirect one, by their effect on the way team members interact.

According to Salas et al., (2007), individual characteristics include variables such as team orientation and personality. Team orientation is the propensity to consider the other's behavior when interacting and also the belief in the importance of common (team) goals over individual members' ones (Salas, Sims & Burke, 2005). Therefore, the more team members are high in team orientation, the more likely they are to invest effort in their work, and to avoid conflictual interactions. In what personality is concerned, extraversion (Eysenck, 1947; Costa & McCrae, 1985) is considered an important predictor of positive feelings (Watson & Clark, 1997). For example, Emmons and Diener (1986) found that extraversion significantly correlates with positive affect but not with negative affect. Additionally, positive affective states and a high activation are positive correlates for extraverts (Kuppens, 2008). Finally, the individuals' level of work engagement might work as an input variable for team work engagement, since individuals will already be more predisposed to feel and display vigor, dedication, and absorption towards work.

Team characteristics include team's culture and climate and the power structure of the team. Bakker and colleagues (2011) proposed that teams with a climate for engagement will favor collective engagement. Climate for engagement involves the shared perception of a challenging, resourceful and supportive environment and encompasses the six areas of worklife proposed by Maslash and Leiter (2008): realistic and challenging workload, control, reward, community and collaboration, fairness, and values.

In what task characteristics are concerned, different tasks may require different degrees of interdependence between team members, which is considered the touchstone of emergent states. Being involved in team processes requires interaction and the more team members interact, the more likely they are to develop shared cognitive, affective, and motivational states, such as team work engagement. The degree of interaction between team members has been related to the affective responses of team members. For example, Van der Vegt, Emans and van der Vilert (2001) showed that individual-level task interdependency and job complexity were related to individual job satisfaction and team satisfaction, and to job and team commitment in a sample of technical consultants. These relationships were moderated by the degree of outcome interdependence of the work group, with high outcome interdependent groups showing a higher positive relationship between the variables. Also, Anderson, Keltner and John (2003) studied emotional convergence in couples and roommates and concluded that their responses on emotional content scales became more similar within a year, reflecting a longer interaction period.

Finally, the work structure is also considered important input. Work structure is related to work assignment, the formal and informal norms of teams, and to their communication structure. Work structure defines who has access to what information and when, as well as the behaviors that are considerate appropriate and these two aspects will shape the nature of team members' interaction.

Proposition 2. Team work engagement will be a function of the following team inputs: individual characteristics, team characteristics, task characteristics, and work structure.

6.3.2. Team processes

More than one proposal on what processes are fundamental for team effectiveness can be found in the literature. For example, Zaccaro, Rirman and Marks

(2001) distinguish four major groups of processes: cognitive (e.g., shared mental models, Cannon-Bowers, Salas, & Converse, 1990), motivational (e.g., group cohesion, performance norms), affective (e.g., affective climate) and coordination (e.g., orientation, systems monitoring) processes. Marks and colleagues (2001) divide team processes in three categories, illustrating different performance phases of teams: transition phase processes (e.g., mission analysis, goal specification), action phase processes (e.g., monitoring progress, systems monitoring), and interpersonal processes (motivation and confidence building, affect management, and conflict management), that occur throughout the action and transition phases.

For the emergence of team work engagement, interpersonal processes, focused on motivating, affect management, and conflict management might be pivotal (cf. Figure 1). These processes not only denote interaction but are relatively independent from specific tasks or performance phases.

6.3.2.1. Motivational processes

At the individual level, the relevance of some motivational constructs for work engagement has been established – directly or indirectly – over the years. For example, the work of Bandura (1997) highlights the importance of both self and collective efficacy for performance: believing in one's capacity for the successful accomplishment of a certain task leads to increased effort and persistence, both characteristics of engagement. Bandura proposes that two of the ways by which efficacy is developed are experiencing success and/or receiving positive feedback. These ideas are in line with Amabile and Kramer's (2011) proposal of the progress principle. Accordingly, experiencing progress is the most important booster of motivation and creativity. Therefore, small daily "wins" should be promoted amongst employees to facilitate engagement and positive emotions at work. Luthans, Avolio, Avey, and Norman (2007) discuss psychological capital, an individual motivational propensity that accrues from efficacy, hope, optimism, and resilience. Psychological capital has also been proposed as a predictor of individual work engagement (Sweetman & Luthans, 2010), either directly or through positive emotions. Finally, the existence of specific, challenging and attainable goals has a motivational effect on workers, resulting in better performance; a consequence of an increase in efficacy beliefs (Locke & Latham, 1984, 2002). The work of Wegge (2004; 2009) supports the adequacy of goal setting theory in a group context. His empirical research supports the argument that specific and difficult group goals lead

to better group performance because such group goals encourage communication during group processes, foster intrinsic motivation, and prevent the use of inefficient task strategies. Group goals also facilitate the emergence of positive states such as collective efficacy or team cohesion. Therefore, it is likely that team motivational processes, focused on generating or preserving collective confidence, motivation, and task-based cohesion (Marks et al., 2001), are represented by interactions promoting those motivational responses.

Different types of interactions are accounted for under the designation of "motivational processes". A sense of collective efficacy can be facilitated by referring to what team members have accomplished so far ("We have already done x and y, well done! Now, let's move on to the next phase!"), or by validating members' competences ("We have Peter who is a great programmer and Christine who is the best graphic designer, we will make this a great website!"). The kind of interactions can also result in shared positive attributions about the future and in perseverance, and therefore in increased shared energy and involvement with work. Positive feedback (e.g., "Great job, we made an outstanding proposal!") and constructive criticism are also examples of motivational interactions that may increase the salience of meaningful small progress made by the team. Team members may stress the advantages of goal achievement ("Just some extra effort and then we will gain this customer's loyalty over our competitors!"), as well as stress the attainability of their goals, despite its degree of challenge ("We don´t have much time to do this project, but if we follow our initial plan we will be able to deliver it by Monday!"). Finally, exhorting members to work hard, either informally ("Come on, today we will finish this project!") or formally, by the existence of performance norms and consequent mutual monitoring may also account as a motivational interaction aimed at increasing the teams' energy and involvement.

6.3.2.2. Affective processes

Affective processes include regulating members' emotions (Marks et al., 2001). Affect regulation is "the process of initiating, maintaining, modulating or changing the occurrence, intensity, or duration of internal feeling states" (Eisenberg, Fabes, Guthrie, & Reiser, 2000, p.137). Team work engagement is a shared positive emergent state of work related well-being and, thus, implies the existence of a positive affective tone within the team. Managing affect and promoting a positive affective tone may occur through three (not mutually exclusive) processes.

First, team members might use controlled interpersonal affect regulation strategies of affect improving (Niven, Totterdell & Holman, 2009) such as positive engagement and acceptance. Positive engagement is related to involving the other with his or hers situation or affect in order to improve his or hers affect. When presented with a difficult task, team members may try to change the way others think about that situation, suggesting that they will be able to succeed and giving advice on possible courses of action; they may point out the positive characteristics of the team or of specific members, following negative feedback; faced with irritated co-workers, team members can make themselves available to listen to what is bothering him or her, allowing him or her to vent his or her emotions. Acceptance is a relationship-oriented strategy that implies communicating validation to the other person. Team members express their caring for the team and its members, and try to make them feel special (e.g., by celebrating individual and team accomplishments, spending their off-work time doing activities with the other team members). Within acceptance strategies, using humour and jokes may also foster an improvement in the team members' affect.

Affect regulation within teams can also represent a controlled attempt to exert interpersonal influence over attitudes and behaviors of team members, and not over their affective experience *per se.* For example, teams develop a set of implicit and/or explicit norms about which emotions should be displayed in the context of work and about how those norms should be displayed (Rafaeli & Sutton, 1987). For example, Sutton (1991) found that bill collectors were selected, socialized and rewarded for following the norm of conveying high arousal and slight irritation to customers (a sense of urgency). Focusing on the construct of team work engagement, display rules will impact its emergence in two ways. When team members express their emotions in a very explicit way, it will facilitate an accurate evaluation of their affective state by others. Consequently, it will more likely result in a shared perception, because it will be less contaminated by personal interpretations, since it will be based on explicit information. At the same time, if display rules focus on the expression of positive emotions, the emergence of team work engagement may be facilitated – more team members will express positive affect and act congruently with the definition of team work engagement, displaying enthusiasm and energy. This display will, in turn, reinforce team members' perception of the teams' high level of engagement.

Finally, the affective climate of the group may be due to emotional contagion (Bakker et al., 2006; Torrente et al., 2012b). This is based on the transmission of non-

verbal signs of emotion (tone of voice, facial expressiveness, and tempo of discourse), that are automatically and subconsciously reproduced by the other, that ends by experiencing similar emotional states (Hatfield et al., 1994). Expressing emotions using nonverbal information leads team members to become more similar in terms of affect (Barsade, 2002). When that expression is focused on positive emotions, it will enhance the teams' level of team work engagement.

6.3.2.3. Conflict management

Conflict management is related to the handling of conflict situations either before or after they have arisen (Marks et al., 2001). Interpersonal conflict may directly worsen team members' affect, because individuals are rude to each other, accuse others of inappropriate behavior, or reject each other's feelings, and motivation, because individuals are unable to give constructive criticism and become more self-centered and less concerned with the teams' collective goal accomplishment (deWit, Greer & Jehn, 2012), and, therefore, undermine the emergence of team work engagement. Preventing or reducing interpersonal conflict may facilitate the emergence of team work engagement. For example, teams can develop norms for cooperation, promote procedural justice (Naumann & Bennett, 2000), or a priori establish the rules about how to handle conflict. When it is not possible to prevent relational conflict, teams who are able to compromise, accept different opinions and try new solutions will be in a better position to develop team work engagement.

According to Marks and colleagues (2001), emergent states can be considered both team inputs and proximal outcomes. Therefore, team work engagement can itself work both as output and input of team processes. For example, an increase on team work engagement may lead to an increased investment in strategic planning and energetic interactions, because team members feel more vigorous and dedicated which, in turn, may lead to better outcomes. Better outcomes, in turn, will foster future team work engagement. At the same time, a decrease in team work engagement may lead to a decrease in motivating behaviors from team members, because the lack of energy and lack of involvement with work may reduce the teams' confidence in their capabilities (dashed arrows in Figure 6.1).
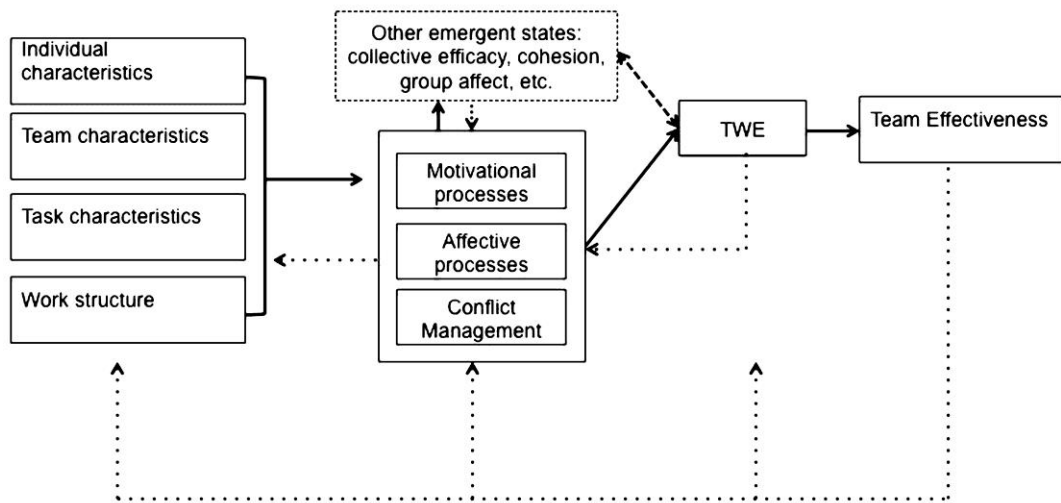
Figure 6.1. Proposed model for the emergence of TWE.

Proposition 3. Team work engagement will be a function of interpersonal team processes (affect management, conflict management, and motivational processes).

Proposition 4. The level of team work engagement at a given moment will lead to changes in prior inputs, outputs, processes and other emergent states.

6.3.3. Other emergent states

The same interpersonal processes (affect management, motivation building and conflict management) may also be responsible for the development of other emergent states. Team work engagement is linked to those other emergent states in a dynamic and recursive way (dashed arrow in Figure 6.1). A team with a high level of collective efficacy, for example, is likely to display high levels of vigor, dedication and absorption because they believe their team has the necessary competences to be successful. Simultaneously, energetic and enthusiastic teams may behave in a way that fosters efficacy beliefs. It follows that a team's level of engagement is not a static "trait" but is instead a dynamic property that changes continuously, reflecting the also dynamic changes on those inputs, in the individual interactions and attitudes associated (Breevaart et al., in press; Cronin et al., 2011). Considering that these emergent states

and team work engagement are positively related, it is relevant to theoretically describe their mutual influences and also to distinguish them. We will focus on four particular emergent states that may co-occur with team work engagement: collective efficacy, team potency, cohesion, and group affect.

6.3.3.1. Collective efficacy and Group potency

Motivating team members and building their confidence may lead to a sense of *collective efficacy* and of *group potency*. Collective efficacy is a group's shared belief that they can execute their tasks successfully (Bandura, 1997). Whereas collective efficacy has a specific temporal focus and is sensitive to specific situations, team potency generalizes the belief to "any task or demand a group may confront", and has an enduring temporal focus and broad outcome emphasis (Stajkovic, Lee & Nyberg, 2009). Collective efficacy has a history of being linked both to performance and to positive affective states. For example, a recent study by Salanova, Rodríguez, Cifre and Schaufeli (in press) reports a reciprocal positive relationship between collective efficacy and collective flow, defined as "a collective state that occurs when a group is performing at the peak of its abilities" (Sawyer, 2003, p. 167). In what work engagement is concerned, a study by Salanova, Llorens and Schaufeli (2011), at the individual level, reports that efficacy beliefs reciprocally influence engagement through positive affect. At the team level, both collective efficacy and group potency enhance the likelihood that team members will persist, approach, and succeed in their tasks; they enhance the likelihood of finding vigorous, dedicated and absorbed teams. Simultaneously, having a high level of team work engagement can contribute to the teams' perception of collective efficacy because team members display willingness to work and to persist even when difficulties arise. However, having collective efficacy beliefs and being collectively engaged are different states. One is essentially cognitive (a belief) and may both *lead* to an increased focus on work or be *influenced* by that increased focus and energy; the other has a motivational nature and *is* that increased energy and involvement.

6.3.3.2. Cohesion

Cohesion relates to "a group property with individual manifestations of feelings of belongingness or attraction to the group" (Lieberman, Yalom & Miles, 1973, p. 337). The more group members are attracted to the group, the more they will be willing to invest in pursuing the group's goals. Although members of high team work engaged

teams are likely to feel attracted to the group and to want to stay in the team, team work engagement goes beyond the simple attraction to the group – it encompasses a positive affective state, a desire to work and be productive, and a high focus on tasks.

Task-based cohesion (Festinger, Schachter, & Back, 1950) represents the shared commitment of team members with reaching valuable goals, because the success of the group is a precondition for the attainment of collective and individual goals. The existence of an attraction to the group and of task-based cohesion may lead individuals to be more dedicated to their work and to display higher levels of vigor. Simultaneously, when teams are engaged and dedicated to work, its members will be more inclined to help each other (Halbesleben & Wheeler, 2008). However, team members may work hard together in the pursuit of important goals, without feeling positively or fulfilled by their work. For example, teams can be highly committed to meeting a client's deadline (an important and valuable goal), but may simultaneously experience negative affective states such as distress, guilt, and hostility.

6.3.3.3. Group affect

When performing similar tasks and receiving the same kinds of outcomes, work teams may share a common affective state. One of the first definitions for this common affective state is the one proposed by George (1996): "consistent or homogeneous affective reactions within a group" (p. 77). Totterdell et al., (1998; 2000) found evidences for the existence of a shared affective state between team members. Specifically, they found significant associations between the reported moods of members of two kinds of work groups (nurses and accountants). Totterdell and his colleagues (1998, 2000) also found that professional sport players' moods were more strongly correlated with the current aggregate mood of their own team than with the current aggregate mood of other teams, or with the aggregate of their own team's moods at other times. Bartel and Saavedra (2000) argue that members of work groups experience "group moods" when their individual moods can be detected by other members and their study with 70 work groups confirmed the existence of mood convergence. Finally, Barsade (2000) showed that groups having a happy confederate reported more pleasant moods than groups with an unhappy confederate, and that the former groups showed greater cooperation and reduced conflict. The existence of positive group affect will correlate highly with team work engagement, since this emergent state has a positive affective nature: teams with positive group affect are more

likely to exhibit team work engagement than teams with negative group affect since the nature of team work engagement and of a positive affective state converges. At the same time, engaged teams will tend to collectively display positive emotions such as joy and pride while working.

However, the two constructs can be differentiated. In addition to its positive affective nature, team work engagement has also a strong motivational component and the construct is inseparable from taskwork. This means that whereas group affect can have no real application towards work, team work engagement is a collective positive affective state at work that drives team members to focus energetically and enthusiastically in their tasks. Therefore, having a positive group affect is not enough to define team work engagement: a team may experience collective positive affect that does not translate into increased effort in work but, instead, is reflected in longer, fun and playful breaks.

Proposition 5. Team work engagement is positively related with the following emergent states: collective efficacy, group potency, cohesion, and group affect.

6.3.4. Outputs

Team effectiveness after a performance episode will, by the cyclical feedback notion of episodic performance episodes, become the input to subsequent episodes, influencing team processes and emergent states in later time (Beal, Weiss, Barros & MacDermid, 2005).

According to Hackman (1987), team effectiveness is a threefold construct encompassing three criteria: team performance, team satisfaction, and team viability. The first criterion has to do with the productive output of the group. It depends on whether the team is able to meet or exceed the performance standards defined for their tasks. The second criterion relates to the balanced degree of satisfaction or frustration of personal needs that the group members experience. The third criterion, team viability, refers to the capability of team members to work together on subsequent tasks.

Overall, succeeding in a given work task can spark feelings of joy, elation and enthusiasm (Amabile, Barsade, Mueller & Staw 2005). Hence, a good performance and feelings of satisfaction and desire to keep on work together will facilitate motivation-focused interactions, as well as interactions with a positive affective valence.

Proposition 6. The level of team work engagement in a given time moment will be a function of previous team effectiveness.

6.4. Time dynamics and team work engagement

If teamwork should be considered within temporal cycles, team processes and emergent states necessarily change over time. According to Kozlowski and Chao (2012), emergence is dynamic and changes in form overtime. The change is not only due to the nature of the phase of taskwork (action or transition), but also to changes in inputs and outputs. These changes will inevitably bring upon changes on team members' interaction and, consequently, on the interpersonal processes. For example, following a great performance team evaluation, team members are likely to express happiness and positive feelings and to express their confidence regarding the team's ability and skills. As a consequence, the level of team work engagement might go up. In contrast, negative feedback by the team leader could lead to an increase in interpersonal conflict, in the form of the expression of hostility and blaming each other. As a result, the level of energy and dedication might drop. Team work engagement is, then, a dynamic state that fluctuates between performance episodes and taskwork phases.

At the individual-level, recent research validated the conceptualization of work engagement as a fleeting state, with oscillations over time (Breevaart et al., 2012; Sonnentag, Dorman & Demerouti, 2010). It changes over days and even within a day. Also, affective states are, by definition, transient psychological experiences (e.g., Frijda, 1993). Therefore, affective processes are necessarily not static, because they are influenced by the affective states of individuals and groups.

Proposition 7. Team work engagement fluctuates over time as a function of team inputs/outputs, team processes and other emergent states, rather than being a static state.

Another fundamental assumption of the study of teams is that teams perform in a series of recursive performance episodes (Marks et al., 2001), where time plays a central role. Each episode refers to a cycle of goal-directed activity (e.g., designing a marketing campaign, auditing a company), at the end of which it is possible to obtain an evaluation of team's performance and feedback. During a performance episode, teams may have to engage in two different types of taskwork: acts that directly contribute to goal accomplishment, such as extinguishing a fire by firemen (action phases) and planning

and/or evaluating activities, such as deciding on a surgical procedure by a medical team (transition phases). During each performance episode, and depending on their specific nature, different processes may have different importance. For example, goal specification is more relevant in transition phases whereas monitoring progress is fundamental in action phases.

Considering this framework, team work engagement's role is likely to be different over these two stages of team performance. Considering that engagement is simultaneously a positive and high-activation state (Bakker, Albrecht & Leiter, 2011), it is expected that team work engagement is globally more relevant during action phases. A high level of team work engagement will generate action readiness to work hard towards the goals of a team (Russell, 2003). More specifically, it is expected that the vigor dimension of team work engagement is the one that will contribute the most to the success of the team during action phases, when teams need sufficient energy to carry on their concrete tasks. During transition phases, nonetheless, the dedication component is expected to play a relevant role. Expressing a shared involvement in work will help team members' focus on what can be improved and considering alternative courses of action. Simultaneously, a state defined by positive feelings and by high activation facilitates the generation, promotion and realization of novel ideas in the workplace (e.g., workplace innovation; Madrid, Patterson, Birdi, Leiva & Kausel, 2013). More specifically, generating novel ideas depends on the broadening of cognition when feeling positive affect (Fredrickson, 2001) associated with the increased action tendencies that high activation stated promote. Therefore, a high level of work engagement will facilitate teams' creativity when planning future action or when evaluating past achievements.

Proposition 8. The effects of team work engagement on team performance will be more salient during action phases.

6.5. Discussion

The present paper introduces the construct of team work engagement within a theoretical model of emergence. Theoretically, this paper represents an underlying discussion on multilevel constructs: studying a higher-level construct is not just a methodological or data analysis question, but is essentially a theoretical one. Collective constructs that are derived from individual-level ones often lack a solid theoretical base

that supports their existence. Considering engagement as a team variable necessarily leads to the proposal of other antecedents different from the traditional Job Demands-Resources Model (Bakker & Demerouti, 2007). The team level also implies the consideration of team dynamics and of team members' individual behaviors as important antecedents. It follows logically that the conceptualization proposed in this paper is not an isomorphic transposition of work engagement from a lower to an upper level. It should be clear that we are proposing a construct that is different from individual work engagement. Following Morgeson and Hofmann (1999), when developing a construct at the collective level, we can distinguish between its structure and its function. The structure of a collective construct has to do with how the construct emerges within a group of people, the individual actions and cycles of interaction responsible for creating a shared pattern of behavior. On the other hand, the function of a construct is about its outcome that is thought to remain the same across levels. We propose that work engagement and team work engagement are functionally equivalent but not structurally equivalent: they have similar functions (fostering individuals' and teams' performance and effectiveness) but a different structure.

This should make researchers question the way collective constructs such as team work engagement should be measured. According to Hofmann and Jones (2004), determining the level of the entities from which data are derived depends on the answer to the question "is the researcher interested in describing a collection of individuals or in describing a collective phenomenon?" (p. 308). The answer depends on the research question and is not either right or wrong on its own. We add that it is also a consequence of the theory level and of the construct definition made, namely about the predicted homogeneity or heterogeneity of the collective construct (Klein, Dansereau & Hall, 1994). Since our theoretical conceptualization of team-level work engagement is homogeneous (i.e. group members have a shared perception of their team's level of work engagement), the focus should be placed on the variation between groups. Moreover, it refers to an emergent state of a team, which is different than an individual work-related state of well-being: what is central to the construct is not how one individual feels about his or her work in terms of energy, affect and motivation but how individuals perceive their team's level of work engagement as a whole entity. Therefore, data should be collected from numerous groups, obtaining a single score representing the group as a whole and maximizing between-group variability.

The main decision in constructing a scale, or in adapting the individual-level one is, then, to select the subject of the sentence. There are three main hypotheses: (1) to use the first-person singular ("I"), where the subject is the respondent him or herself (e.g., "At [my] work, [I think that] my team is/we are bursting with energy"); (2) to use the first-person plural ("we"), where the subject is the collection of individuals composing the team, including the "I" ("At [our] work, we are bursting with energy"); (3) to use the third-person singular ("the team"), where the subject is the team as an entity ("At [our] work, the team is bursting with energy"). The first hypothesis is easily excluded, since we are not looking for an individual propositional attitude about the enunciation but for a collective one. Choosing between the other two hypotheses is less clear, though, since in both the reference is collective. Nonetheless, and reflecting the reference-shift composition model (Chan, 1988), we suggest that the second hypothesis (first-person plural) should be used. According to linguistics (e.g., Cintra & Cunha, 1984), it is assumed that when using the first-person plural ("we"), the speaker includes him or herself in the group that is being described more strongly than when using a more neutral formulation such as "the team". Hence, since the "groupness" of a group can be defined, among other conditions, by whether the people involved consider themselves as part of a group and whether they recognize one another and distinguish members from non-members (Arrow, McGrath & Berdhal, 2000), we believe that using the first-person plural best describes this reality.

In what future work is concerned, researchers should aim at empirically validating this construct. We need more research that operationalizes team work engagement, that investigates its convergent and discriminant validity, and that explores its factor structure, within a theoretical base. This has already been attempted by Torrente et al., (2012a, 2012b), but with the referent "my team" and outside a specific conceptualization of team work engagement. Secondly, the nomological network of the construct should be analyzed. Therefore, we suggest that researchers validate the model by showing significant relationships with variables such as team orientation (as predictor) or team performance (as output). Thirdly, it urges us to look into the black box of team processes, particularly the interpersonal ones. This implies that research designs gain an extra complexity that allows for observing the interaction of team members over time: not only longitudinal designs but probably a more qualitative approach that will help to characterize systematically the way team members interact. In 1950, Bales proposed a method called interaction process analysis, aimed at coding each

act of behavior occurring in face-to-face groups. This method proposed two main broad categories (task area and social-emotional area) and 12 sub-categories reflecting six types of "problems": orientation, evaluation, control, decision, tension-management and integration. This is likely to be an interesting starting point for studying team processes. Fourth, work on the facial expression of emotion (e.g., Eckman & Davidson, 1993) could also be an exciting avenue for research on the emergence of team work engagement: are expressive teams more likely to develop a high level of team work engagement than low expressive ones? Fifth, and considering that there are many teams who interact mainly virtually (email, conference-call, etc.), it would be interesting to investigate whether interacting virtually impacts affective and motivational processes and, consequently, the emergence of team work engagement. Finally, efforts should be directed at understanding how team work engagement develops over time. Researchers should develop longitudinal designs encompassing the notion of cycles of interaction and performance to best describe the fluctuations of team work engagement and its relations with team-relevant events.

From a practical point of view, our team work engagement model (see Figure 6.1) emphasizes the need to consider specific questions when leading a team. If team managers rely only on what is known at the individual level, they may overlook important variables that exert influence within teams. Therefore, the model points out the mediators that should be considered when working with teams, and highlights their interactional nature. For high levels of team work engagement, team leaders must be attentive to how team members interact and guarantee that team members are able to motivate each other, while maintaining a positive affective state.

We have, so far, emphasized the strengths of the proposed model. However, it may also have some limitations. The model may not be generalized entirely to teams who interact exclusively virtually, particularly when video is not available. Face-to-face and computer mediated communication differ in many ways (Okdie & Guadango, 2008). For example, in computer mediated communication social visual cues (voice inflection, eye gazing, etc.) are absent, and the latency of the response may be longer (when using asynchronous methods such as the email), allowing the parts to have a greater control over the pace of the communication. Taken together, these differences might impact the social influence processes involved in interaction and, as a consequence, hinder the development of a shared motivational state.

Finally, cultural differences may also play a role in team work engagement. At the individual level, Shimazu, Miyanaka and Schaufeli and Iwata (2010) reported a significantly lower level of work engagement in a sample of Japanese workers, when compared to fifteen other countries. These lower values, according to the authors, may be due to the tendency of the Japanese to suppress the expression of positive affect (Iwata, Roberts & Kawakami, 1995), and not necessarily to a real low level of vigor, dedication, and absorption with work. At the team level, therefore, the emergence of team work engagement may be compromised in cultures where expressing positive affect is not commendable. At the same time, however, teams could be considered more important in collectivistic rather individualistic cultures. Hence, team members might as well be invested in working towards collective goals, therefore being willing to work hard, being proud of their job and being immersed in their work – being work engaged. In these cultures, different mechanisms than the ones presented in this paper may underlie the emergence of team work engagement.

6.6. Conclusion

This paper opens a motivating avenue for research. We proposed a model of team work engagement including where team interpersonal processes play a fundamental role as proximal antecedents of team work engagement. The model presented should be considered not only as a theoretical output but also as an input for a fruitful research agenda on the promising concept of team work engagement.

CHAPTER VII.

STUDY 1. EMPIRICAL VALIDATION OF THE TEAM WORK ENGAGEMENT CONSTRUCT

7. EMPIRICAL VALIDATION OF THE TEAM WORK ENGAGEMENT CONSTRUCT[3]

A rich body of literature from the last decade has converged on the relevance of the relationship between work engagement (WE) and individual performance and well-being (e.g., Halbesleben, 2010; Schaufeli, & Bakker, 2003). It is also well acknowledged that job resources (e.g., autonomy, feedback) facilitate the development of WE and buffer the negative effects of job demands such as rapid work pace and inefficient equipment (Bakker & Demerouti, 2007). Most of the studies on WE were conducted at the individual level. However, many people work in teams and need to interact with others in order to perform their tasks. Do the specific dynamics of working within a group of people collectively impact the levels of energy and motivation of employees? In this article we investigate whether team work engagement (TWE) exists as a construct that is qualitatively different from work engagement at the individual level. We expect that the two constructs are related, yet different. This paper may contribute to the literature in two ways. First, although TWE has been used in previous studies (e.g., Bakker, Van Emmerik & Euwema, 2006; Salanova, Llorens, Cifre, Martinez & Schaufeli, 2003; Torrente, Salanova, Llorens & Schaufeli, 2012a, 2012b) it is still unknown whether it is empirically distinct from individual WE. Second, as a methodological contribution, this study proposes a different operationalization of TWE, measuring it as a team property (by using "we" as the referent of the items). Finally, we compare two methods for measuring collective constructs: the aggregation of individual answers and a single score obtained through group discussion.

7.1. Theoretical Background

Work engagement is defined as a positive, fulfilling, work-related state of mind characterized by vigor, dedication and absorption (Schaufeli, Salanova, González-Romá & Baker, 2002). Work engaged employees tend to be energetic and enthusiastic about their work and it impacts on both their task and extra-role performance (e.g., Halbesleben & Wheeler, 2008). Therefore, engaged workers not only perform better than non-engaged ones, but they are also more willing to make more effort than what is

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expected of them. One of the psychological mechanisms underlying the engagement-performance link is the experience of positive emotions by employees. According to the broaden-and-build theory (Fredrickson, 2001), experiencing positive emotions results in a momentary broadening of peoples' thought-action repertoires and in an overtime building of resources (physical, social cognitive and psychological). For example, when one experiences interest, he or she will feel the desire to explore and learn.

Work engagement is likely to collectively exist in teams. Previous research has showed that people working together present similar patterns of mood. For example, Totterdel, Kellett, Teuchmann and Briner (1998) found a significant association between the mood of 65 community nurses and their teammates, which was independent from shared daily hassles. They also found the same pattern with a sample of accountants. This affect similarity may be due to emotional contagion (Hartfield, Caccioppo & Rapson, 1994). In teams, individuals are able to perceive and observe the behavior of their co-workers. Team members can see, for example, that one of their colleagues is enthusiastic about a new project because he is smiling when talking about it, uses a higher tone of voice and gestures a lot. At the same time, they can listen to another co-worker complaining about how boring their tasks are and catch her drawing absently in the corner of her sheets during a meeting. Emotional contagion is based on the transmission of non-verbal signs of emotion (tone of voice, facial expressiveness, and tempo of discourse), that are automatically and subconsciously reproduced by the other, that ends by experiencing similar emotional states. In teams, when people interact on a regular basis, there are frequent opportunities for this to happen. Moreover, people can openly and explicitly tell other how they are feeling towards work.

TWE is, then, a shared, positive, fulfilling, motivational emergent state of work related well-being (Costa, Passos & Bakker, 2012). It is shared because, to state the existence of team level WE, team members must have similar perceptions of this state. If team members have high variability in their perceptions of the level of engagement of their team, then we can only talk about a team member's individual perceptions of his/her team's level of engagement and not of TWE. TWE is considered an emergent state whose collective structure is shaped by the nature of their members' interactions during team processes and dynamics. For example, enthusiastic comments about a new prospective client by one team member who incites co-workers to actively suggest strategies to promote its loyalty are likely to foster the emergence of TWE. Also, reviewing the previous years' sales results in a gloomy tone of voice and passively

charging the "economic situation" will tend to hinder the energy and enthusiasm of the team.

Teams develop a certain level of collective engagement as a consequence of a specific configuration of inputs (previous performance, work structure, leader's behavior, work events, and so on) and of team processes (e.g., mission analysis, planning, coordination), particularly interpersonal processes (motivation, conflict and affect management). Work engaged teams tend to collectively display positive emotions while working, such as enjoyment and pride, and to be actively involved in team processes (Marks, Mathieu & Zaccaro, 2001). A high level of TWE leads teams to invest time and effort in planning and goal setting, coordinating the sequence and timing of activities, in tracking team resources and in proving backup responses (such as assisting team members to perform their tasks, by providing verbal feedback or coaching). Members of work engaged teams also invest in regulating members' emotions, adequate conflict management and confidence building, according to their positive affective state.

7.1.1. TWE and related variables

Establishing TWE as an independent construct implies theoretically defining its relationships with relevant constructs in order toassess its convergent and discriminant validity. Here, we discuss some team-level and individual-level variables that have been studied as related both to performance and well-being at work, highlighting their possible relationship with TWE. All of these variables may be related to both TWE and WE. However, team-level variables are likely to have a relationship of greater magnitude with TWE, since it is defined as an emergent state. As such, it is dependent on the interaction and dynamics that occur within the team and not so much on individual characteristics. At the same time, individual-level variables are likely to show relationships of greater magnitude with WE, since they both pertain to the individuals singly.

The team level variables are collective efficacy, team potency, identification with the team and relational conflict (study 1), team viability and objective tesam performance (study 2).

Collective efficacy is a group's shared belief that they can execute their tasks successfully (Bandura, 1997). Whereas collective efficacy has a specific temporal focus and is sensitive to specific situations, team potency generalizes the belief to "any task or

demand a group may confront", and has an enduring temporal focus and broad outcome emphasis (Stajkovic, Lee & Nyberg, 2009). These variables are most likely connected to TWE. When I believe my team is able to attain a certain goal, I probably experience work related well-being. Indeed, they might reinforce each other. However, whereas collective efficacy and team potency have a cognitive nature (are defined as believes), TWE implies an affective well-being and a drive to act in benefit of the team. Both collective efficacy (Bandura, 1997) and group potency (Guzzo, Yost, Campbell & Shea 1993) are thought to be positively correlated with TWE. At the individual level, self-efficacy is one of the personal resources that work as an input for work engagement (Bakker & Leiter, 2010), and we expect that, at the team level, the two engagement constructs have a certain degree of isomorphism.

Identification with the team implies thinking about oneself as a group member and it drives from the relationships the individual establishes as a member of the group and from the value and emotional significance that membership has to the individual (Tajfel & Turner, 1986). Identifying with the work group is related to a greater commitment to the group, cohesion, altruism, positive evaluations of the group, and fewer withdrawal behaviors such as absenteeism, social loafing, and turnover (Riordan & Weatherly, 1999). Therefore, TWE is expected to positively correlate to identification with the team.

Team viability is defined as a team's capacity for the sustainability and growth required for success in future performance episodes (Bell & Marentette, 2011). Since TWE is characterized by positive affect within a team and by a high level of collective dedication to work, it is likely that in teams with high TWE, its members welcome the possibility for working together in the future, as well as their perceptions of room for development as a team. Considering engagement's relationship with performance at the individual level, it is also expected that TWE correlates positively with objective team performance.

Finally, we expect relational conflict to show a non-significant relationship with TWE. Although it has been demonstrated that both relationship and task conflict relate to team performance and team satisfaction (De Dreu & Weingart, 2003), relationship conflict is about the personal relationships of team members, whereas work engagement is focused on the work itself.

At the individual-level, we discuss burnout, job satisfaction and subjective well-being.

Burnout (Maslach, 1999) is seen as the antipode of work engagement. It is defined as a negative three-dimensional syndrome, the components of which are: emotional exhaustion, depersonalization/cynicism and reduced personal accomplishment. We expect TWE to be negatively correlated with the dimensions of emotional exhaustion and cynicism and positively correlated with the dimension of personal accomplishment of burnout.

Job satisfaction, a "pleasurable or positive emotional state resulting from the appraisal of one's job" (Locke, 1976, p.1300) is also put forward as positively correlated with TWE, since both reflect a positive emotional state related to work.

Subjective well-being, how individuals evaluate their lives, both in terms of satisfaction judgments and in terms of affective reactions (moods and emotions) (Diener, 1994) is also expected to be correlated with TWE, since emotional states at work may spill over to other areas of life and contribute to a higher or lower general well-being.

7.2. The present study

The different elements of the definition of WE, both at the individual and at the team level, suggest that these constructs are different concerning their structure. Should this be true, it would be possible to find individuals who have a high level of individual WE, but who work in a team that has a lower level of TWE, or someone who belongs to a highly work engaged team while his/her individual levels of motivation and/or energy are low.These differences can be captured if researchers operationalize WE differently at both levels, by measuring TWE as a team property and individual work engagement as an individual property. If significant differences are found in the responses to those measures, then we can infer that individual work engagement and TWE, despite the fact of probably being correlated, reflect two distinct constructs.

Hypothesis 1. The aggregated mean scores on the individual WE scale and on the TWE scale will be significantly different.

Three possibilities exist for collecting data on collective constructs: (1) the consensus model; (2) the referent shift composition model (Chen, 1998; Chen, Bliese, & Mathieu, 2005); and (3) a single holistic measure obtained through group discussion (Goddard, Hoy & Hoy, 2004). The main difference between the consensus and the

referent-shift models is the construct's referent: in item formulation, consensus models ask individually focused items ("I…"), whereas referent-shift models refer to the collective in the measure ("We…"). We argue that if computing mean scores of individual-level WE using a consensus model the mean scores of a group would still refer to members' perceptions about themselves and not about the team, since those mean scores were obtained from individually focused items. Indeed, according to Chan (1998), "the change in the referent results in a new form of the original focal construct that is conceptually different from the original form" (p 239). Therefore, we believe the consensus model is a fuzzy representative of the true collective construct and the mean scores of a group of individuals on collectively formulated items ("We…") is a better representation of it.

Bar-Tal (1990) posits that the origin of a shared belief depends on the interaction that occurs within the group. In accord with this idea and with the definition of an emergent stare, the measurement of a collective emergent state also should reflect that interaction process. In the group discussion process, team members decide together on the best answer for each item on a scale, resulting in a single score, as opposed to an aggregated one (e.g., Gibson, Randel & Early, 2000).

We argue that both the reference-shift composition model and the holistic measure through group discussion are equally good possibilities for data collection on collective phenomena, including TWE. Since it is a shared state, team members must display similar perceptions.

Hypothesis 2. No significant differences exist between measuring TWE through the aggregation of individual scores using the referent-shift model and measuring it by a holistic measure reflecting the interaction between team members.

In order to demonstrate TWE's convergent and discriminant validity, we selected the variables presented above.

Hypothesis 3a. TWE is positively correlated with: the dimension of personal accomplishment of burnout, job satisfaction, subjective well-being, identification with the team, team viability, objective team performance, collective efficacy and group potency.

Hypothesis 3b. TWE is negatively correlated with the dimensions of emotional exhaustion and cynicism of burnout.

Hypothesis 3c. TWE and relational conflict are not significantly correlated.

Hypothesis 3d: TWE has relationships of greater magnitude with team-related variables (collective efficacy, group potency, identification with the team and team viability) whereas WE has relationships of greater magnitude with individual-level variables (subjective well-being, job satisfaction and the three dimensions of burnout)

Finally, the present study aims at exploring whether the 3-factor structure of work engagement found at the individual level (e.g., Schaufeli & Bakker, 2003; Schaufeli, Bakker & Salanova, 2006) is maintained at the higher level of analysis. Following the proposed definition of TWE, it is expected that the 3-factor structure will be maintained.

Hypothesis 4. The factor structure of TWE is similar to the one of individual-level work engagement and is composed by 3 factors: vigor, dedication and absorption.

We conducted our analyzes in two separate studies. In the first study, we addressed hypotheses 1 to 3 (excluding the variables team viability and objective performance, analyzed in study 2), and superficially explored hypothesis 4, using only one sample. On study 2, we enriched the tests for convergent and discriminant validity, and tested the factorial structure at the team level with a larger sample in order to explore hypothesis 4.

7.3. Study 1

7.3.1. Method

7.3.1.1. Participants, procedure and measures

In this study 226 participants working in 55 teams filled out one questionnaire. Each team could be composed by undergraduate and graduate students doing an end of term group work (n= 126) that would answer the survey considering their work team at the University or by a mix of working students (n=27) and full time workers (n=73). In these teams, one of the participants was a working student at the University who would

bring his/hers work team to answer the survey considering their work group at work. In all the cases all of the team members completed the survey. Most of the respondents were female (74.7%) and under 25 years of age (60.7%). Most teams had been working together for less than 6 months (49.2%) and the average team size was 4.62 members (SD=1.85).

After individually completing the individual surveys comprising all the variables of the study, teams were given the holistic measure of TWE to fill in together. They were told to decide together on the answer to each item that they thought best described their view as a team. We did not counter-balance the order of completion of the two different methods and all the teams completed the discussion method after individually answering the survey. This decision was indeed to make sure every member would have the opportunity to make up his/her mind and to be able to have a prior opinion to bring to the discussion, minimizing the possible impact of dominant members and, therefore, enhancing a "shared" response.

In 7.1 we present all of the measures used in both studies. The proposed measurement instrument for TWE is based on the content of the original, individual level, UWES items (Schaufeli et al., 2002). For conveying a collective/team positioning we focused on the subject of the sentence. Reflecting the reference-shift composition model (Chen, 1988) and Bar-Tal's (1990) ideas on group beliefs, we chose to use the first-person plural: according to linguistics (e.g., Cintra & Cunha, 1984), when using the first-person plural ("we") the speaker includes him or herself in the group that is being described more strongly than when using a more neutral formulation such as "the team". We chose to reinforce the idea of individual belongingness to the group by using first-person plural pronouns ("we", "our", "us"). We believe that the use of these pronouns also helps the respondents to focus on the team and not on individual work that may not be relevant for them collectively.

The only content change made to the original UWES scale was in item 8 ("When I get up in the morning, I feel like going to work"), a clearly individual item with no possible collective phrasing: waking up in the morning is, by definition, an individual action not shared with co-workers! We changed this sentence to "when we arrive at work in the morning we feel like starting to work" since this alternative formulation does depict a shared and public moment.

Table 7.1. Measures of studies 1 and 2.

	Variable	Scale and source	No. of items	Example of items	Cronbach's α (individual/ aggregated)
Study 1	*Individual work engagement*	Utrecht Work Engagement Scale (Schaufeli, Salanova, González-Romá & Bakker, 2002)	9	vigor: *At my work, I feel bursting with energy* dedication : *I am proud of the work that I do* absorption : *I get carried away when I am working*	.80/.86 .83/.91 .74/.83
	Team work engagement	Team Work Engagement Scale	9	vigor: *At our work, we feel bursting with energy* dedication : *We are proud of the work that we do* absorption : *We get carried away when we are working*	.85/.88 .88/.89 .83/.82
	Relational conflict	Intragroup Conflict Scale (Jehn, 2001)	4	*Are interpersonal conflicts evident in the team?*	.88/.92
	Burnout	Maslach Burnout Inventory, General Survey (Maslach, Jackson & Leiter, 1996)	17	emotional exhaustion: *Working all day is really a strain for me* cynicism: *I don't really care if my work is well done or poorly* professional efficacy: *At my work, I am confident that I am effective at getting things done*	.88/.92 .71/.79 .83/.87

Job satisfaction		1	*In general, and considering all the aspects of your work, you would say you are…*	-
Group potency	Guzzo et al., 1993	8	*No task is too difficult for my team*	.90/.94
Collective efficacy	Jex & Bliese, 1999	5	*My team has the necessary skills to have good results in its tasks*	.92/.94
Subjective well-being	Satisfaction with life scale (Diener, Emmons, Larsen & Griffin, 1985)	5	*In most ways my life is close to my ideal*	.86/.81
Identification with the team	Doosje, Ellmers and Spears, 1995	4	*I see myself as a member of my team*	.88/.93
Study 2 *Team viability*	Standifer, Halbesleben and Kramer, 2009, adapted	4	*This team can perform well in future projects*	.85/.89
Team work engagement	Team Work Engagement Scale	9	vigor: *At our work, we feel bursting with energy* dedication : *We are proud of the work that we do* absorption : *We get carried away when we are working*	.97/.96 .95/.94 .95/.87
Objective team performance	computation of the difference between the companies´ stock market share prices at the beginning of the competition (week 1) and the value achieved at the end (week 5) was computed. This generated a team performance index for the companies' stock marketshare price.			

7.,3.2 Results

Table 7.2 summarizes the mean scores, standard deviations, correlations, Rwg$_{(j)}$'s and ICC's for all the variables in study 1. Since the unit of the present analysis is the team, scores for all the measures were calculated using the weighted mean of team member responses and aggregated to the team level for statistical analysis. Using the value of .70 and above as a cut-off point (Cohen, Doveth & Eick, 2001) on the index of within-group interrater agreement (Rwg$_{(j)}$, James, Demaree & Wolf, 1984, 1993) the mean values are all acceptable. Intraclass Correlations (ICC1) values for job satisfaction and for most group-level variables (TWE, collective efficacy, group potency), with the exception of identification with the team and relational conflict, were between the recommended values of .05 and .20 (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann 2004). For the individual variables (WE, burnout, subjective well-being)these values were slightly higher (around .20). This is an interesting pattern of results that can be explained theoretically: apparently, even if within-group agreement exists on all the variables, differences in individual variables cannot be attributed to the fact of belonging to a specific group. However, and as expected, ICC(2) values were greater than ICC(1) for all variables, filling another criteria for aggregation.

Table 7.2. Means, standard deviations, correlations, rwg's and ICC's for all the variables in the study.

	Rwg	ICC1	ICC2	M	Sd	1	2	3	4	5	6	7	8	9	10	11	12
1.UWES9	.89	.32	.80	4.7	.67	1	.88**	.73**	.66**	-.61**	-.70**	.29*	.38*	.34*	.44**	.50**	-.18
2. TWES9	.87	.19	.57	4.8	.63		1	.74**	.69**	-.58**	-.59**	.43**	.28*	.48**	.61**	.63**	-.21
3. TWES9-HM	-	-	-	4.8	1.0			1	.58**	-.55**	-.52**	.35*	.34*	.34*	.46**	.54**	-.13
4. MBI-PE	.86	.23	.63	5.6	.64				1	-.38*	-.38*	.15	.32*	.33*	.34*	.50**	-.02
5. MBI-EE	.73	.27	.68	3.8	.98					1	.74**	-.22	.18	-.18	-.36*	-.32*	.18
6. MBI-CY	.78	.24	.64	3.1	.82						1	-.19	-.23	-.18	-.24	-.20	.16
7. Job. Satisf	.77	.17	.53	5.3	.68							1	.17	.58**	.63**	.52**	-.46**
8. Sub. Well-being	.77	-.02	.-.09	5.0	.48								1	.26	.19	.32*	-.02
9. Identification	.87	.26	.66	5.8	.65									1	.82**	.78**	-.42*
10. Collective Efficacy	.86	.16	.52	5.8	.59										1	.80**	-.50**
11. Group Potency	.88	.21	.59	5.5	64											1	-.26
12. Relationship Conflict	.83	.32	.73	2.2	.81												1

7.3.2.1. Individual and team-level constructs

One of the main goals of this paper is to explore whether WE and TWE are distinguishable constructs that have significant differences between them. Correlations among the items of the individual (UWES-9) and team-level (TWES-9) scales suggest that individuals differentiate between the two constructs and that they are indeed measuring different things (*r* values between .51 and .68).

In order to test Hypothesis 1 (the aggregated mean scores on the individual WE scale and on the TWE scale will be significantly different), a mean Paired Samples t-test was conducted. Despite the significant mean correlation found between UWES-9 and TWES-9 (*r* = .88; p <.001), these two variables do present statistically significant differences between them (*t* = -3.177; p = .002). This supports our first hypothesis. Contrary to what was expected, the mean scores of the UWES-9 and TWES-HM-9 (holistic measure obtained by group discussion) also correlated significantly (*r* =.73; p=.000) but did not differ significantly (*t* =-1.064; p=.292).

7.3.2.2. Aggregated and holistic measure

For testing Hypothesis 2 (no significant differences exist between measuring TWE through the aggregation of individual scores using the referent-shift model and measuring it by a holistic measure reflecting the interaction between team members), another mean Paired Samples t test was conducted. Variables were significantly correlated (*r* = .74, p < .001) and, more importantly, no significant differences between them were found (*t* = .38; p = .70), which supports our second hypothesis. In addition, the aggregated measure demonstrated relations of greater magnitude with the majority of other variables than the group discussion method measure. Considering these results, the next set of analysis was conducted using TWES-9, and not the holistic measure.

7.3.2.3. Convergent and discriminant validity

Hypotheses 3a to 3c are related to TWE's convergent and discriminant validity (TWE is positively correlated with: the dimension of personal accomplishment of burnout, job satisfaction, subjective well-being, identification with the team, objective performance, collective efficacy and group potency; negatively correlated with the dimensions of emotional exhaustion and cynicism of burnout and not significantly correlated with relationship conflict). TWES-9 correlated significantly with all the variables included in this study (cf. Table 7.2), with the exception of relational conflict,

and in the expected direction. This shows that TWE is in fact related with the theoretically proposed variables. Moreover, and in what hypothesis 3d is concerned (TWE has relationships of greater magnitude with team-related variables whereas WE has relationships of greater magnitude with individual-level variables) individual and team level work engagement have different patterns of correlations. WE shows higher correlations with subjective well-being and with the emotional exhaustion and cynicism dimensions of burnout, all individual-level variables. TWE shows higher correlations with variables that reflect emergent states (collective efficacy, group potency and identification with the team), as well as with individual-level variables that are essentially work related: job satisfaction and the personal effectiveness dimension with burnout. Hypothesis 3d was, then, partially supported.

Considering the high correlations between TWE and the personal effectiveness dimension of burnout ($r =.69$), group potency ($r =.63$) and collective efficacy ($r =.61$), we performed additional confirmatory factor analysis, as implemented by AMOS 17 (Byrne, 2010), to test whether these constructs were indeed distinct. Since TWE, group potency, and collective efficacy are referent-shift constructs, factor analyzes were conducted at the team level (N = 55) as recommended by Chen, Mathieu and Bliese (2004)[4]. Hu and Bentler (1999) posit that when the sample size is smaller than 250 combinations based on CFI and SRMR are preferable, since they represent the lowest sum of Type 1 and Type 2 errors. Moreover, the CFI index is particularly recommended for model comparison purposes (Goffin, 1993). Therefore, our evaluation of the goodness of fit of the models presented in this paper will rely heavily on the CFI/SRMR combination, where CFI values greater than .90 and SRMR values of .08 or lower are considered a good fit. From the results presented in table 7.3, we can conclude that TWE is an independent construct from the other three, providing further validity for the TWE construct: the two factor models for all variables showed a better fit. Moreover, the chi-square difference test also shows that the 1 and 2 factor solutions are significantly different from each other, with the 2 factor solution being better.

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[44] We acknowledge our small sample size for running these CFA's. Thus, for exploratory purposes in sample 1, we also ran the factor analyzes at the individual level (N = 226 individuals). These additional analyzes demonstrated that the items loaded as expected on team work engagement, collective efficacy, team potency and the personal efficacy dimension of burnout (results available from the authors upon request).

Therefore, the construct of TWE is indeed distinct from (although related to) those other constructs.

Table 7.3. Confirmatory factor analysis exploring the independency of TWE from related constructs (n=55)

		CFI	**SRMR**	**Δ χ2**
TWE and Group Potency	1 Factor	.726	.1075	47.9 (df = 1)
	2 Factors	.845	.0873	<0.0001
TWE and Collective Efficacy	1 Factor	.666	.1288	149.48 (df = 1)
	2 Factors	.866	.0882	<0.0001
TWE and MBI-PE	1 Factor	.753	.1054	106.2 (df = 1)
	2 Factors	.822	.0929	<0.0001

7.3.2.4. Factor structure

In order to start tackling hypothesis 4 (the factor structure of TWE is similar to the one of individual-level work engagement and is composed by 3 factors: vigor, dedication and absorption.), we analyzed the factor structure of TWES-9 and TWES-HM-9, with each of the 9 items of the scale aggregated to the team level. First, an exploratory factor analysis was conducted (Principal Components method with Varimax rotation) on each scale. It revealed only one factor for both the TWES-9 (69.75% of variance explained) and the TWES-HM-9 (57.91% of the variance explained). Confirmatory factor analysis was afterwards used to test the fit of the two competing models for TWES-9 and TWES-HM-9.

One-factor models assume that the scale items load on one common general engagement factor and three-factor models assume that the items load on three separate but correlated factors, namely vigor, dedication, and absorption. Considering TWES-9, the 3-factor model was not an admissible solution to fit the data (the covariance matrix is not positive definite), whereas the 1-factor model almost reaches the cut-off criteria for the fit indexes (CFI =.87; SRMR=.07). Modification Indexes (MI) were inspected to assess whether the fit of the model could be improved. These values revealed that the fit

could be improved by allowing the errors of item 1 and item 2 (that belong to the same theoretical dimension of engagement, vigor) to correlate (MI = 23.44). This adjustment allowed for better a fit, with both indexes reaching the respective cut-off points (CFI = .93; SRMR = .06). With TWES-HM-9, the pattern of results is not so clear, with both models presenting CFI values above .90 and SRMR values below .08. Nonetheless, the chi-square difference test shows that these models are statistically different between them ($\Delta \chi2 = 15.514$; df = 3; $p = .0014$)[5].

7.3.3. Discussion

The results supported the hypothesis that TWE is a valid construct, independent of that of individual-level work engagement and that it is more than the aggregation of individual scores on the individual work engagement instrument. Indeed, the mean results of UWES-9 and TWES-9 are statistically different. This is a relevant result, not only for the study of work engagement at multiple levels, but also for the multilevel research, where no clear rule transposing individual constructs to higher levels exists at the moment, namely, concerning measurement.

Comparing with individual work engagement, the pattern of correlations for both variables shows that TWE has higher correlations with team-level variables, as expected, but also with work related ones. This justifies the use of a team-referent measure of engagement, particularly in the actual scenario of many companies where work is team-based. Furthermore, it underlies the importance of understanding and paying attention to work teams, team functioning and team processes, since it seems that, rather than individual states, team emergent states are related to job satisfaction and to a sense of job efficacy.

We decided to use the 9-item scale because the one and three factor solutions of this scale (at the individual level) are the ones that show a relative invariance across countries (Bakker & Schaufeli; Schaufeli et al., 2006), whereas the invariance of the three-factor structure of the 17-item scale is relatively poor. Analyzing the factor structure using the 9 item scale, we were unable to find an acceptable 3-factor model in the aggregated measure. Moreover, Cronbach's alpha for the total scale was very high.

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[5] Again, factor analyzes were also run at the individual level (N = 226 individuals). These analysis of TWES9also resulted in a better fit of the 1-factor model, with the covariance matrix of the 3 factor solution being "not positive definite" (results available from the authors upon request).

Possible explanations are related to our sample: it was not large and was mainly composed of students. The holistic measure, however, accepts both solutions. It seems that being able to discuss individual perceptions of TWE results in a more differentiated view of the team's energy and motivation. Nonetheless, these results must be viewed with caution, considering the small sample size.

We also intended to contribute to an understanding of the best way to measure collective constructs: either through aggregation of individual responses on collectively formulated items or with a single holistic measure answered by the whole group after a discussion. Although the pattern of correlations of both methods with the variables chosen for assessing the construct's convergent and discriminant validity is similar, and no statistically significant differences were obtained between them – which leads us to think that both capture TWE in a similar way – two other considerations must be taken into account. First, the magnitude of the correlations with the variables chosen for assessing the construct's convergent and discriminant validity was higher for the aggregated measure. Second, no significant differences were found between the means of the holistic measure and of the aggregation of scores on the individual scale. Contrary to Gibson et al., (2000) who, for collective efficacy, concluded that the discussion method better captured the collective construct, it seems that in this case the aggregated measure is more appropriate. It is possible that having group members making judgments together is not a valid method for data collection on TWE. Bandura (1997) stated that the group discussion method is subject to group processes such as pressures for conformity and social persuasion. In addition, he argues that a group belief is better characterized by a representative value for the members' beliefs and by the degree of variability/consensus around that central belief. Moreover, for Goddard et al., (2004) the group discussion method is prone to social desirability behaviors and answers and, thus, is a less reliable one. One possible limitation of the present data collection is that we did not counter balance the order in which teams completed both methods (aggregation vs discussion). Since all individuals had an opportunity to form their own opinion prior to team discussion, the influence of dominant members is less likely to have had a large impact. Nonetheless, and despite giving the same instructions to all groups, we were able to observe (although not systematically) the process of filling in the holistic measure. Indeed, many of the groups had only one or two members actively discussing the items. This could partly explain why the results are closer to

those of the individual scales than the aggregated collective measure and also the different factor structure found with the holistic measure.

The sample used in this preliminary analysis of the factor structure of TWE was small. This may have led to unclear results about the factorial structure of the construct. Moreover, half of the data were collected from students using the general engagement scale and not the specific student's one – with the main difference being the wording of the items (from "work" to "study") and the study was cross sectional. Also, validation of TWE was still lacking empirical evidence for the discriminant validity between team engagement and similar constructs, such as team viability and team performance. Therefore, and since the results were not totally consistent with the theoretical three dimensional definition of work engagement, we decided to conduct a second study to analyze the factorial structure more profoundly.

7.4. Study 2

7.4.1. Method

7.4.1.1. Participants, procedure and measures

The sample for this second study was composed of participants of the 'Global Management Challenge®' (GMC®), a management simulation developed by a company specialized in the development of business simulations that has been used for more than thirty years. During a 5-week period, participants must manage a virtual company and decide on investment choices and other managerial issues. Participants were emailed a questionnaire with the TWE scale during the last week of the competition in order to collect data for the present study. Participants were 799 individuals, organized in 175 teams. The average team size was 4.67 members (SD = .61). The participants' average age was 28.81 years (SD = 8.4 years) and 67.8% were men. Teams were composed of students (40.3%), full-time workers in different companies (42.4%), and mixed, with both students and full-time workers (17.3%). The measures for this study can be found in table 7.1. In Table 7.4 we present the descriptive statistics, the $Rwg_{(j)}$ and ICCs measures and the correlations between the variables.

Table 7.4.   Means, standard deviations, correlations, rwg's and ICC's for all the variables in the study

	rwg	ICC1	ICC2	M	Sd	1	2	3
1.TWES9	.75	.15	.49	5.5	.88	1	.27**	.17*
2. Viability	.81	.11	.42	4.2	.54		1	.08
3. Objective performance	-	-	-	.06	.20			1

Note: **. Correlation is significant at the 0.01 level (2-tailed).; *. Correlation is significant at the 0.05 level (2-tailed).

7.4.2. Results

7.4.2.1. Further analysis on convergent and discriminant validity

In order to show further evidence for the existence of TWE as an independent construct, we analyzed the correlations between TWE and team viability ($r = .27$, $p<.005$) and TWE and objective team performance ($r =.17$, $p<.05$). Considering these results, TWE can be considered a different, independent variable from these other two. Taken together the results from study 1 and 2, hypotheses 3a, 3b and 3c were supported.

7.4.2.2. Factor structure of TWE

To test our 4th hypothesis (the factor structure of TWE is similar to the one of individual-level work engagement and is composed by 3 factors: vigor, dedication and absorption), we conducted a confirmatory factor analyzes (CFA) using the maximum likelihood estimation method and AMOS 17 software, testing two models (1 factor model and 3 factor model) at the team level. In order to do so, we aggregated each of the 9 items of the scale to the team level and conducted the CFA (Chen et al., 2004). With this sample (n = 175 teams), the fit indexes used to access the model fit were not clear in undoubtedly defining a best fitting model, when no constraints were established (cf. Model 1, Table 7.5). When inspecting the modification indexes for both the one and the three factor models, we observed that the model fit could be improved by allowing

the errors of item 8 and item 9 (both belonging to the absorption dimension, theoretically) and errors 1 and 2 (both belonging to the vigor dimension of engagement, theoretically) to correlate. With one (error 8 and 9) or both constraints added to the model (Models 2 and 3 in Table 7.5, respectively), the 3 factor model became an unacceptable solution (the covariance matrix is not positive definite), whereas the 1-factor model's fit was improved (Model 2: CFI = .97; SRMR = .01; Model 3: CFI = .98; SRMR = .01).

Table 7.5. CFA's for exploring TWE's factor structure

		χ^2/df	GFI	AGFI	RMSEA	NFI	NNFI	CFI	SRMR	AIC
Model 1	**1F**	5.669	.850	.750	.164	.951	.946	.959	.0149	189.064
	3F	6.2000	.852	.722	.173	.953	.940	.960	.0143	190.800
Model 2	**1F**	4.551	.868	.771	.143	.962	.959	.970	.0112	156.331
	3F	*Cov. Matrix not positive definite*								
Model 3	**1F**	3.708	.899	.818	.125	.970	.969	.978	.0107	132.705
	3F	*Cov. Matrix not positive definite*								

7.4.3 Discussion

The results of the CFA conducted in study 2 reinforced the idea that TWE has a unifactorial structure. This did not support our theory-driven hypothesis of a tridimensional structure of the construct.

At the individual level, similar results have been found in Japan (Shimazu, Schaufeli, Suzuki, Kosugi, Nashiwa, Kato, Sakamoto, Irimajiri et al., 2008) and Germany (Sonnentag, 2006). One possible explanation can be the high correlation of the 3 theoretically acceptable components of engagement. One can also argue that, at the team level, work engagement is a more global and unitary construct. Assuming differences in structure between individual and team-level constructs, TWE arises from the interaction between team members and, therefore, individuals must have some kind of observable behavior in order to allow others to perceive their affective-motivational

state. Going from the awareness of an individual internal state to the awareness of a more complex shared state may, thus, imply an inverse pattern of individual perception: from a more complex and multifaceted perception of how one is feeling (since individuals do experience different and almost simultaneous moods and thoughts) to a more holistic and broader perception of how a group of others is feeling, based on observable cues. Moreover, this difference in factor structure may also be interpreted in terms of composition process of the team construct: changing the referent results in a construct that is different, although derived from, its original form. Consistent with these findings, future studies should examine alternative and parsimonious ways of measuring TWE, in line with a solid theoretical referent.

7.5. Conclusion and future directions

Taken together, the results from all of the analyses show that the two scales (individual and team-level) measure two different constructs. TWE seems to be a promising construct for future research on the affective and motivational emergent states of work teams. The studies presented have, however, some limitations. One of them, already mentioned, is the possible confounding effect of not having counter balanced the order in which participants filled the aggregated measure and the group discussion one in study 1.

In what practical implications are concerned, the results presented have two main contributions. On the one hand, they show the importance of having specific, team-referent measures when studying team-level constructs and the danger it may be to assume that aggregating individual-referent items accurately represents a collective construct. On the other hand, they illustrate that teams have specific dynamics and that promoting motivation and well-being in individuals within teams may call for different actions than motivating isolated employees. Managers and team leaders from all the types of organizations want to work with energetic, motivated and focused teams in order to achieve the goals of the organization and to fulfil its mission. A further understanding of the mechanisms underlying TWE will hand practitioners over new sets of possible tools to successfully apprehend and deal with that relevant issue. Therefore, given the importance of teams and team efficacy in the work environment nowadays and after validating the existence of the construct at the team level, it is now important to reflect upon its function and structure. Future studies are needed to test the functional equivalence between the construct at different levels, and to provide additional support

for the adequacy of the present operationalization. Future work should, therefore, aim at understanding the relationships of TWE and team effectiveness and how the construct develops and unfolds overtime: how does TWE emerge in the team? What team processes and dynamics is it related to? Are some individuals in the team more responsible for its development?

The door is open for an exciting research agenda.

CHAPTER VIII.

STUDY 2. TEAM WORK ENGAGEMENT: VALIDATING A THEORETICAL MODEL

8. TEAM WORK ENGAGEMENT: VALIDATING A THEORETICAL MODEL[6]

Several studies have revealed that engaged employees perform better than their non-engaged counterparts, and feel better when they are working (Bakker & Leiter, 2010). Employee work engagement is highly dependent on the existence of job resources, such as feedback or autonomy within the context of a challenging work (Bakker & Demerouti, 2007). However, teams constitute the basic unit of work in many organizations (Kozlowski & Bell, 2003), where its members act together towards goal accomplishment through specific team processes. Therefore, knowledge about work engagement acquired at the individual level may not be fully adequate for understanding how team work engagement emerges and develops, as well as its implications for teams' effectiveness. To our knowledge, there is only one model that proposes team work engagement's predictors and outcomes, based on the literature on teamwork (Costa, Passos & Bakker, 2014a). However, this model is still untested. In this article, we explore the causes and consequences of team work engagement, and aim to validate that theoretical model.

This study contributes to the literature in three main ways. First, we validate a theoretical model of team work engagement. Second, we explore specific, team-level predictors of team work engagement: team interpersonal processes (i.e. affect management, motivation building and conflict management; Marks, Mathieu & Zaccaro, 2001). Do teams that invest in promoting positive affective states, that stimulate members' motivation, and that maintain a low degree of interpersonal conflict develop a higher level of collective engagement? Our study may provide evidence for the relevance of considering the relational and interactional aspects of working together, as well as the affective dynamics of teams. Third, we investigate whether work engaged teams are more effective than non-work engaged ones, both in what objective performance and team viability are concerned. Understanding what can generate collective motivation and well-being allows both academics and practitioners to define and implement interventions aimed at improving teams' performance and their willingness to continue working together in the future.

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Costa, P.L., Passos, A.M., & Bakker, A.B. Team work engagement: Validating a theoretical model. manuscript submitted for publication

8.1. Theoretical Background

Team work engagement (TWE) is defined as a shared, positive, fulfilling, emergent state of work related well-being (Costa et al., 2014a). Work engaged teams display high levels of energy and willingness to invest effort in work and persistence in the face of difficulties (e.g., conflict, bad performance feedback). In addition, they are strongly involved in work and express enthusiasm, inspiration, pride and challenge while doing so. Moreover, work engaged teams are focused on work, and its members experience and express difficulties detaching themselves from work. Empirical work has already supported the existence of work engagement at the team level (Torrente, Salanova, Llorens & Schaufeli, 2012 Costa, Passos & Bakker, 2014b). With two different samples, the latter authors performed confirmatory factor analysis in order to understand whether work engagement at the individual and team levels is qualitatively distinct. Their results support the idea that individual and team work engagement represent related yet different constructs. Nonetheless, the mechanisms that explain the emergence of TWE have not been adequately addressed or tested by researchers yet. This echoes a broader gap within the study of collective constructs. When exploring a construct (initially developed for a specific level of analysis) at a different level, scholars often focus on the construct's function by looking for interesting and potentially useful relationships of the construct with other variables. However, most studies do not explore how team-level constructs come to existence, the processes that are responsible for their emergence, or the construct's structure (Morgeson & Hoffman, 1999).

Costa and colleagues (2014a) proposed a model encompassing TWE's causes and consequences. The model accounts for the specificities of group processes and is based on the input-mediators-output-input (Ilgen, Hollenbeck, Johnson & Jundt 2005) model of teamwork, where TWE is considered a mediator between certain inputs and team effectiveness, as an outcome.

Team interpersonal processes (affective, motivational and conflict management processes) are proposed as the proximal predictors of TWE. When team members' interaction is defined by positive affect, energy and enthusiasm and when the level of interpersonal conflict is not disruptive, a high level of TWE is likely to emerge in teams. At the same time, the model proposes that TWE and other emergent states (e.g., cohesion, collective efficacy, group affect) correlate positively and influence each other

in a recursive way. For example, a team with a high level of collective efficacy is likely to be willing to invest effort in work when facing difficulties and to be proud of its work (Salanova, Llorens, Cifre, Martinez & Schaufeli, 2003). Simultaneously, demonstrating energy and enthusiasm is likely to foster a collective sense of being able to attain teams' goals. Since this model is still untested, this paper aims at testing its adequacy.

8.1.1. Interpersonal processes and TWE

Team processes have been studied as determinants of team effectiveness. Team processes are defined as "member's interdependent acts that convert inputs to outcomes through cognitive, verbal and behavioral activities directed towards organizing taskwork to achieve collective goals (Marks et al., 2001, p. 357). Everything that team members do while interacting in the pursuit of collective goals can be put under the definition of team process. The team processes framework proposed by Marks and colleagues (2001) is temporally based. They group team processes in three broad categories: action phase processes, transition phase processes, and interpersonal processes. Action phase processes include monitoring progress, coordination and backup responses and are most relevant during "action phases", i.e. when teams are actively doing task work in order to attain its goals (for example, when a sales team is negotiating with a client). Transition phase processes include planning and goal setting, mission analysis and strategy definition. They operate mostly when teams are in transition from one task to the other (for example, when research teams finish a project and prepare for the next one). Interpersonal processes - affect management, motivation building and conflict management - are the ones that encompass managing interpersonal relationships. They cross cut through action and transition phases of teamwork and are an ongoing activity salient at all times. According to Marks and colleagues (2001), interpersonal processes lay the foundations for the effectiveness of both action and transition processes.

Affect regulation is "the process of initiating, maintaining, modulating or changing the occurrence, intensity, or duration of internal feeling states" (Eisenberg, Fabes, Guthrie, & Reiser, 2000, p.137). It will contribute to the emergence of team work engagement when affect regulation facilitates the prevalence of positive affective exchanges and of enthusiasm together with inhibiting negative affective states such as frustration, disappointment or anger. To do so, team members can use controlled interpersonal affect regulation strategies of affect improvement (Niven, Totterdell & Homan, 2009), or attempt to exert interpersonal influence on each other's attitudes and

behaviors. As an example of the former, team members may express caring for each other or use humor for mood lifting (Robert & Wilbanks, 2012). As an example of the latter, teams may develop explicit or implicit rules about the acceptable and desirable emotional states they should experience and express (Rafaeli & Sutton, 1987), namely focusing on cheerful and energetic displays. Managing team members' affect will facilitate their convergence on a given emotional state, since it will convey similar messages to all employees. This type of interactions may give rise to other emergent states, such as group affective tone (George, 1996).

Motivation and confidence building represent interactions focused on generating or preserving collective confidence, motivation and task-based cohesion (Marks et al., 2001). Being engaged at work entails feeling and expressing enthusiasm towards the teams' tasks, the willingness to work intensely and the capacity of sustaining the focus on work for extended periods of time. This will be facilitated when and if team members' interactions foster a sense of group capability. According to Goddard, Hoy and Hoy (2004), this perception of group capability pressures the team for collective performance and this pressure may be represented by an intense focus on work. The same interpersonal processes are most likely relevant for the development of another emergent state, collective efficacy (Bandura, 1997).

Conflict is "a process in which one party perceives that its interests are being opposed or negatively affected by another party" (Wall & Callister, 1995, p. 517) and conflict management is related to the handling of conflict situations either before or after they have arisen (Marks et al., 2001). The detrimental effects of conflict on performance are usually found when relationship conflict is examined, i.e., when the conflict is focused on personal relationships and not on distinct opinions concerning the task at hand (e.g., deWit, Greer & Jehn, 2012). According to De Dreu and Weingart (2003), interpersonal conflict distracts team members from performing the task, produces tension and prevents members from openly discussing ideas. Therefore, the existence of relational conflict will reduce the team's level of engagement: teams will be less energetic towards work, will express less joy and pride for their work, and will be less likely to focus on their tasks. According to Jehn (1995), adequately managing conflict entails openly discussing them and actively trying to solve members' differences. Tekleab, Quigley and Tesluk (2009) studied the effect of conflict and conflict management on another emergent state, cohesion. Their results suggest that when teams experience high levels of relationship conflict, their future levels of

cohesiveness are dependent on their ability to acknowledge the interpersonal disagreements and to try to actively address them. A similar reasoning is expected in the relationship between conflict and TWE. Being able to directly address conflict will likely lead to developing an open, healthy, and constructive atmosphere over the long run, and it facilitates team work engagement. On the basis of this overview, we formulated our first hypothesis,

Hypothesis 1: Team interpersonal processes namely (a) affect management, (b) motivation and confidence building, and (c) conflict management, are positively related to team work engagement.

8.1.2. TWE and team effectiveness

The positive relationship between work engagement and effectiveness at the individual level (e.g., Bakker & Bal, 2010; Bakker, Demerouti & Ten Brummelhuis, 2012) is also expected at the team level. Collective engagement was found to be related to service performance and customer loyalty through service climate in a sample of 114 service units (Salanova, Agut & Peiró, 2005). The study by Torrente, Salanova, Llorens, and Schaufeli (2012) supports the mediating role of TWE between social resources and team performance. In the latter study, the authors gathered data from 62 teams in 13 organizations and identified supportive team climate, coordination, and teamwork as social resources leading to TWE. Hence, we have reasons to believe that engaged teams will outperform teams that are less engaged. Work engaged teams will invest more effort in their work and share a higher involvement with their tasks. They will be more immersed in their work and experience a higher degree of joy and pleasure than non-engaged teams. Accordingly, they are more likely to persist when faced with challenges and difficulties and to help other members when needed, which are all characteristics of effective teams (e.g., Salas, Sims & Burke, 2005). As a consequence, TWE will positively relate to team effectiveness.

Team effectiveness is perceived as having at least two dimensions: team performance and team members' affective reactions to working in the team (Hackman, 1987). According to LePine, Jackson, Mathieu and Saul (2008), "high-quality teamwork processes not only transmit the influence of members' contributions associated with task completion but also help to foster perceptions of a satisfying team experience" (p. 278), therefore enhancing the likelihood of wanting to work together in the future.

Hence, in the present study, we conceptualize team effectiveness as comprising team performance (the objective team output that may or not meet the performance standards defined for that output), and team viability (defined as the desire and willingness of team members to continue working together).

Hypothesis 2: TWE is positively related to (a) team performance, and (b) team viability.

8.1.3. The mediating role of TWE

One of the basic assumptions underlying the proposals of team process taxonomies is that team processes are positively related to team effectiveness. However, the influence of interpersonal processes on team effectiveness is more likely indirect, because these processes are not focused on taskwork but on personal relationships. Therefore, for example, having display rules focused on enthusiasm does not make a given team a more effective one, unless those rules impact their thought or action patterns towards an increased effort, reflexivity or creativity. The indirect impact of interpersonal processes on team effectiveness has already been found to occur through mechanisms such as lower levels of conflict (De Dreu & Weingart, 2003), and higher levels of motivation and interpersonal trust (Geister, Konradt, & Hertel, 2006). Team work engagement is an emergent state that encompasses a positive affective state, known to broaden both thought and action repertoires (Fredrickson, 2001). Simultaneously, it comprises motivational tendencies to act and perform, that allow for an increased focus on taskwork. Therefore, team work engagement presents the optimal conditions to convert positive interpersonal interactions in team effectiveness.

The mediation role of TWE is also hypothesized based on an assumption of isomorphism of work engagement's function between levels. The individual-level model posits that work engagement mediates the relationship between job resources and performance and well-being outcomes (Bakker, 2011). Therefore, at the team level, it is expected that TWE mediates the relationship between the team interpersonal processes and team effectiveness, reflecting the construct's functional equivalence between levels (Morgeson & Hofmann, 1999).

Hypothesis 3: TWE mediates the positive relationship between team interpersonal processes and (a) team performance, and (2) team viability.

8.2. Method

8.2.1. Participants

Data were collected from the Portuguese participants of the 'Global Management Challenge®' (GMC®), a management simulation competition. The participants of his study were 1049 individuals organized in 228 teams. Average team size was 4.70 members (SD = .59). Participants' mean age was 29.52 years (SD = 8.66 years) and 67.4% were men. Teams were composed of students (38.4%), full-time workers in different companies (46%), or were mixed, with both students and full-time workers (15.5%).

8.2.2 Procedure

During a five-week period, participants were asked to manage a virtual company and decide on investment choices and other managerial issues. All competing teams started with the same stock market and, depending on their weekly choices and strategic options, a computer program computed each team's stock market value every week. Each week, the teams received an individual report with the consequences of their decisions. To collect data for the present study, participants were emailed a questionnaire during weeks four and five, before receiving the feedback on their decisions.

8.2.3. Measures

Interpersonal processes were measured in week 4 with four items adapted from the scale developed to assess the Marks et al., (2001) taxonomy of team processes (Le Pine et al., 2008). Example items are "My team is able to keep a good emotional balance between its members" and "My team deals effectively with interpersonal conflicts" (1 = *I totally disagree* to 7 = *I totally agree*). The internal consistency of the scale was good, Cronbach's α = .94.

Team work engagement was measured in week 5 with 9 items developed by Costa et al., (2014b) based on the Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006). Examples of the items are "When we are working on the competition we feel strong and vigorous" or "We are excited about this competition"(1 = *Never* to 7 = *Always*). Cronbach's α = .98.

Team viability was measured in week 5 with three items adapted from Standifer, Halbesleben and Kramer (2009). An example item is "This team can perform well in future projects" (1 = *I totally disagree* to 7 = *I totally agree*). The reliability of this scale was acceptable, Cronbach's α= .68.

Team performance was measured by computing the difference between the companies' stock market share price, in euros, at the beginning of the competition (week 1) and the value achieved at week 5 (results varied between -.75 and .94 euros; SD = .25).

8.3. Results

8.3.1. Descriptive Statistics and Data aggregation

Table 8.1 presents the means, standard deviations, and correlations for all the model variables. All analyzes were conducted at the team level (N = 228 teams). We aggregated team members' responses both at the item-level and at the variable level using the weighted mean of team member's responses. In order to statistically justify aggregation, we calculated the index of within-group interrater agreement ($rwg_{(j)}$, James, Demaree & Wolf, 1984). Using the value of .70 and above as an acceptable level of agreement (Cohen, Doveth & Eick, 2001), the mean values of $rwg_{(j)}$, all fall above that value (.83 for interpersonal processes, .76 for TWE, and .76 for team viability). Moreover, Intraclass Correlations, both ICC(1) and ICC(2) (Bliese, 2000) were calculated. ICC(1) values were between the recommended values of .05 and .20 (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann 2004), and ICC(2) values were all greater than ICC(1) values (from .38 to .47).

Table 8.1. Means, standard deviations, aggregation indices and correlations between all study variables. N = 228 teams.

	Mean	SD	rwg(j)	ICC(1)	ICC(2)	1	2	3
1. Interpersonal processes	5.93	.70	.83	.13	.46	-		
2. TWE	5.53	.87	.76	.13	.47	.68**	-	
3. Team viability	6.03	.88	.76	.10	.38	.39**	.42**	-
4. Team Performance	.09	.25	-	-	-	.16*	.24**	.09

*Note. * p< .05, ** p< .01*

Following Byrne's (2010) guidelines, we first tested the measurement part of the model. We tested five different models (Table 8.2): M1, where all items load on one general latent factor; M2 to M4, two-factor models where the items of one construct load on its respective latent variable and the remaining items load on a second latent construct (more specifically, in M2 viability items load on a latent viability variable and the remaining items load on a second latent construct; in M3 TWE's items load on a latent TWE variable and the remaining items load on a second latent construct; and in M4 interpersonal processes' items load on a latent interpersonal processes variable and the remaining items load on a second latent construct); M5, a three factor model, corresponding to the theoretical proposal, where TWE items load on the TWE latent variable, interpersonal processes' items load on a latent interpersonal processes variable, and viability items load on a latent viability variable. The results supported the adequacy of considering interpersonal processes, TWE, and team viability as three distinct, correlated, latent variables each measured by the respective observable items (M5: $\chi 2/df$ = 4.03; p = .000; CFI = .94; SRMR = .04). Furthermore, modification indices indicated that model fit could be improved by allowing TWE's items 1 and 2 and items 8 and 9 to correlate. We allowed these constraints since items 1 and 2 belong to the same theoretical dimension of TWE (vigor), and items 8 and 9 also belong to the same theoretical dimension of TWE (absorption). The items had similar content and were placed together within the questionnaire, which may have led to similar answers. With these changes made, model fit indices improved (M6: $\chi 2/df$ = 2.25; p = .000; CFI

= .97; SRMR = .03 (cf. Table 2), and those constraints were maintained in further analyzes. Note that one of the items for viability (item 3, "This team could work well in future projects") showed a relatively low factor loading (.37).

Table 8.2 Overview of fitted models for assessing the measurement part of our SEM model.

	χ^2/df	CFI	SRMR	AIC
M1	13.35	.77	.10	5027.140
M2	11.30	.81	.09	4803.859
M3	6.53	.90	.08	4312.837
M4	6.31	.90	.07	4290.327
M5	4.03	.94	.04	4051.326
M6	2.52	.97	.03	3898.596

Notes N = 228 teams. Models M1 to M6 are described in the text.

8.3.2. Hypotheses Testing

Hypotheses 1 and 2 were tested simultaneously by performing a SEM analysis using MPlus software (Muthén & Muthén, 2010) with 500 bootstraps. Model fit was evaluated considering a combination of CFI and SRMR indices, according to Hu and Bentler's (1999) recommendation for sample sizes smaller than 250.

The results are presented in Figure 8.1 (standardized coefficients). We found support for the hypothesized model (χ^2/df = 2.45; CFI = .97; SRMR = .04). More specifically, interpersonal team processes significantly predict TWE (β = .71; $p<$ .001, R^2 = 51%). In turn, TWE significantly predicts both team viability (β = .68; $p<$ .001) and team objective performance (β = .22; $p<$ .001). Indirect effects for the impact of team interpersonal processes and team effectiveness through TWE were also supported (β = .48, $p<$ .001, 95% CI: 0.449, 0.996; ; R^2 =46% for team viability; and β = .16, $p<$.05, 95% CI: 0.013, 0,112; R2 =5% for team performance).
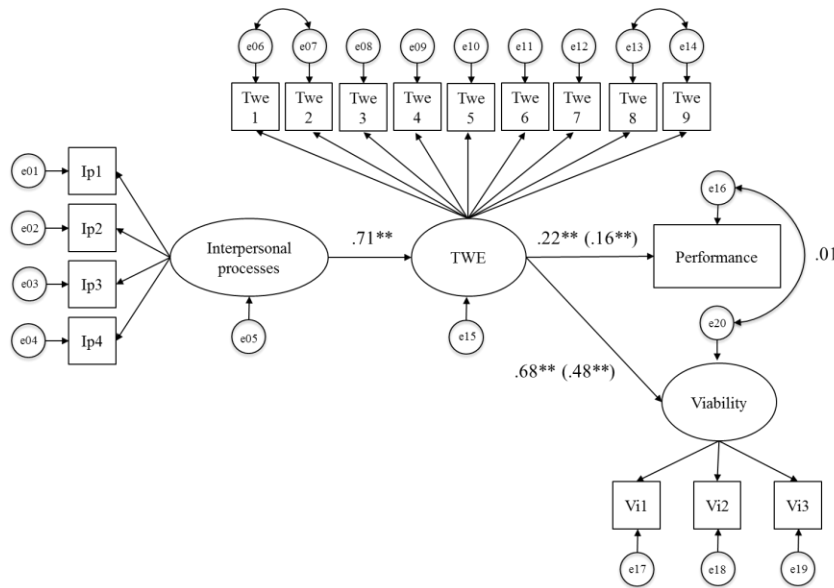
Figure 8.1. Model results with direct and indirect effects.

N = 228 teams. Indirect effects are provided between brackets.

8.4. Discussion

This article shows the role of team work engagement for team effectiveness, as well as the relevance of team interpersonal processes for the emergence of TWE. Thus, the present findings provide empirical support for Costa and colleagues' (2014a) model.

8.4.1. Team work engagement and interpersonal team processes

The most important contribution of this paper concerns the analysis of the interpersonal processes as the proximal predictors of teams' level of work engagement. Doing so differentiates the construct of TWE from individual work engagement. While individual level of engagement essentially depends on the availability of job resources (Bakker & Demerouti, 2007), the higher level construct emerges from team members' interactions, namely interactions with an affective-motivational nature. These types of interactions seem to be the ones with the potential to generate collective positive affective states high in activation.

Interaction processes fall under two main dimensions: task dimension and social emotional dimension (Bales, 1950). According to Tse, Dasborough and Ashkanasy (2005), "the dynamic emotional experiences of individual team members have strong implications for team member relationship development." (p. 195). However, the study of affect in organizations was lacking a systematic approach (Briner, 1999), and it is only from around the year 2000 that it regained relevance in organizational research

(Fisher & Ashkanasy, 2000). Studying interpersonal processes contributes, then, to the literature on work affect and interpersonal relationships at work. We already know that being able to regulate team members' affect with a positive valence will lead team members to feel positive, integrative emotions (Kemper, 1984), such as joy, pride or love. Integrative emotions, in turn, draw people together and contribute to a high-quality relationship. Some authors (e.g., Seers, 1989) name the quality of team members' relationship "team member exchange" (TMX). High quality relationships enhances team functioning, increasing the likelihood of members assisting each other in their tasks, sharing ideas and feedback, and working beyond task requirements (Tse & Dasborough, 2008). The interpersonal processes focused on how affect and conflict management can possibly explain the emergence of team work engagement in parallel with the development of high quality relationships between team members. Additionally, a high TMX could be conceptualized as a moderator in the relationship between team interpersonal processes and team work engagement: affect regulation strategies, such as attempts to improve a co-worker's affect (e.g., after being told their last decision in the competition has led them to loose stock market value) by using humorous statements ("But we are the coolest of them all!"), could lead to an effective improvement of team members' affective states, especially when TMX's quality is good. Team member exchange and team work engagement are, therefore, likely to be related constructs and further research is needed in order to understand exactly the nature of their relationship.

Finally, time is considered as having an impact of the life and work of teams. Tuckman (1975) proposed a model of group development composed of five sequential stages: first, groups are formed (forming), than they undergo a phase marked by conflict (storming), after which they are able to define their rules and functioning (norming) in order to be effective (performing); eventually, the group may break up (adjourning), after having performed the required tasks. In a different perspective, Gersick (1988) argued that group development is not linear but, instead, occurs through sudden changes (midpoints) that comprise a full revision of the groups' "framework for performance". Despite the differences in perspectives, it is undeniable that, over time, the dynamics between team members change, echoing changes in the environment, individual characteristics and also developments in personal relationships. Therefore, temporal issues might condition the relevance of team interpersonal processes throughout the team's life span and may impact TWE differently over time. For example, models of

group development suggest that conflict is something unavoidable. It is the ability to overcome conflict that will enable teams to evolve into a more mature stage of development (Chang, Bordia, & Duck, 2003). It is the way teams manage their conflicts effectively that will allow them to evolve. Therefore, early on the stages of group development (i.e. in the present study: during the earlier weeks of the management simulation competition), interpersonal conflict management could be more relevant than later on for allowing the development of TWE. This is another possible line for future research.

8.4.2. Team work engagement and team effectiveness

According to Bakker and Oerlemans (2011), work engagement represents a state high in pleasure and activation, characterized by energy and excitement. Such active, positive states have been related to positive work outcomes such as workplace innovation (Madrid, Patterson, Birdi, Leiva & Kausel, 2013). Work engaged teams collectively experience a positive affective state high on activation and this could explain team effectiveness. One thing to consider is that, while team interpersonal processes occur throughout action and transition phases, their impact on team effectiveness through TWE might be different in each. During the action phases of the competition, where team members had to decide on their next moves (defining product prices, dealing with extra stock, defining the number of units to be produced, etc.), activation may have been central to their effectiveness. Having activated team members provides the necessary motivation intensity and action tendencies to work intensively together towards goals, as well as the physiological energy to do so (Parker, Bindl & Strauss, 2010). Displaying energetic behaviors can also have communicational significance, conveying confidence in the teams' capacities to perform its tasks. During transition phases, when team members received the results of their prior actions and decisions and reflected on the consequences (e.g., having produced more units that the ones sold resulted in increased stock; having increased the prices led to a reduction of sales, etc.), the positive affective state component of TWE could have been pivotal. These positive affective states broaden thought and action possibilities and allow individuals to consider multiple solutions for specific problems (Fredrickson, 2001). Additionally, positive affective states have been empirically linked to prosocial behavior (George & Brief, 1992), as well as to approach behavior through building on each other's ideas, morale building communication, and showing support for others'

ideas (Rhee, 2008), all relevant during a more reflexive phase. This allows teams a greater flexibility when considering and planning possible courses of action and when reflecting on what they have done in order to improve their performance.

Moreover, considering both the relationship between TWE and team performance and viability highlights the relevance of the construct for the whole dimensions of working in a team – i.e. both objective outcomes and subjective experience of working together. Rousseau, Aubé and Savoie (2006) review 29 proposals of "teamwork behaviors" found in the literature from 1984 and 2005 and propose an integrative framework comprising two main dimensions: behaviors aimed at regulating team performance and behaviors aimed at managing team maintenance. The first dimension is mostly related to work itself: preparation of work accomplishment (e.g., mission analysis, planning), task-related collaborative behaviors (e.g., coordination, information exchange), work assessment behaviors (e.g., performance monitoring), and team adjustment behaviors (e.g., backup behaviors, intra team coaching). The second dimension comprises psychological support and integrative conflict management and is, then, more related with the interpersonal relationships within the team. Effectively performing the behaviors of both of these main areas will lead to increased team performance and to team members' positive evaluations of the team and team viability. The present study suggests that team work engagement contributes to both.

8.4.3. Limitations and future directions

This study was done using a management simulation. Simulations are helpful for testing new models and explore new relationships, which was our case. However, generalization of the findings to real working life must be done with caution and a subsequent study with existing teams is called upon. Considering the nature of the sample and of the task, we were unable to control for the degree of interaction of team members during the five weeks of the competition. Also, teams did differ the percentage of team members they knew prior to the competition (from 0% to 10%, mean = 78%, SD = 30.7) and possibly on the amount of time members had known each other or worked together before, which we did not measure. In previously established teams, TWE could have been facilitated by the existence of a good relationship quality between its members or because teams had already undergone more "stormy" developmental stages

A more qualitative focus on the longitudinal development of TWE is called for as well. Future research on TWE may examine which specific interpersonal actions are related to an increase in team work engagement and explore whether one type of interpersonal interaction (affect management, motivation building or conflict management) is more relevant at different time points.

To better understand TWE, it could also be important to consider not only the difference between TWE's valence (high or low level of work engagement), but also between different levels of TWE's strength, the degree of within-unit agreement among members' perceptions of their level of TWE (high or low strength). The magnitude of the relationship between TWE and outcome variables will be higher not only when TWE's valence is high, but also when TWE's strength is also high. Therefore, future work could consider including the TWE's strength as a moderator between the degree of a team's level of engagement and the team's outcomes. It is likely that the quality of TMX previously mentioned is relevant for whether teams develop a strong TWE. High quality relationships will lead team members to identify more strongly with the team. Identification with a psychological group, defined as a "feeling of oneness with the defined aggregate of persons, involving the perceived experience of its successes and failures. It often involves the perception of shared prototypical characteristics, virtues, and flaws." (Mael & Tetrick, 1992, p.814) leads to conforming both in behavior and attitudes within group members (e.g., Wilder and Shapiro, 1984), and to feel a stronger need to agree with group opinion (e.g., Deutsch & Gerard, 1955; Mackie, Gastardo-Conaco & Skelly, 1992). Therefore, in these situations, the emergence of shared states is facilitated.

8.5. Conclusion

To summarize, we contributed to the development of the concept of team work engagement, by empirically testing and validating a theoretical model. The contributions of this paper are threefold. First, it contributes to the work engagement literature, by expanding the construct to the team level and by providing further support for its relevance in what team effectiveness is concerned. Second, it adds to the literature on team processes by focusing on team interpersonal processes and on their relevance for team's affect and activation levels. Third, it discusses the findings and discusses some other variables that help explaining TWE's emergence and influence on team effectiveness. The model of TWE seems to be a good starting point for further

research of the concept of TWE that will provide us with important knowledge on how to facilitate its emergence in order to booster team effectiveness.

CHAPTER IX.
STUDY 3. ON THE RELATIONSHIP BETWEEN TEAM CONFLICT AND TEAM WORK ENGAGEMENT

9. DISCUSSING AND LOATHING IN TEAMS:
ON THE RELATIONSHIP BETWEEN TEAM CONFLICT AND TEAM WORK ENGAGEMENT[7]

Although research suggests that conflict may have positive consequences (De Dreu & Weingart 2003), most studies indicate that conflicts cost energy and may therefore undermine job performance. In the present study, we investigate the impact of task and relationship conflict in the context of research teams. It has been argued and shown that individuals can particularly be engaged in their work and perform well as a team when there are sufficient job resources (Bakker, Demerouti & Sanz-Vergel, 2014), and when team processes are constructive and motivating (Costa, Passos & Bakker, 2014). We examine how task and relationship conflict may undermine or strengthen the link between job resources and team work engagement, and the link between team work engagement and performance.

The contributions of this paper are twofold. First, it adds to the literature on employee engagement, specifically on team work engagement, by exploring how both task and relational conflict influence its emergence and its relationship with team performance. Second, this paper shifts from a more traditional conceptualization of conflict as a mediator or a direct predictor of effectiveness outputs, by considering it as a more contextual influence on teamwork.

9.1. Theoretical background

Team work engagement is a shared, positive and fulfilling, motivational emergent state of work-related well-being (Costa et al., 2014). Engaged teams are energetic when they are working, and display active, productive behaviors such as bouncing back quickly from unexpected negative events (e.g., a sudden decrease in the sales due to the entering of a new, strong competitor). In addition, in engaged teams, employees are willing to help each other, and build on each other's ideas to optimize processes and products. These teams are really enthusiastic about their job, and enjoy

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the moments they work together. Engaged team members consider what they do as meaningful and relevant.

According to the Job Demands-Resources model (Bakker & Demerouti, 2007; Bakker et al., 2014, in press), work engagement is highly dependent on the existence of job resources, defined as aspects of the job that facilitate goal achievement, reduce job demands, or stimulate personal growth. Examples of job resources include performance feedback, social support from colleagues, skill variety, and supervisory coaching (Schaufeli & Bakker, 2004). The importance of job resources for work engagement has received considerable empirical support. A longitudinal study by Mauno, Kinnunen, and Ruokolainen (2007) with a sample of Finnish health care professionals concluded that those who reported higher levels of job control were the ones who reported higher levels of work engagement one year later. A meta-analytic study (Christian, Garza, & Slaugther, 2011) corroborated this positive relationship, finding that job resources are the most relevant predictors of work engagement. Among the studies included in this meta-analysis, the job resources that predicted work engagement were task variety, task significance, autonomy, feedback, social support from colleagues, a high-quality relationship with the supervisor, and transformational leadership. Additionally, autonomy and social support had a positive, lagged effect on work engagement.

As a consequence of their engagement levels, engaged work teams outperform teams low in engagement. The positive relationship between team work engagement and team performance was reported by some recent empirical studies. For example, Torrente, Salanova, Llorens, and Schaufeli (2012) reported evidence for a mediation role of team work engagement in the relationship between social resources (coordination, team work and supportive team climate) and performance, with 63 teams from 13 organizations. Further, Costa, Passos and Bakker (2014, manuscript submitted for publication), studied 228 teams participating in a management simulation over 5 weeks. The results of structural equation modeling analyzes indicated that team work engagement was an important mediator in the relationship between interpersonal team processes (Marks, Mathieu & Zaccaro, 2001) and team performance. Teams who were able to manage their motivational level, to control the teams' level of interpersonal conflict and to establish a positive affective climate showed higher levels of engagement and this led not only to better performance results but also to an increased desire to continue to work together (i.e. team viability, Hackman, 1987).

On the basis of JD-R theory and these previous studies, we formulated our first hypothesis:

Hypothesis 1: Team work engagement mediates the positive relationship between team resources and team performance.

9.1.1. Team conflict and team performance

Team conflict is "the process emerging from perceived incompatibilities or differences among group members" (DeWit et al., 2012, p.360). These perceived incompatibilities are traditionally divided in two broad types: task and relationship conflict (Priem & Price, 1991; Jehn, 1992). Task conflict encompasses team members' disagreements about the content and the outcomes of the task being performed. Take the example of a team of biology researchers exploring the development of a specific fungus in hot temperatures. When one member believes they should grow their fungus for 15 days, and another member believes that 30 days are needed, they may engage in a conflict about their task. Relationship conflict is interpersonally focused and has to do with disagreements about personality differences, different values or different norms. In the same biology research team, if one member perceives another as being rude and disrespectful, this may lead to a relationship conflict.

Within work and organizational psychology, conflict has a long history of being perceived as a hindrance to effective team functioning (e.g., Blake & Mouton, 1984), regardless of what the focus of perceived incompatibility is. The results from a meta-analysis by De Dreu and Weingart (2003) supported this consistent view of conflict as a negative state for group outcomes: "…whereas a little conflict may be beneficial, such positive effects quickly break down as conflict becomes more intense, cognitive load increases, information processing is impeded, and team performance suffers." (p. 746).

Ten years after the publication of De Drew and Weingart's (2003) meta-analysis, both the theory and the data on team conflict evolved to a more complex scenario. New studies highlighted different influences of task and relationship conflict for different types of group outcomes, as well as possible moderator variables. According to a recent meta-analysis (De Wit et al., 2012), both relationship and task conflict have a negative relationship with more proximal team outcomes. These proximal outcomes are the emergent states of teams, such as trust and cohesion (De Wit et al., 2012). Emergent states are defined as cognitive, motivational and affective states

of teams that change dynamically and permanently, echoing changes in team inputs, team processes and team outcomes (Marks, Mathieu & Zaccaro, 2001). Team work engagement is also considered an emergent state.

When more distal outcomes are considered (i.e. group performance, innovation productivity and effectiveness), task conflict loses its negative influence, and seems to be a neutral phenomenon, whereas relationship conflict keeps its negative influence. According to De Wit et al., (2012), relationship conflict increases anxiety and hostility, since they focus on self-concept related issues. Therefore, relationship conflict negatively impacts identification, trust or commitment (more proximal outcomes), as well as reduces collaborative problem solving and the time devoted to the work itself and not to parallel questions, resulting in performance or creativity losses (more distal outcomes). In what task conflict is concerned, its influence can be especially negative when members interpret the divergences as negative assessments of themselves or their own abilities (e.g., Simons & Peterson, 2000).

9.2. Model and hypotheses

The literature on team work engagement shows that conflict management is one of the interpersonal processes responsible for the emergence of a shared level of work engagement (Costa et al., 2014). The theory suggests that preventing or reducing the level of interpersonal conflict, particularly in what relationship conflict is concerned, will facilitate the development of team work engagement, because team members will then be more able to provide constructive criticism, become less self-centered and more concerned with the teams' collective goal accomplishment and with the task(s) at hand. This idea however, focuses on the management of conflict, and not on the impact of the different types of conflict in team work engagement.

DeChurch, Mesmer-Magnues and Doty (2013) highlight the differences between conflict states and conflict processes. The former are shared perceptions about the intensity of disagreement over tasks or relationships, whereas the latter correspond to the interactions between team members aimed at working through those disagreements – which is commonly labeled "conflict management". In this paper, we analyze how task and relationship conflict states may challenge or reinforce the link between job resources and team work engagement, and the link between team work engagement and performance. In figure 9.1, we present our model and hypotheses.
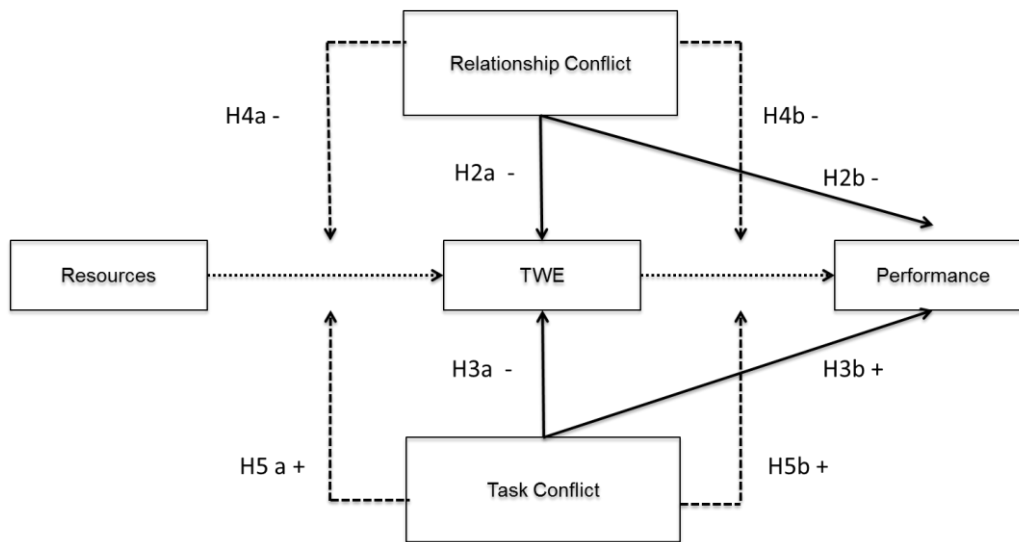
Figure 9.1. Study model and hypotheses.

Dotted arrows represent the hypothesized mediation (H1). Solid arrows represent direct effects (H2 and H3). Dashed arrows represent moderation effects (H4 and H5).

Following De Wit et al., (2012), we expect that relationship conflict will be negatively related to both proximal (TWE) and distal (team performance) outcomes. Team work engagement is considered a motivational construct with a positive affective valence (Costa et al., 2014). Relationship conflict, on the contrary, induces negative emotional states, since it influences individuals' self-concept and may be considered a threat to the ego (de Wit et al., 2013): negative emotional states may increase anxiety (Dijkstra et al., 2005) and hostility between team members. As a consequence, the emergence of positive states such as identification (e.g., Rispens, Greer & Jehn, 2007), commitment (e.g., Conlon & Jehn, 2007), and work engagement is less likely. In addition, engaging in relationship conflict will shift team members' focus from work to interpersonal quarrels, and their energy will be essentially devoted to trying to solve the conflict and not to the task at hand, resulting in performance losses (Beal, Weiss, Barros & MacDermid, 2005). To sum up, relationship conflict is as a hindrance job demand (LePine, Poskadoff & LePine, 2005; Bakker et al., 2014, in press) that acts as a barrier for goal attainment. Based on this rationale, we formulate our second hypothesis (cf. Figure 1):

Hypothesis 2 – Relationship conflict is negatively related to (a) TWE and to (b) team performance.

We also expect that task conflict will have a negative impact on proximal outcomes (TWE) and a positive impact on team performance. Although task conflict is assumed to involve cognitive processes (Garcia-Prieto, Bellard & Scheider, 2003), it is likely an emotion inducing event. The type and degree of emotional response will depend on many aspects (Scherer, 1984). It depends on how people evaluate the event as causing environmental changes; on the pleasantness of the event; on the perceived impact of the event for goal achievement; and on the perceived control over the event and its fit with personal or social norms. When team members believe a given solution is the best to accomplish their goals, contradicting opinions may be perceived as unpleasant and as an obstacle for goal accomplishment, therefore leading to negative emotional states. Also, following self-verification theory (Swann, Polzer, Seyle & Ko., 2004), team members may interpret divergent opinions as a negative assessment of their own abilities and competencies, therefore leading to dissatisfaction. Finally, task conflict entails expressing divergent viewpoints. The existence of differences between team members can hinder the emergence of a shared state, which, by definition, implies homogeneous perceptions of the team's cognitive, affective and /or motivational states (Kozlowski & Chao, 2012).

However, in the longer run, task conflict may lead to better performance outcomes. Engaging on task conflict allows teams to consider a broader range of solutions and courses of action, more critical evaluations of possibilities and reduces the likelihood of thought processing biases such as confirmatory biases (e.g., Jehn, 2005, Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006). An experimental study by Jehn and Shah (1997) showed that critical evaluation (e.g., disagreements about a members' performance, disapproval of a member suggestion) was positively related to performance in decision making tasks, but not in simpler motor tasks. The meta-analysis of De Wit et al. (2012) compared the relationship between task conflict and performance in different organizational levels. They concluded that the aforementioned relationship was more positive for top management teams, therefore supporting the idea that task conflict and performance have a more positive relationship when more complex tasks are being performed, such as the ones performed by research teams. Therefore, task conflict can help group performance by synthesizing individual contributions into a better fitting decision, and this is particularly important when teams

perform complex cognitive tasks, which is the case of research teams. Our third hypothesis is formulated based on these evidences:

Hypothesis 3 – Task conflict is (a) negatively related to TWE and (b) positively related to team performance.

Adding to these direct effects on TWE and on team performance, we propose that conflict can act as a contextual variable affecting the relationship between team resources and TWE and between TWE and team performance. As previously stated, the relationship between resources and engagement is consistently positive. Individuals thrive in resourceful environments, as they lead to increased levels of energy, of attention focus and of dedication. In addition, according to the JD-R model, job resources lead to engagement, particularly when job demands are high (Bakker et al., 2014, in press). However, not all job demands have an equal impact in that relationship (LePine et al., 2005). On the one hand, challenging demands are perceived as obstacle to overcome in order to achieve goals and to learn and evolve. When faced with challenging demands, employees perceive their job as stimulating, which leverages motivation. On the other hand, hindrance demands are perceives as unnecessary obstacles that block goal achievement. With a sample of 64 studies, a meta-analytic review by Crawford, LePine, and Rich (2010) supported a positive relationship between challenging demands and engagement, and a negative relationship between hindrance demands and engagement at the individual level.

Therefore, considering an equally resourceful environment, the existence of task or relationship conflict may condition the emergence of TWE differently, since the two types of conflict represent different job demands. Relationship conflict is a hindrance job demand that does not contribute to task completion nor adds to the teams' potential., On the contrary, task conflict can be considered a challenging job demand that can stimulate individual thought and decision making. Therefore, we formulate the following hypotheses:

Hypothesis 4a – Relationship conflict weakens the relationship between team resources and team work engagement.

Hypothesis 4b – Task conflict strengthens the relationship between team resources and team work engagement.

Work engagement leads to an increased in-role performance because it increases worker's vigor, allowing them to work harder and longer, as well as their devotion to their job. The relationship between engagement and performance is consistently positive (e.g., JD-R model, Bakker & Demerouti, 2007). In addition, and despite the direct effects of conflict both on TWE and on performance, conflict states can be conceptualized as the context where that particular relationship develops. A context of high levels of relationship conflict, where team members are constantly picking on each other, may prevent a shared engagement to be translated into actual taskwork (Beal et al., 2005). However, the performance output may benefit when an engaged team also presents high levels of task conflict. Engaged teams are likely to be able to persist in face of difficulties, to be more willing and open to accept different viewpoints, and to channel their divergent viewpoints into an increased focus on work. Therefore, the aforementioned positive consequences of task conflict for though processing and decision making are more likely to emerge within engaged teams.

Hypothesis 5a – Relationship conflict weakens the relationship between TWE and team performance.

Hypothesis 5b – Task conflict strengthens the relationship between TWE and team performance

9.3. Method

9.3.1. Participants and procedure

In this study, data was collected from 82 research teams (N=217 individuals). We gathered the emails of the principal investigator of all ongoing funded (by the national Foundation for Science and Technology, a public organization) research projects in the country from an open online database and sent all an invitation to be a part of our study. The same email contained a link to an electronic survey. The principal investigator of each research project was then asked to provide the emails of his/hers research team members to whom we sent another email, with the link to the electronic survey. From the 537 principal investigators emailed, 396 answered our survey (73% response rate). From these, 150 provided the emails of their team members (37%) and, in the end, 82 complete teams (principal investigator and project members) answered

the survey. Table 9.1 indicates the scientific areas of the projects whose teams participates in this research.

Participants' average age was 38.2 years (SD = 10.29) and 40,1% were men. The majority of participants had completed their PhD (64.5%) or masters' degree (28.1%). Team size was, in average, 3.41 members (SD = .92), and participants were working in the project, in average, for 2.46 years (SD = .67).

Table 9. 1. Scientific Areas of the research centers involved in this study

Scientific Area	%	Scientific Area	%
Civil and Mining Engineering	5,0	Education	3,8
Electrical Engineering	1,3	Engineering Systems	2,5
Agricultural Sciences and Forestry	6,2	Environment and Climatic Changes	6,1
Animal Science and Veterinary	2,5	Health Sciences	7,4
Architecture	1,3	History	1,3
Art Studies	1,3	Materials Science and Engineering	7,4
Biological Engineering and Biotechnology	6,2	Mechanical Engineering	1,3
Biological Sciences	8,6	Philosophy	1,3
Chemical Engineering	1,3	Psychology	5,0
Chemistry and Biochemistry	5,0	Science of Language and Literature	1,3
Communication and Information	1,3	Sea Science and Technology	7,4
Computer Engineering	2,5	Sociology	5,0
Earth and Space Sciences	2,5	Sports Sciences	2,5
Economy and Management	2,5	-	-

Note. N = 82 teams

9.3.2. Measures

Team resources were measured with six items encompassing performance feedback, social support from co-workers, support from supervisor and information available (based on Schaufeli & Bakker, 2003). This scale was answered by team members. An example item is "I can ask my co-workers for help whenever I need" (1 = *I totally disagree* to 7 = *I totally agree*). Cronbach's α = 91.

Team work engagement was measured with nine items (Costa, Passos & Bakker, 2014b). This scale was answered by team members. Examples of the items are "When we are working on the project we feel strong and vigorous" or "We are excited about this project" (1 = *Never* to 7 = *Always*). Cronbach's α = 95.

Relationship conflict was measured with three items adapted from Jehn (1995). This scale was answered by the team leader (principal investigator). An example of the items is "There are personal conflicts between team members" (1 = *I totally disagree* to 7 = *I totally agree*). Cronbach's α = 94.

Task conflict was also measured with three items adapted from Jehn (1995). This scale was answered by team members. An example of the items is "In this team, there are disagreements about ideas". (1 = *I totally disagree* to 7 = *I totally agree*). Cronbach's α = 82.

Team objective performance was computed as the difference between the projects' defined number of outputs (obtained from the formal project funding form) and the actual number of outputs reported by the project's principal investigator, controlling for the duration of the project, in years. These outputs included the number of: publications, oral presentations in congresses, official reports, organization of seminars/conferences, advanced training, models, computational applications, pilot installations, laboratory prototypes, patents, and others. Values range between 0 and 14.5.

9.4. Results

9.4.1. Descriptive statistics and data aggregation

Table 9.2 presents the means, standard deviations, and correlations for all the study variables. All analyzes were conducted at the team level (*N* = 82 teams). In order to statistically justify aggregation, we calculated the index of within-group interrater agreement ($rwg_{(j)}$, James, Demaree & Wolf, 1984). Using the value of .70 and above as

an acceptable level of agreement (Cohen, Doveth & Eick, 2001), the mean values of $rwg_{(j)}$, all fall above that value (from .86 for relational conflict to .78 for task conflict). Moreover, Intraclass Correlations, both ICC(1) and ICC(2) (Bliese, 2000) were calculated. ICC(1) values were between the recommended values of .05 and .20 (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann 2004), and ICC(2) values were all greater than the ICC(1) values. Therefore, we aggregated team members' responses both at the item-level and at the variable level using the weighted mean of team member's responses.

Table 9.2. Means, standard deviations, aggregation indices and correlations between all study variables.

	Mean	SD	$rwg_{(j)}$	ICC(1)	ICC(2)	1	2	3	4
1. Team resources	6.2	.69	.85	.07	.24				
2. TWE	5.7	.68	.82	.05	.18	.78**			
3. Task conflict	3.4	1.0	.78	.10	.31	-.21	.-31*		
4. Relationship conflict	1.9	.67	.86	.16	.42	-.45**	.37**	-.41**	
5. Team Performance	3.8	2.9	-	-	-	.18	.24*	-.12	-.05

*Notes. N = 82 teams. * p< .05, ** p<.01*

Considering the high correlations between TWE and team resources, we performed confirmatory factor analysis in order to guarantee that the two were different constructs. We compared a two-factor model where TWE and team resources' respective items load on two distinct latent factors, with a one-factor model, where all the items load on one common latent factor. Model fit was evaluated considering a combination of CFI and SRMR indices, according to Hu and Bentler's (1999) recommendation for sample sizes smaller than 250, plus RMSEA. The fit of both models improved significantly when one constraint between the errors associated with TWE's items 1 and 2 (both from the vigor dimension) and two constraints associated with the errors of team resources items 1 and 2 (both measuring feedback) and items 3 and 4 (both measuring support among colleagues) items were allowed. The fit for the

two factor model (CFI = .94; RMSEA = 0.9; SRMR = 0.7) was better than the fit for the one factor model (CFI = .89; RMSEA = .13; SRMR = .06). Therefore, we proceeded to test our hypotheses.

9.4.2. Hypotheses testing

Hypothesis 1 (Team work engagement mediates the positive relationship between team resources and team performance) was tested using MPlus software (Muthén & Muthén, 2010) with 5000 bootstraps. Our data supported the mediator role of TWE between team resources and team performance[8]. The indirect effect was significant (β = .19, p = .01; 95% CI: 0.066, 0.319), as well as the direct effects from team resources to TWE (β = .78, p = .000; 95% CI: 0.670, 0.904), and from TWE to team performance (β = .25, p = .02; 95% CI: 0.348, 1.883). Moderation hypotheses were tested in SPSS 18 (2009) after centering both independent variables and of calculating the interaction term. Next, we present the results for task and relationship conflict separately.

9.4.2.1. Relationship Conflict

First, we analyzed the role of relationship conflict, testing its' direct relationship with TWE (hypothesis 2a), controlling for team resources, and with team performance (hypothesis 2b), controlling for TWE. We did not fund support for neither hypotheses. In what hypothesis 2a is concerned, only team resources, and not relationship conflict, significantly predict team work engagement (β = .76; p< .001). In what hypothesis 2b is concerned, only team work engagement significantly predicts team performance (β = .26; p = .031). Therefore, we found no direct effects of relationship conflict with TWE or with team performance.

Next, we tested the hypothesized moderation role of relationship conflict in the relationship between team resources and TWE (hypothesis 4a), and between TWE and team performance (hypothesis 5a). Considering hypothesis 4a, when the interaction was entered in the model team resources continue to be a significant predictor of team work engagement (β = .80; p< .001), and the interaction was also significant and negative (β = -.19; p = .009) (cf. figure 9.2).

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[8]The tested model was nearly saturated (df = 1) and many fit indexes showed a perfect fit (CFI = 1; SRMR = .004). Therefore, we do not rely in these indexes to access the fit of the model, and rather present the values for each effect.
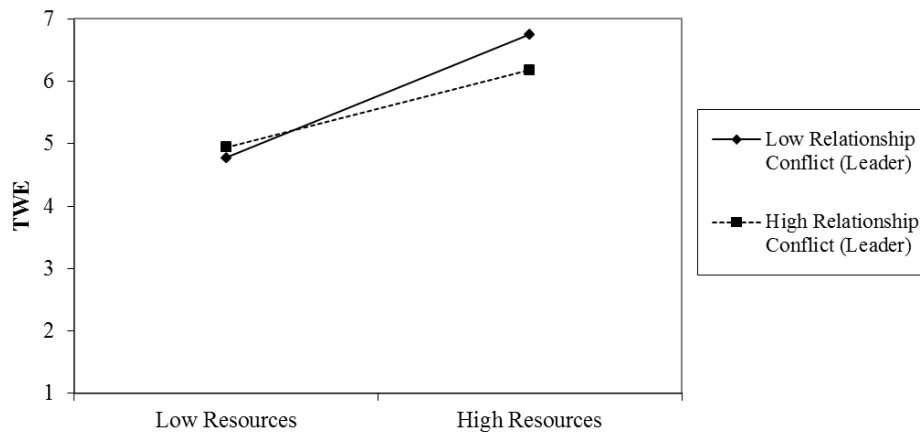
Figure 9.2. Interaction between team resources and relationship conflict (as perceived by the team leader) in predicting TWE.

Therefore, a high level of team resources leads to higher levels of team work engagement and this relationship is stronger when teams have low levels of relationship conflict. Therefore, hypothesis 4a was supported. Considering hypothesis 5a, when the interaction was entered in the model, team work engagement continued to be a significant predictor of team work engagement ($\beta = .27$; $p = .027$), but the interaction was not significant ($\beta = .12$; $p = .325$). Hypothesis 5a was, thus, not supported.

To sum up, in what relationship conflict is concerned, we only found support for its moderating role between team resources and team work engagement.

9.4.2.2. Task conflict

The role of task conflict was tested in the same way. First, we analyzed the direct relationship of task conflict with TWE (hypothesis 3a), controlling for team resources, and with team performance (hypothesis 3b), controlling for TWE. In what hypothesis 3a is concerned, both team resources ($\beta = .72$; $p < .001$) and task conflict ($\beta = -.17$; $p < .05$) significantly predict team work engagement. Hypothesis 3a was, therefore supported. In what hypothesis 3b is concerned, only team work engagement ($\beta = .29$; $p < .05$) significantly predicted team performance. Hypothesis 3b was, therefore, not supported. Next, we proceeded to test the hypothesized moderation role of task conflict in the relationship between team resources and TWE (hypothesis 4b), and between TWE and team performance (hypothesis 5b). Considering hypothesis 4b, when the interaction was entered in the model, both independent variables continued to be

significant predictors of team work engagement (β = .75; *p*< .001 for team resources andβ = -.15; *p*< .05 for task conflict), but the interaction was not significant (*B* = -.12; *p* = .099). Therefore, hypothesis 4b was not supported. Considering hypothesis 5b, when the interaction was entered in the model, team work engagement continued to be a significant predictor of team performance (β = .27; *p*< .05), and the interaction was significant and positive (β = .21; *p* = .05) (cf. figure 9.3).
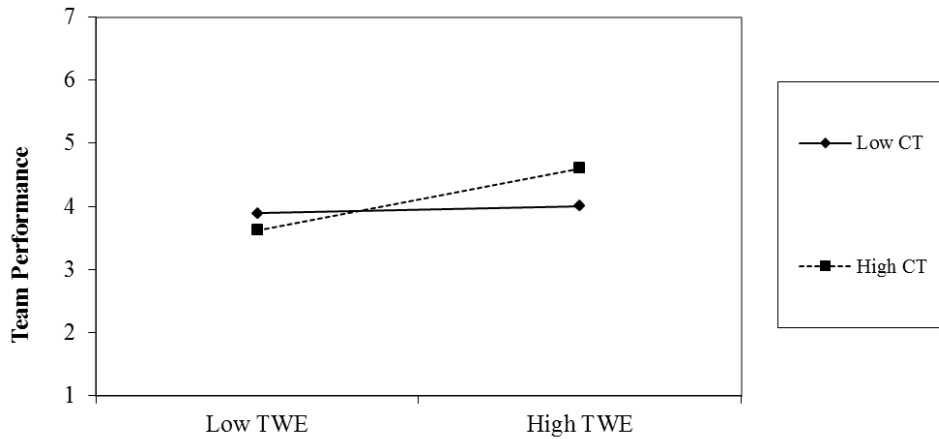
Figure 9.3. Interaction between TWE and task conflict in predicting team performance.

Therefore, hypothesis 5b was supported. Thus, a high level of team work engagement leads to higher levels of team performance and this relationship is greater when teams have high levels of task conflict. To sum up, in what task conflict is concerned, we found evidence for a negative direct relationship with TWE, and for a moderator role in the relationship between TWE and team performance. All of the significant paths are presented in figure 9.4.
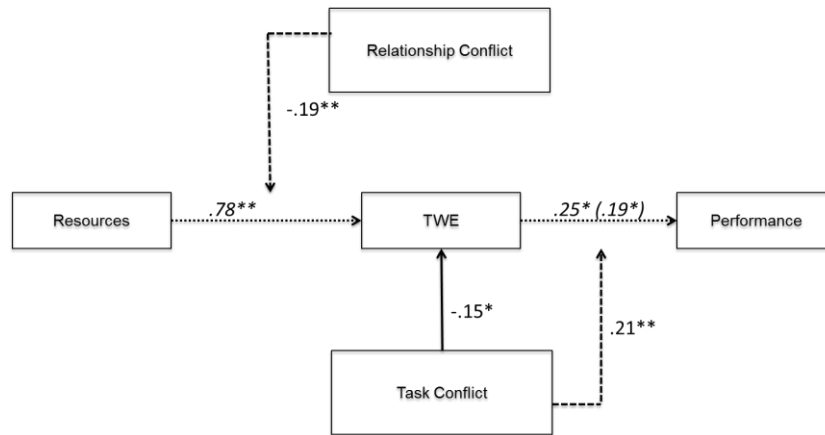
Figure 9.4. Final model representing supported hypotheses with standardized coefficients. Italic numbers represent standardized coefficients obtained when testing mediation, and indirect effect is between brackets. Regular numbers represent standardized coefficients obtained when modeling moderation.

9.5. Discussion

In this study we investigated the effects of conflict in the emergence of team work engagement and in the engagement and performance link, at the team level. We explored the conflict's direct relationship with team work engagement and team performance, as well as its moderator role in the relationship between team resources and team work engagement and between team work engagement and team performance. First and foremost, our mediation hypothesis was supported, which was expected considering the amount of evidences gathered over the last years that support it.

Second, it is worth noticing that only task conflict directly impacts TWE, reducing its level. The type of sample used can help to justify this result. Research teams are composed of highly educated individuals, who may be more politically savvy and, therefore, may be better able to not engage in relationship conflicts when working (Lazear & Rosen, 1981). This is in line with the low level of average relational conflict these teams report, compared to the average task conflict level. These types of teams, according to De Wit and colleagues (2013), may show less negative effects of conflict on proximal outcomes. However, task conflict may still generate interpersonal tension among team members, which negatively influences the collective engagement levels. Even if individuals manage to solve complex interpersonal situations politely, the

negative affective valence of conflict and its potential ego threatening nature (and academics are not at all immune to it) has a negative impact on emergent states of teams.

We wonder whether conflict (both relationship and task) is distinctly relevant in different performance phases. According to Marks and colleagues (2001), teams are involved in iterative performance episodes. Each performance episode comprises action and transition phases: the former are related to the actual taskwork – doing what they must do to accomplish the task, such as building the products, designing the new marketing props, etc.; the latter encompass more reflective moments, where members evaluate what they have done so far and plan further moves (e.g., analyzing the monthly sales, defining the new targets for a product, and so on). Managing conflict is an interpersonal team process that should be present throughout both action and transition phases (Marks et al., 2001). However, conflict's influence on transition phases may be more detrimental for the team's effectiveness, particularly in what relationship conflict is concerned. Positive high-activated states have been linked to innovative work behavior (Madrid, Patterson, Birdi, Leiva & Kausel, 2013) and positive emotional states are related to a more broad perception of the environment and the ability to create new solutions (Fredrickson, 2001). Conflict is, by definition, an activated state, but has a negative affective valence associated. This may block creative thinking and problem solving during those moments where teams are reviewing and planning, and prevent team members from appreciating each other's perspectives. Conversely, during action phases task conflict may have a more positive influence in teams' performance, since during this phases teams are more predisposed to focus on the task, and less on personal relationships.

The most interesting result of this study concerns the different pattern of influences of each type of conflict on the team work engagement network, when a moderator role is investigated. Conflicted relationships seem to be a more detrimental context when team work engagement is emerging within the team, whereas discussing ideas positively impacts the transformation of the teams' energy and enthusiasm into objective performance. It is possible to consider that team work engagement may act as a "shield" that prevents relationship conflict from impacting the team's dedication towards work and their willingness to go the extra mile in their job. Therefore, once engaged, teams are better able to swerve the negative consequences of relationship conflict and to stay focused in their tasks. What is more, and adding to the findings of

De Wit et al. (2013), task conflict may enhance the benefits of engaged teams in what performance is concerned. Engaged teams are more open to new information (Bakker, 2011), and can better integrate different or even opposing contributions of their members. At the individual level, recent work has showed that engaged employees are active actors in their environment, changing it according to their needs (e.g., Tims, Bakker & Derks, 2012) coined this active influence over the environment as job crafting. Through job crafting, engaged employees try to increase job resources such as mobilizing their social network, as well as their own challenges or job demands, such as starting a new project. This might explain our results. First, through job crafting, teams may be able to mobilize social resources, reducing the negative impact of relationship conflict. Second, the need to conciliate district viewpoints can be perceived as a challenging task by engaged teams, rather than as a hindering job demand, therefore functioning as performance leverage. More research is needed in job crafting at the team level.

9.5.1. Limitations and future research

In this study, we focused on conflict states' influence on team engagement and performance. Our findings speak to the collective engagement literature, by showing that interpersonal interactions with an affective valence can impact its emergence. This is in line with the proposal of Costa et al., (2014). However, our study indirectly investigates emergence, by inferring it from scales results. A more dynamic analysis of the emergence process for TWE is called upon, moving towards a more direct investigation of this process (Kozlowski & Chao, 2012) - what types of interactions characterize relationship and task conflict and how do those interactions relate to the emergence of team work engagement?

Although we found support for conceptualizing team conflict as a moderator (moving from the traditional mediator perspective), more research is needed in order to access whether these findings can be replicated with different samples. Our sample was very specific – research teams – and composed of highly qualified intellectual workers. Therefore, generalizing the results to other samples is not advisable.

Practical implications

Our study highlights the importance of intelligently managing conflict in order to promote an optimal level of performance. Relationship conflict, as a hindrance,

should always be avoided as a way to promote positive emergent team states. In order to do so, managers can invest in communication training and in acting as impartial mediators of those situations. Simultaneously, there should be formal moments for generating and expressing divergent opinions about what to do and about how to do it, ensuring the necessary trustful environment to do so with no fear of negative consequences. The promotion of task conflict should be done conscientiously, and in teams where positive emergent states such as cohesion or engagement have already been established.

CHAPTER X.

STUDY 4. MULTILEVEL INFLUENCES OF TEAM WORK ENGAGEMENT AND INDIVIDUAL POSITIVE EMOTIONS ON TEAM VIABILITY PERCEPTIONS

10. MULTILEVEL INFLUENCES OF TEAM VIABILITY PERCEPTIONS[9]

Working in teams can be either a pleasant experience or a distressing one. After completing a project or a specific task, team members may welcome the idea of working together again with the same group of people or they may dread it. What influences the desire of employees' working on a team to remain working with the same people? The present study aims to explore whether affective variables (positive emotions at the individual level, and work engagement at the team level) have an impact on team effectiveness, operationalized as perceptions of team viability.

This article makes the following contributions to the literature: first, it contributes to understanding how human resources can reduce employees' turnover rates, by fostering their desire to stay within their work team. Second, our study contributes to the literature on team effectiveness. Since the seminal work of Hackman (1987), team effectiveness is defined not only by team performance, but also by the degree of satisfaction with the team, and by team members' desire to work together on subsequent tasks. Team viability is defined as the "team's capacity for the sustainability and growth required for success in future performance episodes" (Bell & Marentette, 2011, 279). However, researchers tend to focus either on team performance (e.g. Griffith & Sawyer, 2010, Salas, Cook & Rosen, 2008; Mathiew & Schulze, 2006;) and team satisfaction (for example, Gevers & Peeters, 2006; Mason & Griffin, 2005) alone, or on overall team effectiveness (Maynard, Mathiew, Rapp & Gilson, 2012; Tekleab, Quigley & Tesluk, 2009; Tesluk & Mathiew, 1999). Therefore, understanding the drivers of individual perceptions of team viability represents an important step in team-effectiveness research, as it focuses on the lower-level units (team members) that will originate to the collective construct. Third, this paper contributes to the literature on work affect, since both predictors – positive emotions and team work engagement - have affective components. Despite having been removed from organizational science for quite some time (Briner, 1999) affect is intrinsically tied to human activity (such as work), and human interaction (such as teamwork). Consequently, this study extends research on the outcomes of positive affective states (specifically positive emotions and

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[9]This paper has been published as:

Costa, P.L., Passos, A.M., & Barata, M. C.. (in press) Multilevel influences of team viability perceptions. *Team Performance Management*

team work engagement) to perceptions of team viability. Fourth, it simultaneously analyzes individual- and team-level constructs, contributing to our understanding of the dynamics between levels of affective states at work.

10.1 Theoretical background

Team effectiveness is often perceived and operationalized as equivalent to team objective performance. However, it should be understood as a threefold construct. According to Hackman (1987), team effectiveness is a function of the amount of knowledge and skills of group members, their performance strategies, and the level of effort that members collectively experience. Moreover, Hackman stated that "members of work groups (…) usually continue to relate to one another long after the group task is completed; what happens in the work group can substantially affect their willingness (and their ability) to do so" (1987, p. 323). Therefore, understanding team effectiveness implies studying three criteria. The first criterion for team effectiveness is related to the productive output of the group. It depends on whether the team is able to meet or exceed the performance standards defined for their tasks. The second criterion is related to the balanced degree of satisfaction or frustration of personal needs that the group members experience. This is considered a personal criterion, since it is connected to the individuals' predominant reactions to the group. The third criterion, the one on which we focus in the present paper, encompasses the social processes that occur while teams work. These processes should maintain or enhance the capability of team members to work together on subsequent tasks. Team viability reflects team members' ability to adapt to internal and external changes while staying together over time, and to sustain effective levels of performance over time (Behfar Peterson, Mannix, & Trochim, 2008; Kozlowski & Bell, 2003; Rousseau & Aube, 2010). In Hackman's (1987) words, viable teams are the ones that subsist despite of unresolved conflict or divisive interaction. Although most researchers espouse Hackman's view of team effectiveness, the majority of empirical studies on team effectiveness still focus on the objective or perceived performance, and on the satisfaction dimensions of team effectiveness (e.g., Bell & Marentette, 2011; Mathieu, Maynard, Rapp, & Gilson, 2008).

Because of the limitations of the empirical research on team effectiveness, scholars have limited knowledge about long-term team viability (Kozlowski & Bell, 2003). One particular example of this knowledge is the continuance effect. Past research

shows a negative effect of continuing to work together on team performance (e.g., Katz & Allen, 1988; Pelz & Andrews, 1966): team performance seems to fade and decline overtime. This fading is, however, not directly dependent on the continuance per se, but is instead related to a decline in the quality of team communication over time, namely on areas central for team activity (Katz & Allen, 1988). In newly formed teams, though, the willingness to continue working with the team is related to an improvement of performance: the more time team members spend working together, the greater the familiarity they develop towards each other. This familiarity, in turn, facilitates rapid coordination and integration of team members' efforts, resulting in better task performance (e.g. Cannon-Bowers, Tannenbaum, Salas & Volpe, 1995). Accordingly, researchers' focus ought not to be only on what makes a team more or less productive, but also on team viability.

10.1.2. Individual perceptions of team viability

Understanding team viability is critical because ongoing organizational teams tend to exist for long periods of time, even if their projects or roles change. Team viability is traditionally a team-level emergent construct, and treated as a compositional emergent state (Kozlowski & Chao, 2012). This means that researchers usually aggregate individual perceptions of team viability to the team level by using the mean of team members' individual perceptions of their willingness to stay in the team. Therefore, team viability at the higher level depends on the lower-level individual perceptions. Individual perceptions are important by themselves not only because they are the building blocks of the team level construct, but also because they will impact individual behavioral intentions, namely their intention to quit the job. The unwillingness to continue to work together may lead to voluntary turnover, which has high financial costs - from 0.5 to 2.5 times the annual salary of the job in question (Campbell & Campbell, 2001). Personnel turnover (weather voluntary or not) and new hiring may also impact teamwork in many ways (Campbell & Campbell, 2001). Team members must continuously adapt to new members, restructure their functioning accordingly, and establish personal relationships with the new co-workers. This process of continuing change may hinder the development of positive team characteristics, such as team cohesion (e.g., Kozlowski & Chao, 2012) or shared team mental models (e.g., Santos & Passos, 2013), and may undermine team effectiveness. The reasons underlying

employees' voluntary turnover range from dissatisfaction with the work, other employment opportunities, unmet expectations regarding pay, or work group dynamics, namely how team members interact in the pursuit of team goals (Campbell & Campbell, 2001). Particularly in emerging economies, the possibility of voluntary turnover is more likely to be considered by employees, due to the range of opportunities available. For example, a survey covering 19 industries by one of China's largest human resources service providers showed that the average employee turnover rate for privately owned companies in China was 18.5% in 2010 (51job.com, 2013). According to the same source, employees leave the company because of better compensation packages, career opportunities, training and development opportunities, opportunities to use their skills, better benefits, and better prospects for success of the new company. In this scenario, teams who are able to generate willingness in its members to keep on working with their teammates will counterbalance the eventual intention to leave. Enhancing the organizations' capacity to retain its employees is important if organizations want to remain regionally and globally competitive (Campbell & Campbell, 2001). The present study focuses on individual perceptions of team viability, as building blocks of the ability and willingness of its members to keep adapting and working together effectively for extended periods of time.

Therefore, we focus on perceptions of viability and not on other indicators of team effectiveness for two main reasons: the relative lack of studies focused on this dimension, and the importance of individual perceptions of viability for voluntary turnover and its related financial costs and process losses in teamwork.

10.1.3. Positive affect and perceptions of team viability

Many important aspects of work and of teamwork experience have an affective component. This affective component is fundamental in understanding human behavior at work (Ashkanasy, 2003; Kammeeeyer-Muller & Judge, 2008). Additionally, the organizational behavior literature has shifted from a focus on the negative to a focus on positive affective states. In the work context, positive psychology (e.g. Seligman & Csikszentmihalyi, 2000) aims at understanding human strengths and how they can be promoted in the workplace, therefore enhancing effectiveness (Bakker, 2013). Furthermore, positive affective states have been linked to positive outcomes at work, including improved cooperation, decreased conflict, increased perceived task

performance (Barasade, 2002), prosocial behavior (George & Brief, 1992), and customer helping behavior (George, 2001).

According to Weiss and Cropanzano's Affective Events Theory (AET; 1996), affect mediates the effect of organizational variables on affective and behavioral outcomes. People experience affective events in their work life, and these events lead to moods and emotions. According to AET, moods and emotions can accumulate over time and, in the long term, lead to more stable work attitudes such as job satisfaction. In turn, these work attitudes will result in work-related cognitively driven behaviors, such as work productivity or the decision to quit. Therefore, the affective experiences of individuals while working in a team are likely to impact their desire to continue working with the team. For example, if the team always puts someone's ideas aside, it may result in frustration or anger towards team members and, as a result, lead to the desire of leaving the team. Conversely, positive affective experiences (such as having enthusiastic and cheerful coworkers), may enhance the willingness to stay on the team. Therefore, affective experiences will impact the perceptions of team viability. Next, we analyze two distinct affective experiences: the individual experiences of positive emotions at work and team work engagement (i.e., a collective state of energy and enthusiasm).

10.1.4. Individual emotions

At the individual level, the Broaden-and-Build theory of positive emotions states that positive emotions broaden the array of thoughts and actions available (Fredrickson, 2001). When experiencing positive emotions, individuals are able to come up with more ideas, different perspectives, and multiple solutions. Increased flexibility and adaptability are characteristics that help both individuals and teams to successfully work in complex environments (e.g., Pulakos, Arad, Donovan & Plamondon, 2000). Following the same theory, these broader repertoires of thought and action will over time build enduring personal resources, such as social connections, increasing the connectivity between individuals. Following a similar reasoning, Barasade & Gibson (2007) suggest that positive group emotion, expressed as liking and positive regard of others may bring a group together. Experiencing positive emotions and their positive consequences for performance, therefore, enhances the likelihood of wanting to

maintain and preserve the conditions under which those positive states were felt – in this case, the work group. Therefore, we put forward the following hypothesis:

Hypothesis 1: Individuals who experience higher levels of positive emotions perceive higher levels of team viability, compared to those who experience lower levels of positive emotions.

10.1.5. Team work engagement

Teams may also develop shared affective states (e.g. George, 1996; Kelly & Barasade, 2001; Totterdell, Kellett, Teuchman & Briner, 1998) due both to sharing similar work events and to processes of emotional contagion (Hatfield, Cacciopo & Rapson, 1994). Team work engagement (TWE) is one of those shared states that may influence team viability. Team work engagement is defined as a shared, positive, fulfilling, emergent state of work related well-being (Costa, Passos & Bakker, 2014a). Members of work engaged teams express high levels of energy and of willingness to invest effort in work and persistence in the face of difficulties (e.g., conflict, bad performance feedback); they enthusiastically encourage demoralized colleagues, and explicitly express their desire to continue working (Costa et al., 2014a). These teams are strongly involved in work and express a sense of significance, enthusiasm, inspiration, pride and challenge while doing so. For example, team members talk to each other and to others (external to the team) about the importance of their work, and about the thrill they feel concerning their work (Bakker, Van Emmerik, & Euwema, 2006; Bakker & Xanthopoulou, 2009). These teams collectively experience and express difficulties detaching themselves from work: team members talk about their work during breaks, commenting on time passing quickly, and not engaging in non-work related interactions when working. Consequently, engaged teams not only perform better than non-engaged ones, but they are also more willing to invest more effort than what is formally expected from them (Bakker, 2009). Therefore, we present the following hypothesis:

Hypothesis 2: Individuals in teams with high levels of work engagement perceive higher levels of team viability, compared to those who belong to teams with low levels of work engagement.

10.1.6. Cumulative and compensatory effects of individual emotions and team work engagement

Furthermore, team work engagement and individual positive emotions may interact in predicting perceptions of team viability. High levels of desire to remain in the team will be found in individuals with high levels of positive emotions, especially when they belong to highly work engaged teams. These individuals experience, individually, positive feelings that foster an approaching emotional state. Approach behavior has been found to facilitate the involvement in teamwork and task-relevant activities (e.g., Cacioppo, Gardner, & Berntson, 1999), therefore promoting positive effectiveness outcomes. Simultaneously, these individuals who experience positive emotions belong to teams characterized by positive affectivity and by a high motivation towards their work, therefore enhancing the desire to keep on working together.

However, some authors argue that having a predominance of positive affective states or experiences may not serve team effectiveness, particularly in what team performance is concerned. For these authors, experiencing negative emotions such as fear of not being able to succeed, or frustration after negative feedback can result in an increased focus and investment on the task, therefore improving the work being done (e.g. Derryberry & Tucker, 1994, Isen, 1999).

While this may hold true for team performance, we hypothesize a cumulative effect of both individual and collective affective states for team viability perceptions, as follows:

Hypothesis 3: Individuals who experience high levels of positive emotions, and are in teams with high levels of work engagement, perceive higher levels of team viability, compared to those who experience high levels of positive emotions, but are in team with low work engagement.

Finally, considering that women and men's emotional experience vary, belonging to a team mainly composed of one gender or the other may influence the individual perceptions of team viability. For example, Fujita, Diener and Sandvik (1991) show that women tend to experience more intense (negative and positive) emotions than men. Curseu, Pluut, Boros and Meslec (in press) show that the percentage on women in a group is an important predictor of collective emotional intelligence.

Also, Kelley and Hutson-Comeaux (1999) found that women have more frequent characteristic emotions when in personal relationships, whereas men have more frequent characteristic emotions when in achievement situations, which is the case of work (for further information on gender and emotion, readers are referred to Fisher, 2000). Therefore, the percentage of women in the teams was used as a control variable in our analyses.

10.2. Method

10.2.1. Participants and procedure

The sample for this study was composed of participants of the 'Global Management Challenge®' (GMC®), a management simulation developed by a company specialized in the development of business simulations that has been used for more than thirty years. During a five-week period, participants are asked to manage a virtual company and decide on investment choices and other managerial issues (e.g. where to allocate financial resources, number of units to be produced). All competing teams start with the same stock market value and, depending on their weekly choices and strategic options, a computer program computes each team's stock market value every week. The winning team – with the highest stock market value in the end of the competition - will participate in the national official competition. Each week, the teams receive an individual report with the consequences of their decisions. To collect data for the present study, participants were emailed a questionnaire on week five, before receiving the feedback on their decisions. A total of 1154 participants were organized in 254 teams (average number of team members = 4.6; SD = .60). Teams were either composed of students (42.8%), full-time workers in several different companies (47.2%), or a mix of students and workers (10%). The team members reported that, before the competition, they knew, on average, 78% of their team members. Sixty-five percent of the participants were male.

10.2.2. Measures

Demographic data and data on the study variables was collected through questionnaires.

Team viability was measured using an adaptation of four items such as "I would not hesitate in participating with this team in future competitions", from Standifer, Halbesleben and Kramer's (2009, unpublished data) scale. Participants rated how much they agreed with each sentence on a 7-point scale (1 = I totally disagree to 7 = I totally agree) (Cronbach's α = .83).

Individual positive emotions were measured using five items (enthusiastic, active, interested, inspired, and attentive) from the Positive and Negative Affectivity Scale (PANAS, Watson, Clark, & Tellegen, 1988). Participants rated how much they agreed with each sentence on a 7-point scale (1 = I totally disagree to 7 = I totally agree) (Cronbach's α = .95).

Team work engagement (TWE) was measured with the 9-item scale developed by Costa, Passos and Bakker (2014b), which consisted of an adaptation (using the referent-shift consensus model proposed by Chan, 1998) of the original individual work engagement scale (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Examples of the items included "When we are working on the competition we feel strong and vigorous" or "We are excited about this competition". Participants rated how much they agree with each sentence on a 7-point scale (1 = never to 7 = always) (Cronbach's α = .98).

Scores for team-level work engagement were calculated using the weighted mean of team member responses and aggregated to the team level for statistical analysis. In order to statistically justify aggregation, we calculated the index of within-group interrater agreement (rwg(j), (James, Demaree & Wolf, 1984), using the value of .70 and above as an acceptable level of agreement (Cohen, Doveth & Eick, 2001). The mean value of this index (.77) falls above that value. Moreover, Intraclass Correlations, both ICC(1) and ICC(2) (Bliese, 2000) were calculated and ICC(1) value (.13) was between the recommended values of .05 and .20 (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann 2004) and ICC(2) value (.41) was higher than ICC(1), thus fulfilling the criteria for aggregation.

The percentage of women in each team was used as a control variable in the analyses.

10.2.3. Data-analytic approach

In order to address our research questions, we fit a multilevel model of the association of positive emotions and team work engagement with the perceptions of team viability, using the percentage of women in the team as a control variable. Positive emotions were introduced as a level-one (individual) predictor, and team work engagement and the percentage of females in the team were introduced as the level-two (team) predictors. We built a taxonomy of six different models, adding and removing predictors based on theory and model adequacy, which we tracked using three criteria (Hox, 2002): (1) the change in the -2Log Likelihood statistic or deviance statistic; (2) the level of significance of the coefficients for both the fixed and random effects; and (3) the proportion of variance that remains unexplained both at the individual and team levels when new predictors are added to the model.

First, we fit an unconditional (or reduced) model, with no predictors (M1) and a random intercept. Then, we added our control variable (percentage of females in the team) in order to control for the effect of this variable in subsequent models (M2). Next, we fitted a model (M3) with the level-1 predictor (positive emotions) and a model (M4) including the level-2 predictor (TWE). All of these first four models were random intercept and fixed slopes models, assuming that the relationships tested between the predictors and the outcomes were constant across teams. M5 included a random slope, in order to assess whether the relationship between positive emotions and perception of team viability varied across teams. Finally, M6 tested the cross-level interaction between positive emotions and team work engagement in the prediction of the perceptions of team viability.

10.3. Results

10.3.1. Descriptive Statistics

In Table 10.1, we present the descriptive statistics and zero-order correlations for all of the variables in the study. The zero-order correlations indicated that perceptions of team viability were significantly correlated with both proposed predictors ($r = .31$, $p < .01$ and $r = .32$, $p < .01$, for positive emotions and team work engagement respectively). Our control variable, gender, did not correlate significantly with the other variables ($r =$

-.01, p = .74, r = -.07, p = .08, and r = -.05, p = .19 for perceptions of team viability, positive emotions, and team work engagement respectively).

Table 10.1. Descriptive statistics and correlations for all the study variables

	M	SD	1	2	3
1. Team Viability (level 1)	6.08	1.18	-		
2. Positive Emotions (level 1)	5.38	1.11	.31**	-	
3. Team Work Engagement (level 2)	5.51	1.08	.32**	.81**	-
4. % females (level 2)	34.58	24.41	-.01	-.07	-.05

Notes. N = 1154 individuals; ** p < 0.01.

Team work engagement and positive emotions present a high correlation between them (r = .81). Therefore, to guarantee that the two constructs were statistically distinct, as measured by the scales we used, we conducted a confirmatory factor analysis. The two-factor model (where TWE's items load on a latent TWE factor and the positive emotions' items load on a latent positive emotions factor) best fits the data (cf. Table 10.2), therefore providing support for their distinctiveness, despite being highly correlated.

Table 10.2. Fit statistics for 1-factor and 2-factor model.

	χ^2/df	CFI	SRMR	RMSEA	AIC
1 factor model	20.67	.88	.05	.17	18404.311
2 factor	9.44	.95	.02	.11	17535.283

model

Considering the perceptions of team viability across teams, despite the high mean value (M = 6.08), these perceptions varied across teams (SD = 1.18). ANOVA results (F= 1.81; p. < .001) indicated that there was significant variance in team viability perceptions between teams to justify a multilevel approach. The estimates presented in M1 reinforce this idea (see Table 3). The intraclass correlation (ICC) for M1 shows that 23% of the outcome variability is due to differences across teams. Therefore, there is enough variance to be explained at each level of the outcome.

Hypotheses Testing

According to Hypothesis 1, individuals who experience higher levels of positive emotions perceive higher levels of perceptions of team viability, compared to those who experience lower levels of positive emotions. The results from M3 show that experiencing positive emotions significantly predicted perceiving team viability (b =.34, $p.$ < .001), controlling for female team composition. The relationship between positive emotions and perceptions of team viability is assumed constant across teams. Analyzing the change in the variance components from M2 to M3, we verified that the inclusion of the individual-level predictor positive emotions led to a small reduction in the variance attributable to individual differences (from 1.09 to 1.04). This means that other important individual covariates exist that were not included in the model. Including positive emotions in the model also changes the size of the remaining team-level variance (from .32 to .24). These results support hypothesis 1.

Table 10.3. Taxonomy of fitted multilevel models predicting perceptions of team viability based on individual positive emotions and team work engagement.

Predictor	Model					
	M1	M2	M3	M4	M5	M6
Fixed Effects						
Intercept	6.05***	6.08***	5.97***	5.94***	5.94***	5.97***
%Fem		-.001	.001	.001	.002	.002
PosEm			.34***	.24***	.24***	.23**
TWE				.28**	.25**	.27**
PosEm*TWE						-.10‡
Variance Components						
Level-1 or Within-teams	1.09***	1.09***	1.04***	1.03***	.96***	.95***
Level-2 or Between-teams						
In intercept	.32***	.32***	.24**	.21**	.23**	.22**
In slope					.09‡	.10‡
Covariance					-.10*	-.11**
Goodness-of-fit						
-2LL	1752.322	1752.133***	1665.07***	1649.98***	1640.38***	1637.62‡
Deviance statistic	-	0.189	87.06	15.09	9.60	2.76

Notes. N= 1154 individuals; N= 254 teams. ‡ p<.10; * p<.05; ** p<.01; *** p<.001. Detailed description of each model can be found in the text.

Hypothesis 2 states that individuals in teams with high levels of work engagement would perceive higher levels of team viability, compared to those who belong to teams with lower levels of work engagement. Looking at M4, both positive emotions and team work engagement are significant predictors of individual levels of perceptions of team viability (b =.24, $p < .000$ and b =.28, $p. < .001$ for positive emotions and team work engagement, respectively), controlling for female team

composition. These relationships are also assumed constant across team. Considering the change in -2LL (or deviance statistic) being greater than the critical value, we conclude that the set of predictors in M4 (including both positive emotions and team work engagement) better predicts perceived team viability, than the set in M3. Including TWE also led to a reduction in the variance attributable to team differences (from .24 to .21). This supports hypothesis 2.

Next, we tested whether the effects of positive emotions on perceived team viability varied by team, by including a random slope to the model (M5). This allowed to explain more variance, with the -2LL being greater than the critical value. The individual-level variance was reduced (from 1.03 to .96) and the variance due to differences in the teams is significant at trend level ($p. = .097$).

Next, we tested our cross-level interaction hypothesis (M6). Both the chi-square test and the coefficient of the interaction ($b = -.10$, $p = .097$) are significant at the trend level, indicating that the differences in the relationship between positive emotions and perceived team viability might be marginally associated with the levels of team work engagement of each team, controlling for the main effects of positive emotions and perceived team viability, as well as female team composition. At this significance level, individuals who experience low levels of positive emotions, but are in teams with high levels of work engagement, perceive slightly higher levels of team viability than individuals who experience low levels of positive emotions, but are in teams with low levels of work engagement. However, for individuals who experience high levels of positive emotions, the team level of TWE does not seem to make a difference for individual perceptions of team viability. Our results offered only partial support for hypothesis 3. (see Figure 10.1).
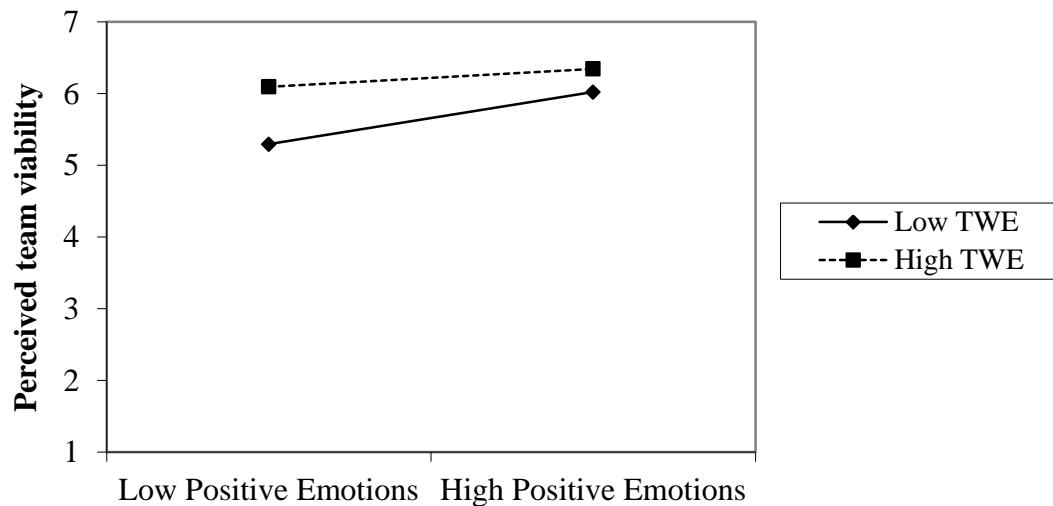
Figure 10.1. Cross-level interaction between positive emotions and TWE predicting perceived team viability. *N=1154 individuals; N=254 teams.*

10.3. Discussion

The present study was aimed at exploring whether affective variables both at the individual and at the team level have an impact on perceived team viability. Our results support our hypotheses that positive emotions and team work engagement are important predictors of the perceived viability of teams. Additionally, we found that individuals who experience high levels of positive emotions, or are in teams with high levels of work engagement, perceive higher levels of team viability, compared to those who experience low levels of positive emotions, and are in team with low work engagement. Therefore, we found a partial effect of the levels of TWE, which happens only when individual positive emotions are low.

This study clearly demonstrates the importance of collective phenomena in work teams. Emergent states such as TWE are necessarily collective, since they are defined as constructs that characterize properties of the team, typically dynamic in nature and that describe cognitive, motivational and affective states of teams (Marks et al., 2001). The results of this study suggest that collective positive affective states may be important for perceiving team viability when individuals have lower levels of personal resources, namely positive emotions. More specifically, the existence of a high level of team work engagement minimized the detrimental effect of the existence of low positive emotions

on the perceptions of team viability. Therefore, in moments where, for some reason, team members individually experience many adverse and negative events (e.g. conflicts, problems with clients or suppliers, personal issues), if they are able to, collectively, maintain their energy and enthusiasm, the losses in terms of team effectiveness or turnover intentions may be lower. According to Lazarus and Smith (1988), one of the core dimensions of emotional experience is cognitive appraisal that encompasses the personal significance of an encounter/situation for well-being, which will determine the type and intensity of the emotion. In our study, when individuals already felt positive emotions collectively, the significance of the individual affective state for their willingness to stay in the team became less relevant. Therefore, they relied more on team-related information and less on their individual information on affective states, when evaluating their perception of future team viability. This leads us to consider the relative importance of collective and individual affective states when working in teams. Our results suggest that, in the context of teams, the collective state influences individual perceptions in a top-down route. They may be more relevant for desiring to working with the same team in the future in situations of a low level of individual positive emotions. This calls practitioners' attention to the importance of considering the collective, and not only the individuals, when team outputs are at stake. For example, having reward systems that encourage team effort is still rare in many organizations (McClurg, 2001). Yet, doing so fosters cooperation among team members, promotes productivity and helps to overcome limitations of larger group based plans (e.g. gainsharing) (DeMatteo, Eby & Sundstrom, 1998).

One question that also deserves researchers' attention is whether the development of positive collective states takes time and what is the lag between forming a team and being able to observe the emergence of a shared state. Emergent states, by definition, develop from the interaction between team members. The more team members interact the more they will be able to develop a common understanding of their environment, their team and their work. Also, interaction is a necessary precondition for the phenomenon of emotional contagion (Cacioppo et al., 1994), considered one of the most important mechanisms for developing a shared emotional state. Therefore, researchers should consider how changes in the composition of teams lead to a disruption on their levels of collective states and explore the conditions under which it is likely to happen. For example, the exit of one member may not have the

same short-term implications for a team's shared TWE state than as the exit of three members and the entrance of other three. Also the entrance of a highly energetic member to a low TWE team may lead to a greater need for readjustment in their shared TWE state than the entrance of a low energy member. All of these adjustments may take time to happen, and it would be interesting to study the impact of this period of adaptation, before the emergence of a shared state, on teams' effectiveness.

The passage of time should also be accounted for in future studies, with longitudinal designs, also to clarify causation relationships. In the present paper, we assume that positive affective states (individual and collective) are predictors of team viability perceptions. Nonetheless, a reversed causation possibility should not be overlooked. Perceiving that one wishes to continue working with a group of people, and believing that that team has what it takes to be successful in the future can generate individual or collective positive emotions, namely through the development of self and/or collective efficacy (Bandura, 1997). For example, a study by Stephanou, Gkavras & Doulkeridou (2013), with a sample of 268 elementary school teachers found that efficacy believes explained a moderate amount of teachers' reported emotions.

Previous research has also showed that "too much" positive emotions can have detrimental effects on information processing and decision-making. For example, some studies suggest that negative emotions narrow the attention focus, allowing individuals to spend more time analyzing the information and leading to a more systematic processing (e.g. Derryberry & Tucker, 1994, Isen, 1999). This may be useful in situations that demand increased attention and where risky decisions and /or heuristic processing can have high costs (Forgas, 1998, Bodenhausen, Kramer & Susser, 1994). Therefore, perceiving team viability may not necessarily correspond to better performance. Team work engagement encompasses, by definition, demonstrations of enthusiasm and of energy. It is possible that, in some cases – namely when individuals were already experiencing individual positive emotions - that this energy is not so much translated into task related activities, but instead is mostly used to create a fun environment or in making humorous comments. Therefore, the potential positive effects of team work engagement that occur through an increased effort and focus in the task, are not fully accomplished and it could lead to less accurate decisions throughout the competition. In the specific case of this study, we did not find any negative effect of having simultaneously high positive affective experiences at the individual and team

levels. However, the characteristics of the sample may have contributed to this result: the task individuals were involved in was part of a simulation game, and no serious negative professional consequences could arise from a bad result. Therefore, even if individuals considered that their highly positive affective context did not facilitate effective decision making or that being part of that team was great fun but the work did not get done properly (Page & Boyle, 2005), they did welcome the possibility of working together again in the future. Future research with different samples is needed to better understand this relationship.

In the future, research on affective states and perceptions of team viability should also consider the degree of familiarity between team members. In this specific case, 78% of team members were familiar with each other. According to Bartel and Saavedra (2000), when team members have a long tenure and a higher degree of familiarity between them, they are more likely to develop a common mood. Familiarity leads to increased interaction, to sharing a higher degree of intimacy and to an ability to decode the affective expressions of others more easily. Therefore, our teams had probably optimal conditions for developing shared states, which may have influenced their perceptions of viability. Plus, this can also partially explain the high correlation between TWE and individual positive emotions, as team members affective experiences were more likely to converge.

Our results contribute to the literature in three specific ways. First, they reinforce previous studies that demonstrate the importance of considering engagement at the team level as an important variable for understanding team effectiveness. Second, they add to the affect at work literature and to the positive psychology literature, showing that positive affect has a beneficial effect on an important area of people's lives, namely work. In the present case, they are also linked to a positive attitude towards the team, translated in the desire to stay in that team and in the belief that they can continue to work together in the future. Third, they highlight the importance of positive collective affective states over individual negative ones, in what team outcomes are concerned.

Despite these exiting contributions, the study also has some limitations. First, the sample was composed of teams who were working on a simulation activity. Therefore, generalizing the results to "real world" teams must be done with caution. Second, data was collected at the end of the competition. Since participants were answering one questionnaire each week, for other purposes, the number of dropouts at week 5 was

large, which led to a higher than desirable number of missing values. In order to deal with missing values, we selected for our final sample only the teams where two or more members had answers in all of the three variables used in the study, which necessarily resulted in data loss and further limitations on generalizability (i.e. the results are mostly generalizable to teams more willing to answer surveys over time). Third, the results may not be generalized to teams with a majority of women, since two thirds of the team members in this study were men. Fourth, our study has a cross-sectional design, which prevents us from drawing causality inferences, and makes it possible to question reversed causation relationships. Fifth, the high correlation between TWE and individual positive emotions should be considered. While we have demonstrated that the two are empirically distinct, our results showing only a partial compensatory effect of TWE for perceiving higher team viability can be partially justified by this high correlation. Finally, using the five weeks of the competition, data on the variables of interest could have been collected in different time moments, in order to explore temporal cross-level influences of both predictors.

10.4. Conclusion

This study contributes to a broader comprehension of the drivers of team viability perceptions and reinforces the relevance of studying the affective dimension of work life at more than one level simultaneously, in order to look for conditional cross-level effects.

CHAPTER XI.

STUDY 5. ENGAGED TEAMS' VERBAL AND NON-VERBAL INTERACTIONS: A QUALITATIVE APPROACH

11. *WALK WITHOUT RHYTHM AND YOU WON'T ATTRACT THE WORM? A QUALITATIVE EXPLORATORY STUDY OF ENGAGED TEAMS' VERBAL AND NON-VERBAL INTERACTIONS*

Researchers agree that engaged teams outperform teams with low levels of engagement (e.g., Torrente, Salanova, Llorens, & Schaufeli, 2012).These teams are highly motivated to work and persist even when facing difficulties or draw backs, and share a positive affective environment. Theoretically, team work engagement (TWE) emerges in teams who are able to successfully manage conflict, affect and motivational levels of team members (Costa, Passos & Bakker, 2014a). However, to what specific interactions do those activities correspond to? How exactly do teams "manage affect" or "build motivation"? In this study we qualitatively analyze the verbal and non-verbal interactions of members of highly engaged teams. Our aim is to describe what characterizes work engaged teams in terms of affect and motivation management. Our contribution to the literature is two-fold. First, we contribute to the literature on team engagement, by exploring what team interpersonal processes characterize highly engaged teams. Second, we take an in depth, qualitative look at team interactions, and explore what really happens in teams during teamwork. This answers Kozlowski and Chao's (2012) call for studying the dynamics of emergence in a more direct way.

11.1. Theoretical background

Team work engagement is a shared emergent state of work related well-being that mediates the relationship between a set of individual and team variables, and team effectiveness (Costa et al., 2014). Engaged teams are able to maintain their motivational levels high, and this results in a greater commitment with collective goals, and on actions focused on goal achievement (Chen & Kanfer, 2006). Plus, these teams present a positive and activated affective climate, characterized by feelings of pleasure while working and by high levels of energy. This positive and activated affective climate has been linked to performance outcomes such as innovation and creativity (Madrid, Patterson, Birdi, Leiva & Kausel, 2013) or prosocial work behavior (George & Brief, 1992), by which team members tend to help co-workers in need. Acknowledging the relevance of affect for employees' engagement, Bakker and Oerlemans (2011) have suggested that work engagement can be positioned in the circumplex model of affective well-being. This model was proposed by Russell (1980) and its basic premise is that

affective states depend on two different neurophysiological systems that determine each emotion. Contrary to the perspective of discrete emotions (e.g., Ekman, 1973), Russell's two systems are best represented as two continua (low-high): a pleasure-displeasure axis and an arousal axis. For example, feeling irritated results from a combination of a high activation and unpleasant emotions, whereas feeling content results from the opposite combination: pleasant emotions and low activation. Work engagement is represented in the upper right quadrant of the circumplex model - a highly active and pleasant state.

The relationship between TWE and team effectiveness has been supported by empirical research. For example, Torrente et al. (2012) gathered data from 62 teams in 13 organizations and identified supportive team climate, coordination, and teamwork as social resources leading to TWE that, in turn, was positively associated with team performance. Tims, Bakker, Derks and van Rhenen (2013) also found a positive association between TWE and individual performance, with a sample of 54 occupational health service teams. Hence, we have reasons to believe that engaged teams will outperform teams that are less engaged.

According to the theoretical model of TWE, its emergence within teams is dependent on the existence of successful interpersonal processes, namely conflict management, motivation building and affect management. These processes have been proposed by Marks, Mathieu and Zaccaro (2001) as relevant for team effectiveness throughout the entire span of team's life: during both action phases, when teams are actively doing tasks that are related to goal accomplishment, and during transition phases, when teams reflect on past performance and plan future action. Affective and motivational processes are used by teams to manage interpersonal relationships and, according to Marks et al., (2001), lay the foundations for the effectiveness of other processes. Teams who are successful in manage interpersonal relationships are able to prevent or control team conflict and to, when conflict does occur, work through task, process or interpersonal disagreements among members. They also can generate and preserve a sense of collective confidence and task based cohesion, while regulating members' emotions during tasks. Therefore, it is expected that work engaged teams present all of these competences. Research has also provided evidences for a positive relationship between TWE and interpersonal processes (cf. chapter VIII). However, the exact interactions that correspond to interpersonal processes are still unknown and, therefore, how engaged work teams interact is not completely understood. This paper

presents an exploratory qualitative study of highly engaged teams. Next, we present the theoretical framework that guides it.

11.1.1. Specific interactions and behaviors overtime

Many have been the proposals about which team processes are fundamental for team effectiveness (e.g., Marks et al., 2001, Kozlowski & Ilgen, 2006). However, these proposals are essentially abstract, in the sense that they do not specify the actual behaviors of team members that lead to successfully performing those processes. For example, Kozlowski and Ilgen (2006) review a set of team processes that they group in three categories: (1) cognitive processes and structures such as transactive memory systems and shared mental models, (2) emergent affective and motivational states and processes, such as cohesion, team efficacy, team affect, and team conflict, and (3) team action and behavioral processes, such as coordination, communication, and adaptation. For each, they review relevant empirical research, aiming at providing concrete advice in how to leverage team effectiveness. In what affective and motivational processes are concerned, the authors conclude often that, despite evidences that link certain "processes" with team effectiveness, "the research base to help identify techniques for enhancing group cohesion is as yet not sufficiently developed to warrant specific recommendations for how to develop these desirable emergent states" (p. 89), "However, the research base is not sufficiently well developed to provide guidance for application recommendations" (p. 93) or "Recommendations targeted at the promotion of particular types or amounts of conflict, however, await a better-developed and more rigorous research foundation" (p. 95).

This echoes a trend in research on teams that has consistently overlooked something central: what do actually team members do? What do they say? How do they say it? When do they do it? The relevance of doing so is even more pertinent when affective or motivational constructs are being studied, since their measurement is still the Achilles' heel of research on affect and emotion (Dasborough, Sinclair, Russell-Bennett & Tombs, 2008), and where objective measures are rare by nature. Plus, it calls for a qualitative research approach that is often more time consuming but allows for a more descriptive representation of reality.

One of the first proposals on categorizing team members' interaction behavior was suggested by Bales (1950). The author proposed what he named "interaction

process analysis", an interaction coding system composed of 12 categories. These 12 categories were divided in two areas: task area, divided in questions and attempted answers (e.g., asking for opinions and giving suggestions, respectively) and social-emotional area, divided in positive (e.g., showing solidarity) and negative (e.g., show tension) reactions. Later, Bales and Cohen (1977) developed the Symlog (Systematic Multiple Level Observation of Groups) system that highlights three fundamental dimensions of group interaction: dominance/submission, friendliness/unfriendliness and acceptance/non-acceptance of authority. More recent studies on what team members actually do are scarce. For example, Stachowski, Kaplan and Waller (2009) qualitatively studied the interaction of nuclear power plant control room crews during crisis, looking for patterns, regular sets of verbalizations and nonverbal actions intended for collective action (Zellmer-Bruhn, Waller, & Ancona, 2004). They recoded 14 teams doing a simulation task, and coded discrete verbal and non-verbal behaviors involving communication between two or more team members (e.g., "the unit supervisor called a focus brief at 7:10:05"), between a set of 11 behaviors (e.g., providing information, offering opinion, expressing warning, etc.). Data analysis of interaction patterns with a pattern recognition software program showed that, during crisis, teams with recurrent patterns of interaction (i.e. with a tendency to respond to one interaction almost always in the same way) performed less well than more "chaotic" ones.

Therefore, a more qualitative approach to studying team processes may bring new insights into the work of teams. Plus, studying what actually happens in teams, implies considering the temporal dynamics of teams' interaction. Adopting a temporalist approach (Roe, 2008) entails looking at human behavior as phenomenon, "or observable series of events happening to particular objects during a certain time interval" (p. 41). This positioning naturally requires adopting specific techniques such as recording video and audio tracks and analytically describing them in terms of specific variable of interest. Video data has been a used to analyze social interaction. Videotaping interactions commonly results in an overabundance of data, which leads to complicated data analyses especially when the recorded interactions are complex (Clement, 2000). Therefore, we opted for defining *a priori* categories (Ghiglione & Malton, 2005) in which to base subsequent data analysis. This study aims at describing the types of behaviors are characteristic of highly work engaged teams. On the one hand, we describe the degree of activation and valence, and the types of interpersonal processes that are more common in these teams, operationalized as specific, theory-

driven, behaviors. On the other hand, we analyze the temporal patterns of those behaviors, during a specific, decision-making task. In order to do so, we conducted an exploratory study examining both the frequency and temporal patterns of interaction patterns and behaviors. Specific hypotheses are not offered.

11.1.2. Activation and valence

Since TWE is a shared emergent state, individuals must somehow perceive the motivational and affective state of their teammates in order to be able to judge their collective level of TWE. This perception can be formed from observing how they behave non-verbally. While working, there are many non-verbal interactions that team members may display. For example, they can nod their heads signaling approval of some idea, they can point to a specific folder asking a colleague to pass it on, they can just lay back in their chairs with their arms closed. While work engagement can be described within the circumplex model of affect as a highly activated and positive state (Bakker & Oerlemans, 2011), for the present study we are interested in non-verbal behavioral communication signaling activation and emotional valence.

Bartel and Saavedra (2000) conducted an observational study focused on work group mood, in which they constructed an observation instrument also theoretically based in the representation of the individual affective state within the circumplex model of affect (Russell, 1980). After an extensive, systematic and scientific development process (the description of the process is beyond the scope of this chapter, please refer to the authors' original work) they defined three types of behavioral indicators for both dimensions: facial indicators, vocal indicators and postural indicators. High activation was defined, for example, by a lot of eye contact (facial), rapid pace of speech (vocal) and restlessness (postural). On the contrary, low activation was inferred, for example, fromexpressionless and little eye contact (facial), monotone speech (vocal) and by slow movements (postural). Positive valence, or pleasure, was operationalized, for example, by smiling (facial), a clearly audible volume of speech (vocal) and body poised to include group members (postural). Finally, negative valence, or unpleasant mood, as signaled by eyes avoiding stimuli (facial), slow speech (vocal) and head tilted downward (postural). This work was the basis for our analysis of the activation and valence behavior indicators.

11.1.3. Affective and motivational processes

The typologies of team processes that exist in the literature provide some examples of both motivational and affective team processes. For example, Marks and colleagues (2001) operationalize motivational processes as "encouraging team members to perform better (…) communicating their beliefs about team ability, competence on particular tasks, and feedback on team successes" (p. 368). However, the description of interpersonal processes is many times rather abstract. The same authors describe affective processes as "attempting to calm members down, control frustration levels, boost team morale and cohesiveness among members" (p. 369), which do not have a behavioral referent. On their proposal, Kozlowski and Ilgen (2006) mention team cohesion, team efficacy, team affect and team conflict as interpersonal processes, with no specific behaviors associated. Therefore, and for defining the categories for video analysis, we relied in our theoretical proposition, presented in chapter IV (Costa et al., 2014a), since it describes actual behaviors and is specific for team work engagement. The authors propose different specific behaviors that account for both affective and motivational interpersonal processes. In what motivational interactions are concerned, team members can highlight the successes of the team so far. This echoes Amabile and Kramer's (2011) proposal of the progress principle that states that experiencing progress is the most important booster of motivation and creativity. Team members can also validate each other's' competences or their teams' qualities, and provide positive feedback to team members, promoting a sense of collective efficacy (Bandura, 1997). Finally, and in line with Lock and Latham's (1985) goal setting theory, by which difficult goals enhance motivation, team members can establish difficult goals for their team, or exhort colleagues to work hard to get where they want to be. Affective processes include regulating affect through what Niven, Totterdell and Holman (2009) call interpersonal affect regulation strategies, namely positive engagement and acceptance. In the context of teamwork, positive engagement implies trying to change the way others think about that situation, suggesting that they will be able to succeed and giving advice on possible courses of action; pointing out the positive characteristics of the team or of specific members, following negative feedback; being available to listen to what is bothering a coworker, allowing him or her to vent his or her emotions. Acceptance includes communicating validation to the other person or using humor and jokes (Costa et al., 2014). Also, teams may engage in defining norms about the emotions that should be displayed or avoided (e.g., display rules, Rafaeli & Sutton,

1987) – for example, team members may remember others that they should not show low morale. The categories used in this study to analyze the teams' interpersonal processes were based in this proposal and are described in table 11.1.

Table 11.1. Categories used to analyze team interpersonal processes

Dimension	Categories and behavioral description of interaction	Examples and source
Motivational Processes	Highlighting small wins *Team members tell others about things in which they have been successful or more successful in comparison to other groups. This applies to tasks that have been finished (e.g., the position in the last decision, the relative position concerning specific areas, etc.)*	"We got the first place! [in the last round]" (team C) "We got 5 stars on our website!" (team B)
	Establishing difficult goals *Team members talk about difficult goals, either about the results of the competition (e.g., being fist) or about the current decision (e.g., increase the sells, decrease the stock, etc.)*	"Goals for the next decision? First place!" (team D)
	Validating competences *Team members mention characteristics of their team that may allow them to get good results, such as being fast, each one being good at a specific thing, etc. If they mention something positive that happened to the team, than it should be coded "highlight small wins"*	"This is very well thought, very well. We are very efficient!" (team A)
	Positive/constructive feedback *Team members talk about what they did right (e.g., a good idea from someone) or could improve. It refers to tasks that do cannot be measured (if so, it should be coded "highlight small wins")*	"The market had a good answer to our decision, that's what we expected" (team E)

Affective Processes	Exhort to work hard	"Ok, gentleman, let's play!" (team E)
	Members incite others to work, to get things done, to be fast.	"We have 16 minutes!" (team A)
	Positive engagement	"Look, what we could have improved, we did improve! The problem in our first moves was that we ha always too much production, and that we could already fix [trying to convince others they are doing everything they can to have a better result in this decision]" (team B)
	Try to change what others think about what they should do (e.g., suggesting they will be able to succeed) give advice. Point out positive characteristics of the team, following negative feedback.	
	Team members show availability to listen to others, for example by being quiet while others speak and looking at them.	
	Acceptance	"Yes, yes, that's it." (team C)
	Communication validation (saying that the other person is right, demonstrating agreement)	"Guys, you have all my support, weather we end up in first or last!" (team D)
	Express care/ try to make members feel special	
	Humor and jokes	
	Display Rules	"Guys, let's do our yelling, like we always do! [they hold hands and scream "WO-WO"] (team D)
	Team members mention how they should feel or what kind of emotions they should display.	

11.2. Method

11.2.1. Participants & Procedure

The participants of this study were six teams (N = 31 individuals) enrolled in a two year Executive MBA program. The average age of team members was 38.06 (SD = 4.18), 77% of participants were male, and average size was 5.19 members (SD = .40). Table 11.2 presents their degree area, type of company these students worked in and their job.

Table 11.2. Degree area, type of company and job of participants.

Degree	%	Work area	%	Job	%
Other	29	Other	25.8	Manager	51
Engeneering	25.8	Pharmaceutical	22.6	Director/President	32.3
Management	19.4	Bank/Finances	22.6	Other	16.1
Economy	12.9	Industry	9.7		
Pharmacy	6.5	Telecommunications	6.5		
Marketing	6.5	Consulting/HR	6.5		
		Public Administration	6.5		

Note. N = 31 individuals.

Participants of this MBA tend to be very motivated to succeed, as this MBA is highly recommended, and therefore were selected on the basis of the researchers' expectation that they will present high levels of engagement.

This Executive program consists in regular classes, as well as in the participation on a management simulation that goes on in the last semester of the course, provided by a company specialized in developing management simulations. In the beginning of the first year, students are randomly assigned to a team, with which they will be working for two years. During the last semester of the MBA program, those teams will manage a

virtual company within the business simulation. They all start with the same stock market share value and will have to make five strategic and management major decisions throughout the competition, each one comprising 66 micro decisions in issues such as prices of products, marketing channels, production volume, human resources practices. The final decisions must be submitted online by the team leader in a defined deadline, on the simulation's website. However, each team has the autonomy to work as they wish, to meet when, where and for as many times as they choose to, and this is not controlled by the MBA's staff nor by the management simulation company. After the final (5th) decision, they also answered an online questionnaire on their level of engagement. After submitting their decisions, they receive the respective feedback, not only about their stock market value, but also about their relative position within the remaining teams, and about more practical results (e.g., number of products in stock, turnover rate, etc.). The last decision (5th) is the only one that they must take at the university. They receive there the results from the 4th decision and, afterwards, they have 1 hour to decide and submit their decision, and after that the winner is announced at a ceremony that marks the end of their MBA. The winner will be invited participate in the national management simulation competition based on the same simulation, whose winner will represent the country in the international competition. For this study, we videotaped the teams during that hour, while discussing their decision choices, and after informed consent from every team member. The teams were left alone when deciding, and the researcher was not present in the room. We opted for a mid-shot perspective of the camera (Luff & Heath, 2012), which is a static shot with an open angle adequate to capture the activities of a small group of people, especially when they are seated. This option rests in a few advantages: a stable shot, with the cameras left in the tripod, provides access to the participants' shifting orientation and participation in social actions and supports the analysis of organization of conduct and interactions and is the less intrusive possible (Luff & Heath, 2012)

11.2.2. Measures and data analysis

Videos were coded twice, with the two different sets of categories and subcategories previously defined. Based on those *a priori* defined categories, we conducted two distinct, closed (Ghiglione & Malton, 2005) content analyses. First, we coded the videos in terms of the degree of interaction between team members, the physical distance between members, the degree of team's activation and the emotional

valence of their interaction. Each 30 seconds of each video were coded in all of these aspects, in a 4 point scale (1 – minimum degree, 4 – maximum degree), by three autonomous coders, after three sessions of training with the categories. Codes were based on the evaluation of the whole team and not on the evaluation of single members. Therefore, when members differed in their degree of activation, for example, the rule "*more than half of the members*" was used to define the coding.

Interaction was coded in a 4 point scale from 1 ("*During the last 30 seconds each member was working alone, silently and with no gesturing towards others – e.g., reading documents or using the computer*") to 4 ("*During the last 30 seconds all team members were simultaneously focused on the same task, all contributing to the discussion either verbally – e.g., expressing ideas, questioning – or non-verbally – e.g., nodding, looking in the eyes*"). Distance was coded in a 4 point scale from 1 ("*During the last 30 seconds all team members were apart, with no physical contact*") to 4 ("*During the last 30 seconds all team members were so close that physical contact was unavoidable*"). Activation and valence behavior indicators were coded in a four point scale, as described in table 11.3 and 11.4.

Table 11.3. Activation codes.

Indicators	Examples on both scale ends	
	Minumum degree	**Maximum degree**
Facial activation [Degree of visual contact with colleagues; Degree of expression, regardless of the valence]	(1) No visual contact and expressionless	(4) Visual contact with others and presenting expression more than half of the time
Vocal activation [Volume and rhythm of speech]	(1) No speech	(4) Fast pace and clearly audible volume of speech
Postural activation [Frequency and pace of body movements]	(1) Immobility	(4) Frequent rapid movements (more than half of the time)

Table 11.4. Valence codes.

Indicators	Examples on both scale ends	
	Minumum degree	**Maximum degree**
Facial valence	(1) Frown, blank stare	(4) Grin or laughing
Vocal valence	(1) Monotone, slow pace speech or uneven pitch and volume	(4) Varied inflection, regular pace audible volume
Postural valence	(1) head tilted down or body poised to excludes other members	(4) body poised to include group members, active hands during speech, or head tilted towards stimuli

Until the coding of all videos, coders met once a week to discuss together the units in which they had doubts, until an agreed-upon solution was found. This process led to around 120 coded units per video, and to around 700 coded units in total., Subsequent analyzes of these data were made by dividing each video in 10 minutes blocks (from 0 to 10 minutes, from 10 to 20 minutes and so on), and by adding the number of times each variable was coded at its maximum (4), therefore signaling moments of high activation and high valence, congruent with the theoretical model of TWE. Inter-rater reliability was assessed with a stratified sample[10] of around 20% of the total corpus, using Krippendorff's *alpha* (Hayes & Krippendorff, 2007; Krippendorff 2011) that allows for testing reliability with more than two coders. The analysis showed good reliability (Krippendorff's $\alpha = .74$).

In a second moment, the videos were coded by the first author in what the operationalization of motivational and affective processes was concerned. Since more than one discrete behavior pertaining to the categories dictionary could be present in a 30 second block, we coded each relevant discrete behavior. Only one category was

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[10]A stratified sample, with a similar percentage of each scale point (1 to 4), was used to counter the effects of the existence of rare values (in this case, 1).

allowed for coded segment, to account for they exclusivity. If a single team member repeated a specific discrete behavior within the 30 seconds following its first occurrence, it was not coded. However, if the same team member produced a different behavior or if a different team member produced the same behavior, it was coded. This process led to 269 coded segments. A second researcher then coded a randomly selected sample of 20% of the total segments, and inter-rater reliability was calculated (Krippendorff's α = .73). The total number of occurrences for each category was used for reporting the results.

Team work engagement was measured by means of an electronic questionnaire at the beginning and end of the competition (decisions 2 and 5) with nine items (Costa, Passos & Bakker, 2014b). This scale was answered by team members. Examples of the items are "When we are working on the project we feel strong and vigorous" or "We are excited about this project" (1 = *Never* to 7 = *Always*), Cronbach's α = 96.

11.3. Results

11.3.1. General results

Table 11.5 details the team composition, and presents the means and standard deviations for TWE's values. In order to statistically justify the existence of the team level construct, we calculated the index of within-group interrater agreement ($rwg_{(j)}$, James, Demaree & Wolf, 1984). Considering our sample size of 6 teams, we did not calculate Intraclass Correlations.

Table 11.5.Team composition, mean and standard deviations for TWE's values and aggregation index

Team	N	Mean Age	Sex	TWE $_{TIME\ 2}$	TWE $_{TIME\ 5}$	Rwg$_{(j)\ TIME\ 5}$
A	5	M = 36.8 (SD = 4.9)	FMMMM	5.29 (SD = 1.1)	5.71 (SD =1.21)	.63
B	5	M = 38.2 (SD = 4.1)	FFMMM	4.89 (SD = 1.9)	5.49 (SD = 1.16)	.67
C	5	M = 38.8	FMMMM	6.53	6.84	.99

				(SD = 2.9)		(SD = .35)	(SD = .23)	
D	5	M = 38.6	FMMMM		6.09	6.76	.95	
		(SD = 4.9)			(SD = .65)	(SD = .43)		
E	6	M = 39.4	FMMMMM		5.09	5.36	.86	
		(SD = 2.9)			(SD = .96)	(SD = .75)		
F	5	M = 38.4	FMMMM		5.98	6.31	.95	
		(SD = 4.8)			(SD =.56)	(SD = . 43)		
Mean	5.19	M = 38.6	M = 77%		5.6	6.1	M = .84	
		(SD = 4.1)	F = 23%		(SD = .65)	(SD = .94)	(SD = .16)	

As we can see, the mean level of TWE of these teams (6.1 in a 7 point scale) is very high, therefore supporting our assumption that the participants in this MBA program all were highly engaged with the competition, and allowing for pursuing the aim of the study.

In figure 11.1 we present the temporal evolution of the teams' ranked position in the competition. Teams A and C were the ones that, from the start, competed over the first place, whereas team B has a long period of being last. Team D is the one that has the major fall, going from third to last in two decisions.
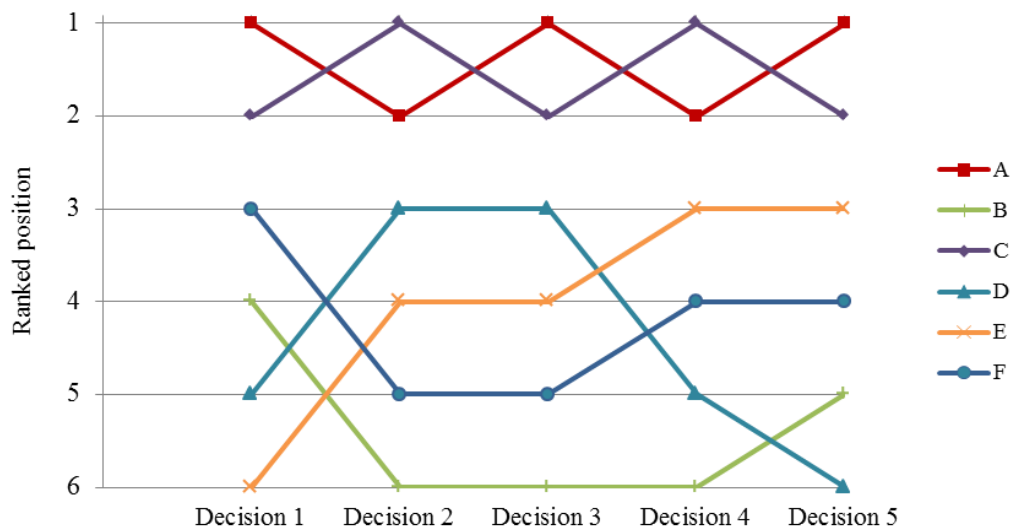

Figure 11.1. Ranked position of each team overtime.

11.3.2. Interaction and distance between team members

Most of these teams worked closed together during the whole hour (cf. figure 11.2), except teams D and C, whose members progressively move apart until around 40 minutes. These are the teams who had moved down the rank in the previous (4th decision).

In what interaction is concerned, there is clearly a transition moment for all the teams. They tend to show increasingly more interaction between them, until around the midpoint of the task (around 30/35 minutes). Also, they tend to diminish their interaction around 50 minutes, when they have to insert the decision in the computer simulator and work alone on their management report (cf. figure 11.3). Team D, who ended in the last place, shows the higher initial levels on interaction and also the more abrupt decrease, from which it does not recover. All the others show ups and downs in their members' levels of interaction.
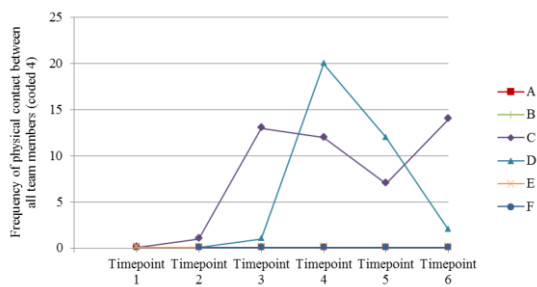

Figure 11.2.Team members' distance.

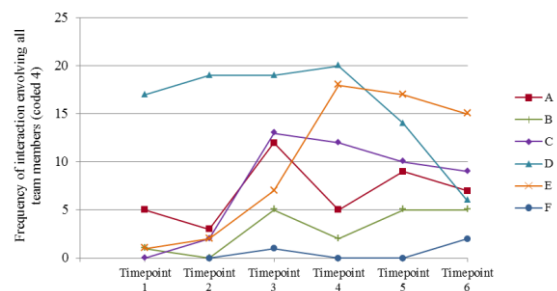
Figure 11.3.Team members' levels of interaction.

11.3.3. Activation and valence

In general, teams tend to show an initial peak of activation, followed by ups and downs that tendentiously increase overtime, with the exception of team D, which shows the highest fall, from as early as 20 minutes onwards. Team A (1st final place) stands out with higher values in the second half of the time (from around 30 minutes until the end), closely followed by team C (2nd final place).

There is no clear pattern of valence among all teams during the first 50 minutes of the decision making task, but we can globally perceived a tendentiously U-shaped evolution. Around the 50th minute, all teams show an exponential increase in their positive valence, which coincides with the time where they have submitted their decision, and therefore their task is done. Similar to what happens with the activation

values, team A, the winner, shows the higher increase of positive valence after midpoint. Team D, who lost, always shows the higher peaks throughout the whole hour, particularly in the first half of the task.
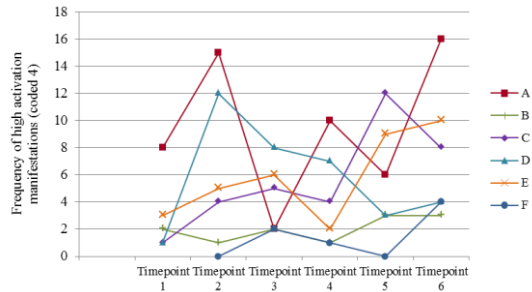

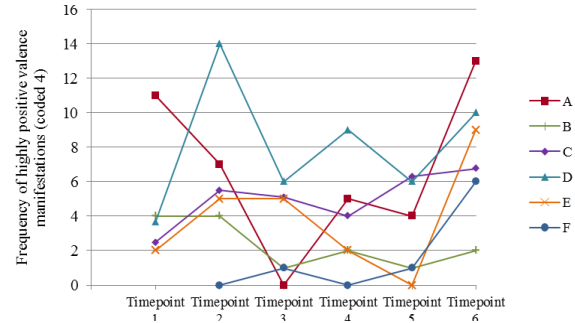Figure 11.4. Levels of activation of each team over time

Figure 11.5. Levels of valence of each team over time

11.3.4. Motivational and affective team processes

In table 11.5 we present the absolute frequencies of each process, for each team and in total., Taken together, affective processes are generally more present in these teams than motivational ones (cf. figure 11.6), except in teams B and E, where the prevalence of both is similar. From the previously defined processes, four of them were clearly salient in all six teams: two affective (positive engagement and acceptance) and two motivational (highlighting small wins and positive feedback) (cf. figure 11.7).

Table 11.6 .Absolute and relative frequency of each team interpersonal process, within each team.

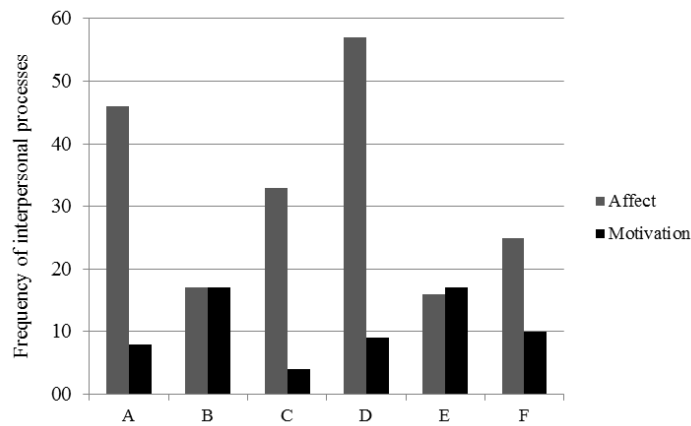|	Motivational												Affective				Total
Team	Highlighting wins	% team	Difficult goals	% team	Validating competences	% team	Positive feedback	% team	Inciting to work hard	% team	Positive engagement	% team	Acceptance	% team	Display rules	% team	
A	1	*1.9*	.	.	2	*3.7*	5	*9.3*	.	.	16	*30*	30	*56*	.	.	54
B	11	*25*	.	.	.	.	8	*18.2*	2	*4.5*	8	*18.2*	15	*34.1*	.	.	44
C	2	*5.3*	.	.	.	.	1	*2.6*	1	*2.6*	13	*34.2*	21	*55.3*	.	.	38
D	3	*4.5*	1	*1.5*	.	.	5	*7.6*	.	.	11	*16.7*	45	*68.2*	1	1.5	66
E	9	*28.1*	1	*3.1*	1	*3.1*	2	*6.3*	2	*6.3*	6	*18.8*	11	*34.4*	.	.	32
F	3	*8.6*	.	.	1	*2.9*	6	*17.1*	.	.	9	*25.7*	16	*45.7*	.	.	35
Total	29	-	2	-	4	-	27	-	5	-	63	-	138	-	1	-	269
% Total	**10.78**	-	**0.74**	-	**1.48**	-	**10.03**	-	**1.85**	-	**23.42**	-	**51.30**	-	**0.37**	-	**100**

Figure 11.6.Frequency of affective and motivational interpersonal processes in each team.

Acceptance is the process that is most observed in all teams, except in one (E), and generally is followed by positive engagement, with the exception of team E and team B. The two teams who consistently had the best results throughout the competition (A and C) present a similar pattern: high levels of acceptance, followed by high levels of positive engagement, both of these processes clearly departed from others. Team A's values on the affective processes are higher than any other team, with exception of team D's distinctively high level of acceptance. Team D was the one who eventually lost the competition, and is characterized by a lot of humorous comments and jokes throughout the whole hour.
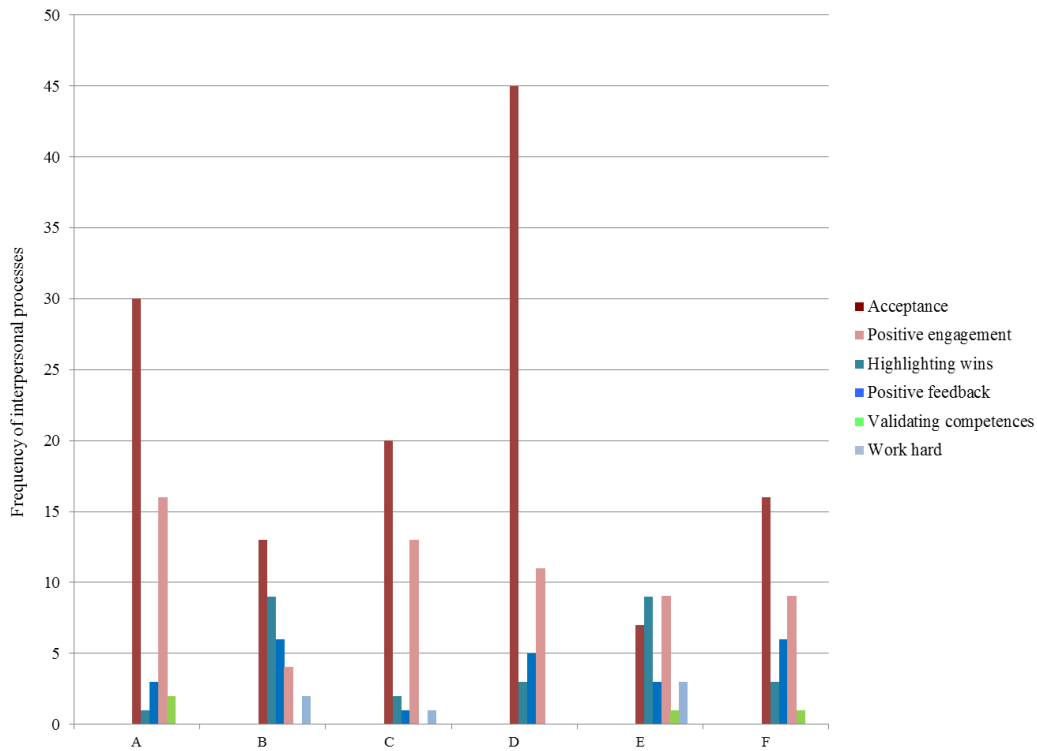
Figure 11.7.Frequency of each type of interpersonal process for each team.

We then looked for a temporal pattern in terms of the frequency of the most observed processes overtime (cf. figures 11.8 to 11.11). Highlighting small wins tends to occur more during the first minutes of the task and positive feedback presents an iterative pattern – with peaks every 20 minutes. Affective processes appear to have a less defined trajectory overtime, with positive engagement tendentially decreasing, exept for team C, which presents a peak at arround 50 minutes.
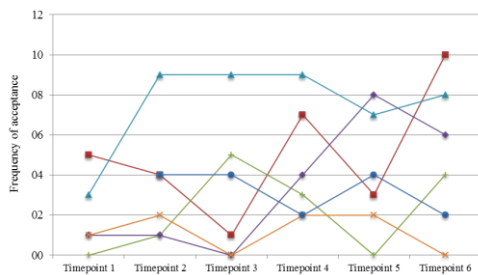

Figure 11.8. Frequency of acceptance in each team over time.
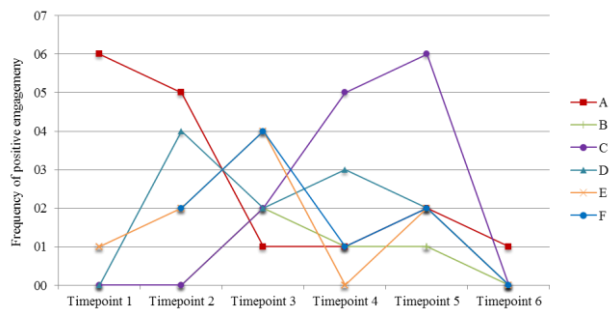

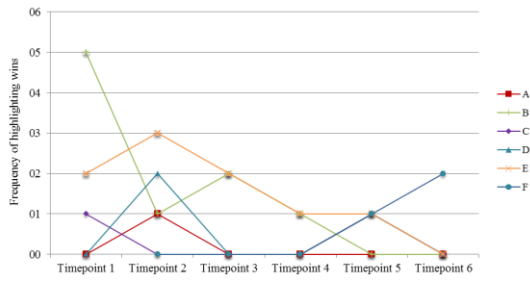Figure 11.9. Frequency of positive engagement processes in each team over time

Figure 11.10. Frequency of highlighting wins in each team over time.
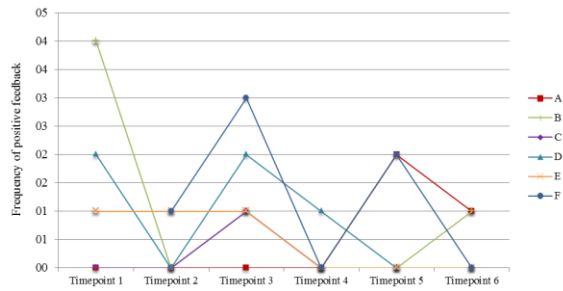

Figure 11.11. Frequency positive feedback in each team over time.

Table 11.7 presents a summary of the main results, per team.

Table 11.7. Summary of the main results, per team.

	Team A	Team B	Team C	Team D	Team E	Team F
Final rank	1st	5th	2nd	6th	3rd	4th
Interaction pattern	Increasing interaction until the midpoint, followed by slow steady decrease	Increasing interaction until the midpoint, followed by a decrease	Increasing interaction until the midpoint, followed by slow steady decrease	Very high initial level, flowed by abrupt continuous decrease	Increasing interaction until the midpoint, followed by slow decrease	More stable pattern with small increase in the final time point.
Members distance	Always close	Always close	Progressively apart	Progressively apart until the midpoint, and progressively approaching each other	Always close	Always close
Activation pattern	Early initial peak followed by ups and downs	Late initial peak followed by ups and downs	Initial increase followed by ups and downs	Early initial peak followed steady decrease	Initial increase followed by ups and downs	Late initial peak followed by ups and downs
	High values in the second half		High values in the second half			
Valence pattern	Tendentiously U-shaped	Tendentiously U-shaped	Tendentiously U-shaped	Tendentiously U-shaped, but always within high values; high peaks	Tendentiously U-shaped	Tendentiously U-shaped
Motivational and affective processes	Clear prevalence of affective over motivational processes	No clear salience of particular types of processes	Clear prevalence of affective over motivational processes	Extremely high frequency of "acceptance"	No clear salience of particular types of processes	Slight prevalence of affective over motivational processes

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11.4. Discussion

One of the major goals of this study was to describe the types of interaction (both verbal and non-verbal) that are present in highly engaged teams. This ambitious goal is still open for further developments and a definitive answer cannot be put forward at the moment with our results. So far, it looks that high engaged teams seem to work physically close to each other and have an increment on their interactions up until the task's temporal midpoint, followed by a slow steady decrease or by a decreased followed by a small increase over the second half of the task. They have an initial peak/increase of activation followed by irregular ups and downs in activation, and an U-shaped temporal evolution of their emotional valence (with more positive emotional valence in the first and last moments). The most interpersonal processes used are affective, namely acceptance and positive engagement; and the most motivational processes include recursive positive feedback and highlighting the teams' wins in the first moments of the task.

One aspect that protrudes from our study is a more fine grained relationship between TWE and team performance. Considering teams with high levels of engagement that are competing against each other, how they interact can not only influence their levels of engagement but also have an impact on their objective performance. In the present study, we can identify specific changes in the above described patterns that characterized both the teams with better performance and the team that ended up in last place. High performing teams show higher activation levels in the second half of the teams' task, as well as higher levels of affective processes over motivational ones. The worst performing team in the group has the highest initial interaction levels followed by an abrupt decrease both in their levels of interaction and in their levels of activation. Simultaneously, they present higher peaks of positive emotional valence and an outstanding frequency of "acceptance". These results suggest that, although engaged teams are essentially characterized by the presence of positive interactions, it is fundamental to alternate more "exited" and fun moments with more task focused ones, and collective interaction moments with individual work. This dynamic changes from one mode to the other seems to allow to keep a functional balance between socio-emotional and task areas (Bales, 1950; Bales & Cohen, 1977).

Our results also echo the work of Gersick and Hackman (1990) and, more recently, of Knight (2013). According Gersick and Hackman (1990), temporal milestones are very important moments for teams, since it is during these moments that

teams can break free of inertial patterns and change their amount of focus in exploratory search, such as experimenting with new ideas or approaches to their tasks. Building on these ideas, Knight (2013) suggests that performance will be higher when this exploratory search is done at the initial stages, declining in the second half of the task. This is precisely what happens with our teams in what their levels of interaction, as well as the initial activation peak are concerned. Plus, the author argues that positive mood in the beginning of the teams' life stimulates this exploratory search (the start of the U shaped "valence" curve), since a task-focused motivational frame is likely to be salient: individuals are still unconcerned about evaluation or performance and want to enjoy and to make the most to improve their work. However, at the midpoint, when teams must heighten their focus on performance to comply with the deadline, the existence of team positive mood signals that there is no need for further exploratory search and that they have reached a desirable level of performance (e.g., mood-as-information theory, e.g., Schwarz's 2012). Simultaneously, the existence of negative mood signals that they are still far from their goals and, then it leads teams to persist in that exploratory search. In our specific case, the high peaks of positive affective interactions in team D overlap with this teams' abrupt decrease in interaction and activation in the second half of its life – therefore not allowing for further exploring of possible courses of action and, possibly, preventing them from reaching better solutions. Other teams, with their U-shaped valence pattern, reach a kind of an affective "valley", signaling that they should increase their activity in order to reach their goals. Indeed, the first and second-placed teams are the ones who exhibit a higher increase in activation after their midpoint.

The empirical work by Bledow, Schmitt, Frese, and Kuhnel (2011) may bring another useful input to this discussion, since it focuses in the engagement construct. With a sample of 55 software developers, the authors found support for their affective shift model of work engagement, which states that work engagement (in their study, at the individual level) results from a dynamic interplay of positive and negative affect. More specifically, they found that work engagement in the afternoon was positively related to negative mood and events experienced earlier in the day as long as there had been high positive mood in the interval between morning and afternoon. Their findings highlight the relevance of affect management for engagement, particularly the motivating potential of negative affect that subsequently lead to a shift to positive affect (the final end of our U-shaped valence curve). Teams who fail to convert TWE into

objective performance gains can be missing the importance of the existence of less positive moments, and therefore can be "too happy" while lacking the necessary task focused energy. Hence, teams who are unable to "walk without rhythm", alternating the valence and activation of their interactions and of their work, may "attract the worm" (Herbert, 1965) of low performance. Therefore, the theoretical model of TWE (Costa et al., 2014) is supported, in what the relevance of interpersonal processes for the emergence of TWE is concerned. However, the relevance of each specific process is likely to be different, considering the phase of teamwork at steak.

A final note is needed at this point. Notwithstanding the potential of this study, considering the small sample size and its exploratory nature, these considerations must be perceived with caution and further research is needed to support their adequacy.

11.4.1. Contributions and limitations

The major contribution of the paper is its qualitative nature in the study of team interpersonal processes. The quality of this qualitative study is first of all given by the inter-rater reliability indexes (Kirpenddorf, 1980). Plus, and flowing Gaskell and Bauer's (2000) guidelines, we provide the complete categories' list, with definitions and examples (with the respective source, as well as its context, when necessary), as well as the detailed description of the data collection and analysis processes. This answers to concerns about the transparency and sistemacity criteria of quality of qualitative studies, as argued by Meyrick (2006).

The main limitation of this study is the small sample size. This limitation does not allow for generalizing the findings to other populations or contexts, and prevented us from more complex quantitative data analysis (e.g., modeling change overtime). However, this study adds to the literature in three ways: first, we have provided an empirical, qualitative description of the specific behaviors of team members during affective and motivational team processes, which is not commonly seen, contributing to the literature on teamwork; second, we have depicted teams' levels of interaction, activation and emotional valence overtime, highlighting its role in a task with a clear temporal deadline, contributing to the literature on teams life span and related activities; third, we have done so with highly work engaged teams, therefore contributing to understanding the emergence of TWE.

The second limitation of the study is that it leaves out another interpersonal process from the taxonomy of Marks et al. (2001): conflict management. The reason for

this is that analyzing which type of conflict management strategy used (e.g., avoidance, compromise, accommodation, competition and collaboration, Blake & Mouton, 1964; Rahim & Bonoma, 1979) would imply defining different temporal limits for each unit of analysis, since those strategies are not comprised in a single sentence. Therefore, and considering we already had two distinct code systems, we opted to leave conflict management out of the present study. However, it is a relevant process that should also be qualitatively analyzed, in order to better understand how it can be operationalized in terms of concrete behavior and interactions.

Finally, we did not analyze the degree of homogeneity of team members' behavior. Our analysis concerns the team as a whole, and leaved behind the possibility of considering eventual dominant members, or subgroups. This is an interesting line for future research.

Looking into the black box of team processes is still at an embryonic state. We look forward to seeing it grow and for the implications it can bring to our understanding of team effectiveness.

CHAPTER XII.

GENERAL DISCUSSION

12. GENERAL DISCUSSION

Working in teams is, in itself, a challenge for both team members and team leaders alike. When working with others, individuals must not only ensure that their own, individual work, gets done within the expected deadlines and with a certain degree of quality, but also that they are able to, collectively, achieve their objectives. Further, in addition to managing individual levels of satisfaction and motivations, team members need to interact with others. This interaction entails being able to communicate adequately, to argue when disagreements arise, to negotiate concessions, while ensuring that the affective climate of the group does not obstruct members' ability to work effectively. All of these skills go way beyond individual, task-related abilities. Moreover, team leaders are faced with the challenge of bringing out the best in each team creating an optimum environment for those interactions to take place, as well as maintaining high levels of collective involvement and energy. Doing so goes beyond adding individual needs and expectations and responding accordingly, because teams engage in specific dynamic interactions that are more than the sum of its individuals' actions.

The study of work teams is still incomplete especially in what team members' cycles of interaction responsible for creating patterns and emergent states is concerned. Moreover, studying team-level constructs is often equated with merely aggregating individual-level data and statistically justifying it. However, doing so is not only methodologically and theoretically fallacious, but also prevents researchers from understanding the specificities of team work, from studying those interaction patterns and, consequently, from being able to provide concrete guidelines for team members and team managers in their pursuit of effectiveness.

In this thesis, we aimed at contributing to fill this gap. We departed from the individual-level construct of work engagement, known for explaining individual performance and well-being, and set out to conceptualize engagement at the team level. More specifically, we aimed at understanding how a positive and activated emergent state – team work engagement – can be promoted, as well as its consequences for teams' effectiveness. All of the work is framed within the literature on emergence (e.g., Kozlowski & Chan, 2012), in which interaction processes are pivotal. Within those interaction processes, our focus falls in affectively charged interactions, which tends to be slightly overlooked when studying team effectiveness. In the following sections, we

outline the main contributions of this thesis, from the more abstract and theoretical to the more practical contributions.

12.1. Conceptualizing collective constructs

The first main contribution of this work concerns a theoretical reflection upon the conceptualization of collective constructs. Klein, Dansereau and Hall (2004) argue that "by their very nature, organizations are multilevel [and] no construct is level-free" (p. 198). It is assumed that organizations are complex networks of nested social systems that allow for the emergence of relevant constructs at different levels that justify the advancements of multi-level organizational research on the last 10 to 15 years (e.g., Lichtenstein et al., 2006; Molloy, Ployhart & Wright, 2010). For example, many authors conceptualize collective efficacy as an emergent group-level attribute rather than the sum of member's perceived personal self-efficacies (Bandura, 1997; Goddard, Hoy & Hoy, 2004; Gibson, 1999; Gibson, Randel & Earley, 2000). It is thus assumed that self and collective efficacy originates from the same resources (mastery experience, vicarious experience, social persuasion and affective states), operate through similar processes, and serve similar functions. Thus, collective efficacy is rooted in self-efficacy. Indeed it is not likely that a group mainly composed of individuals with low self-efficacy will be a group with a high shared believe in their collective capability for goal attainment. We applied a similar reasoning to the conceptualization of TWE.

Following Morgenson and Hofmann (1999), when developing a construct at the collective level, we can distinguish between its structure and its function. The collective construct's structure relates to the emergence of recurrent, jointly produced behavior patterns that act both as a product and a constraint of individual action and interactions among individuals. Individual action can be considered the most elementary level of analysis when reflecting on social systems. Let's think about a given work team. We may say that a team is responsible, and we say it because of the observable outputs it produces: for example, the team never misses a deadline, team members answer every e-mail they get from clients or supervisors, they endorse a response within 24 hour compromise with clients, etc. Nonetheless, the building blocks for labelling a team as responsible are the individual actions of its members. It is not the team, as an anthropomorphic somehow invisible entity, that writes the e-mails or decides on the response delay, it is one or more individuals. Let's imagine the idea for a response within 24 hours compromise came from a team meeting, where individuals proposed

and agreed upon that service level agreement. If the event cycles between members are composed by individual behaviors that reinforce the team's responsibility (one member tells another to write an email, a newcomer is socialized by the team to always respect deadlines, modelling behavior from certain members, Bandura, 1997), then that collective construct emerges and transcends the individuals who constitute the collective. It is the team that is responsible, not Paul, John or Alice. This last example illustrates how the collective construct is shaped by individual action: but also how it has the potential to shape subsequent individual action, in other words, to act as a constraint of each member's action. From repeated interaction patterns, collectives and teams form behavioral norms that will (explicitly or implicitly) influence what each individual member does or does not do. When team member socialize newcomers about the importance of deadlines, they are shaping his or her behavior in order to align it with their way of functioning (van Maanen & Schein, 1979). In this sense, the structure of a collective construct has to do with *how* the construct emerges within a group of people, the individual actions and cycles of interaction responsible for creating a shared pattern of behavior: "it is not the collective construct, per se, that determines the behavior of individuals – rather, it is the individuals (or collective) who determine the collective construct and, through their actions influence the behavior of others in the collective" (Morgeson & Hofmann, 1999, p. 253).

On the other hand, the function of a construct is about its outcome, or the causal effects of the construct that are thought to remain the same across levels. This means that, in multilevel research, although one construct at different levels of analysis may have a different structure, it has the same outcome. Let's think about the construct of ability, for example. Functionally, ability at the individual or at the team level is related to the proper reception, processing and responding to information from the environment. However, individual ability's structure is about schemes, cognitive and behavioral factors, whereas team's ability's structure is composed of not only those factors but also of interactions among team members (Hofmann, 2004).

Therefore, constructs at different levels may share a certain number of similarities at the functional level (constructs that lead to the same outcomes), but are not similar in the underlying structure. Thus, across levels, the constructs may manifest themselves in distinct manners and discussing them at these different levels implies only similarities in their function/outcome: they need to be functionally equivalent but

do not need to be structurally equivalent, since the structure of these constructs has to do with explaining how they emerge without a lower-level analogue.

Our work reflects these theoretical underpinnings, by considering that engagement, at the team and individual level has an equivalent function (fostering individuals' and teams' performance and effectiveness) but a different structure between levels. The idea that the same construct, between levels, is functionally equivalent but not structurally equivalent is at the core of this thesis. This is the first key principle that explicitly guided our subsequent theoretical and empirical work. We believe that this is one of the major contributions of this reflection, since an in-depth theoretical consideration of the structural differences between levels is often missing from empirical work. As such, focused on the need to specify the type of collective construct we were working with, which impacts its measurement methods.

We based the conceptualization of TWE on the work of Klein et al., (1994) and of Kozlowsky and Klein's (2000). Klein and colleagues (1994) state that when specifying the level of the theory, the researcher is implicitly or explicitly stating his or her understanding of the degree of construct-related homogeneity of the collective members. *Homogeneity* of a group implies that the members are sufficiently similar in what concerns the construct being reflected upon. Thus, the construct relates to the group as a whole. When *independence* is predicted, researchers believe that group members have different values in the operationalization of the construct of interest and that, therefore, are independent of group influence regarding that construct. Lastly, if the group is considered *heterogeneous*, a comparative process is at the centre of the conceptualization – individuals vary within the group in their single values regarding the group's average of the values of a given attribute of interest and rankings can be established. These theories are often cross-level theories.

We believe that this distinction is related to Kozlowsky and Klein's (2000) distinction among constructs that are meaningful across/within different levels of analysis. These authors propose three types of collective constructs with different implications in measurement, discussed below. A *global construct's* origin is at a higher level of analysis and, thus, it has no analogue at a lower level. It is a single-level, objective and descriptive phenomenon that does not depend on member's individual perceptions or attributes (e.g., number of group members). Also, global constructs are independent of individual behavior or interactions between members. *Shared constructs* arise from the lower level and are manifested at the higher-level. They only exist when

the individuals of the collective (people in a group, groups in an organization, etc.) share similar perceptions. These constructs describe characteristics common to the members of the collective and emerge through composition (Kozlowsky & Klein, 2000) because the type and amount of individual-level phenomena are similar for all unit members. Constructs such as collective efficacy (Bandura, 1997) and organizational climate (James & Jones, 1974) have a history of being conceptualized as shared constructs. *Configural constructs* also arise from the lower-level attributes as do the shared constructs, but are not defined by homogeneity of perceptions. They capture the pattern of individual-level phenomena within the collective: such as football players have different roles within a team and contribute differently to the end result, when we think of configural constructs individual actions/perceptions combine in a complex and non-linear way to form the aggregate property (Hofmann, 2004). This has been the paradigm in diversity research, where measurement issues are usually framed as a within-unit variability.

The discussion about weather some collective constructs are shared or configural is a current discussion amongst researchers (e.g., González-Romá, et al., 2002; Quigley, Tekleab & Tesluk, 2007; Kozlowski & Chao, 2012). The difference between shared and configural constructs was at the heart of the theoretical definition and choices in conceptualizing TWE. We positioned it as a shared construct, and this theoretical choice had important implications for the measurement and analysis of the construct, namely for the articulation of the nature of the aggregated construct.

Indeed, we wanted to reflect this theoretical choice in the measurement instrument of TWE. More than merely changing the referent of the items (from "I" to We") it was fundamental to justify all of the aspects of the new items. We considered that items' enunciation ought to reflect two important aspects: (1) a *certainty attitude* and not a probability or a possibility one, since what was at stake was the measurement a property of the team that represent members attitudes, values, cognitions and motivations; and (2) a *collective positioning* rather than a subjective individual judgment, because this collective positioning is a touchstone of the differences in structure between individual and collective constructs.

For the first condition to be met, we reflected on the modality values of an utterance, since they match the various different attitudes that the speaker may convey about the propositional content that is expressed in that sentence (Lyons, 1977). Within this domain, it is the epistemic values that reflect the degree to which the speaker

commits him or herself to what is being said, from a total compromise to the truth of the proposition (value of certainty) to values of probability and/or possibility. These three possible values represent a continuum in the epistemic scale. Linguistics tells us that, to express an epistemic value of certainty, one uses simple declarative sentences such as "John is tall". These kind of sentences can be interpreted as "It is true/certain that John is tall" or, in other words, as a fact ("I know for a fact that John is tall."). They convey a categorical assertion in which the speaker assumes a total compromise with the truth (or falsity) of what is being said. This kind of utterance is different from the ones that use varying resources to express other modal epistemic values: modal verbs such as can, may, should, must[11] ("Teresa may be coming tonight"; "The spoon should be in that drawer."); adverbial expressions (probably, maybe, possibly, etc.) and some adjectives. These are all means to transmit a reduced degree of compromise with what is being stated: when one says "Teresa may come tonight", he or she is assuming that it is only possible that she will come. The same thing happens when one says "It is likely [but not sure] that we will arrive before 11.": the value conveyed here is one of possibility, but the speaker does not guarantee that he or she will actually arrive before 11. Another possible way to inscribe a modal value in an utterance is to use verbs such as "knowing" or "believing" that also reflect the speaker's attitude towards the proposition expressed.. Therefore, when one says "I believe my boss is fair", he or she assumes that the content of what is being said is *true for him or her*, but also acknowledges that *others may have a different view or evaluation of the same thing*. These considerations were the basis for developing and adapting our measure (cf. appendix), which we intended to justify theoretically, from a shared construct emergence standpoint.

These reflections on conceptualizing and measuring collective constructs guaranteed our proposal a strong theoretical and epistemic background. The more specific theoretical and empirical contributions of our work are summarized next.

12.2 Main theoretical and empirical implications

In table 12.1 we resume the information on table 5.1 (research questions and methodology of each study presented), adding the main theoretical, empirical and

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[11] The verb "to think" is more complex and there is not a strong linguistic theorizing of it. Therefore, we exclude it from our own reflection.

practical implications of each study. This thesis has four main theoretical and empirical implications that will be briefly discuss next.

First, the theoretical proposal and the first study define TWE as a valid, independent construct with its respective measurement instrument. This is the core theoretical contribution of the work since it presents a new theoretical model with testable propositions that can guide future research in the area. This theoretical proposal brings together the IMOI models of team effectiveness (Ilgen et al., 2005) and a temporally based framework and taxonomy of team processes (Marks et al., 2001), within the conceptual space of the dynamics of construct emergence (Kozlowski & Chao, 2012). To our knowledge, no collective construct, derived from an existing individual level one, has been conceptualized in this way before. TWE is defined as a shared emergent state – it corresponds to a common perception held by team members about their teams' level of engagement, and "comes to life" as dependent on the interactions among co-workers. Answering to the need to consider temporal dynamics when analyzing organizational phenomena (e.g., Harrison, Mohammed, MGrath, Florey & Vanderstoep, 2006), the theoretical proposal highlights the recursiveness of the model, where the outputs of one performance episode become subsequent inputs for teams. Also, the reciprocal influence of team processes and team emergent states is not overlooked.

The importance of the first two papers presented in this work lies beyond the setting of the stage for the subsequent studies. They legitimate the collective construct as distinct from the individual-level work engagement, therefore guaranteeing that "entities are not to be multiplied unless necessary" (Le, Schmidt, Harter, & Lauver, 2010). Construct redundancy is one of the most important concerns that should be considered when exploring an existing construct at a different level, especially when no attention is paid to the new construct's theoretical framework and to the logic beyond its aggregation to a higher level. One of the most relevant outcomes of the first empirical study is the finding of a single factor structure of TWE, contrasting to the three-factor structure found at the individual level. This finding points to a significant distinction between levels, where at the collective level the three theoretical dimensions – vigor, dedication and absorption – collapse into a single, broad, engagement dimension. This suggests that perception of a collective state is less sensitive to fine distinctions between components that are more affective (dedication), cognitive (absorption) or behavioral/energetic (vigor), which can be explained by the salience and centrality of

behavioral demonstrations of team members for the construction of a shared vision. Whereas individual states can remain, to an extent, "private" (i.e. individuals can chose not to demonstrate them directly), collective ones are precisely born from behavioral interactions, and are necessarily "public" in their origin. This led us to pursue the exploration of the most behavioral theoretical antecedents of TWE, interpersonal processes. Adding to these implications, our work also highlights the relevance of considering team-level variables for understanding team effectiveness. In Study 4, we found that team work engagement has a "protective" role in what perceptions team viability are concerned, when individual-level affective states are less positive.

The second main implication of this thesis is the fundamental role of interpersonal team processes involving affective and motivational interactions, for a collective emergent state of energy and involvement. Following the previous papers, studies 2 and 3 (chapters VIII and IX, respectively), explored the advanced theoretical propositions that relate to the role of those processes. Study 2 was aimed at validating the theoretical model, with a solid statistical procedure – structural equation modeling. This validation was made using self-report evaluation on those team processes, which limits our understanding of how exactly those processes are manifested. Notwithstanding, one of the central theoretical propositions of the model was supported, supporting the relevance of interaction for the emergence of TWE.

Study 3, using a real world sample, aimed at looking at one of those interpersonal processes – conflict management – in more detail. However, and due to the lack of validated empirical work on conflict management, we analyzed the existence (or absence) of conflict and not the specific interactions aimed at managing that eventual conflict. Nonetheless, the perception of conflict, by definition, implies the perception of conflicted interactions and, therefore, can be argued as signaling an interpersonal team process. One of the most important aspects of this particular study is the contextual influence attributed to both relational and task conflict, by modelling them as moderators of the relationships between team resources and TWE, and between TWE and team effectiveness. This conceptualization speaks to the dynamics of emergence discussion, by assuming that contextual variables are the ground from which certain cognitive, affective and motivational states emerge. This moves the discussion on emergence from a logic of cause-effect (i.e. certain input variables lead to certain outcomes) and towards a logic of "conditions" (Hackman 2012) under which teams fade or flourish. Further, considering two types of team outcomes (more proximal emergent

states such as TWE, and more distal ones, such as team performance) highlights the need for a contextual and dynamic approach to teamwork and management of teams: using the same type of approach in distinct time moments can backfire and have detrimental effects either in the final team performance or in intermediate states such as TWE. Therefore, something that may be considered negative for the momentary affective valence of teams (e.g., task conflict), can have a positive effect when their objective performance in the long run is considered.

This result led us to start questioning whether there is a "limit" to the benefits of merely positive affective states (such as TWE) in the context of teamwork. As such, the third main implication of this work is the warning to conditionally interpret some of the tenants of the positive psychology movement, namely in what the benefits of positive affective states are concerned. Considering the findings of study 5, it is likely that teams (regardless their level of engagement) who struggle with negative performance feedback engage in extra demonstrations of positive states and of activation levels as a compensation mechanism. This strategy is not likely to be sustained for extended periods of time, particularly when teams face temporal deadlines and will have to, therefore, be confronted with their actual performance. However, while "in use", that strategy may create an illusory perception that "we are fine", confirmed by a general positive affective climate, and thus prevent teams from dedicating an extra focus to their tasks. Moreover, the need to display positively charged behavior can also preclude the existence of more negative states with positive consequences for performance, such as task conflict. When negative interactions can be perceived as a threat to a team already experiencing difficulties, managing affect by only promoting positive demonstrations may not prove adequate for fostering suitable behaviors directed at actual actions and work. Rather, these behaviors can act as distractions form the work itself (during action phases) or for analyzing what is not properly functioning (during transition phases).

The last main implication of this thesis is that it takes the research on team interaction one step forward by qualitatively analyzing interactions, in study 5. This study is greatly exploratory in nature, since, to our knowledge, there is no specific operationalization of team processes.

Table 12.1. Research Questions, Design, Theoretical, Empirical and Practical Implications

Studies	Research Questions	Design	Main Theoretical and Empirical Implications	Main Methodological and Practical Implications
Theoretical proposal	Does work engagement exist at the team level?	Integrative literature review	- Consideration of the teamwork models, namely IMOI models, for framing the construct of work engagement at the team level. - Consideration of team interpersonal processes as central for TWE - Inclusion of the theoretical discussion on emergence for the reasoning on the team-level construct	- Presentation of a theoretical model and of eight testable propositions - Measurement instruments for TWE must consider its shared and emergent nature and, therefore, be formulated with a referent-shift - Data should be collected at the individual level and treated at the team level by means of composition
Study 1	Is TWE a distinct construct from individual work engagement?	Scale validation; Confirmatory Factor Analysis	- Empirical distinction of individual and team-level work engagement - Empirically distinction of TWE from neighboring constructs: group potency, collective efficacy, cohesion, job satisfaction, identification with the team and team viability - TWE is defined by 1 factor	- Importance of having specific, team-referent measures when studying team-level constructs - Promoting motivation and well-being in individuals within teams calls for different actions than motivating isolated employees

Study 2	How does TWE emerge within teams? What is TWE's relationship with team effectiveness?	Structural Equation Modeling	- Structural Equation Modeling of the theoretical TWE model and support for that model - Interpersonal processes as predictors or TWE - TWE is positively related both to team viability and to the team's performance	- How team members interact during task work is central for their levels of engagement - Specifically, being able to manage conflict, to build collective confidence and to create a positive affective climate are positively related to having energetic and involved teams, who are able to better perform, and who are willing to continue working together in the future.
Study 3	How do conflicted interactions influence TWE?	Correlational study; Moderation analysis	- Real-world sample of research teams - Modelling of conflict as a moderator and not as a mediator, the more traditional approach, therefore considering its contextual significance - Considering both proximal and distal outcomes of conflict in teams - Different types of conflict have different influences in distinct phases of teams' work	- Relationship conflict, as a hindrance, should always be avoided as a way to promote positive emergent team states - Once engaged, teams are better able to swerve the negative consequences of relationship conflict and to stay focused in their tasks - Conflicted relationships are a more detrimental context when TWE is emerging, whereas discussing ideas positively impacts the transformation of the teams' energy and enthusiasm into objective performance.

Study 4	Do TWE and individual positive states interact in predicting team viability?	Multilevel analysis	- Team viability considered as an evidence of team effectiveness - Analyzes of individual and team level constructs, contributing to our understanding of the dynamics between levels - Individual and team level affective constructs' consequences for team effectiveness may not be exclusively cumulative	- Collective positive affective states are specially important when individuals experience adverse and negative events (e.g., conflicts, problems with clients or suppliers, personal issues)
Study 5	What are the specific interactions between team members that occur in highly engaged teams?	Qualitative video data analysis	- Qualitative study of team processes, using video analysis - Development of a coding system for team interaction, considering non-verbal indicators and specific operationalization of team affective and motivational processes - Identifying common interaction patterns among highly engaged teams	- Highly engaged teams alternate their levels of activation and valence overtime, showing lower levels of interaction when approaching the deadline - Affect management interactions are more frequent in highly engaged teams than motivational ones, especially in what showing acceptance and positively engaging co-workers is concerned. - Too much positive interactions do not translate in increased performance: there are possible detrimental effects of "too much" positive affective states for team effectiveness: energy is not so much translated into task related activities, but instead is mostly used to create a fun environment or in making humorous comments

Therefore, the developed categories are, by themselves, a theoretical contribution to the study of team processes. These categories should be further explored and validated in future studies with different samples and contexts.

12.3. Practical Implications

The practical implications of this thesis are mostly directed at team leaders, whether participant members of the team or having a more external coordination and management role. Moreover, they should be of interest to human resources management systems, in what certain practices of human resources development are concerned. We will highlight three main practical considerations.

First, managing and leading team requires more than managing a set on different individuals if one is to take advantage of the increased potential of teamwork over individual work. Bar-Tal (1990) argues that group members share common beliefs, which they are aware they share and that are considered as defining their groupness. One of these, the fundamental group belief is the belief that "we are a group". The existence of such group beliefs provides the cognitive basis for members to conceive the group as one entity and, consequently, for group identification, cohesion, boundary establishment and, we add, TWE. Social identity theory (e.g., Tajfel & Turner, 1979), a pivotal theory on the field of social psychology, states that a part of individual self-concept is deeply related to the belongingness to the group. Individuals will, then, try to protect and enhance their self-image and self-esteem, by striving for a positive differentiation of their group when compared to other relevant groups (Tajfel & Turner, 1986). Identification with a psychological group is then defined as a "feeling of oneness with the defined aggregate of persons, involving the perceived experience of its successes and failures. It often involves the perception of shared prototypical characteristics, virtues, and flaws." (Mael & Tetrick, 1992, p. 814). When individuals identify themselves with a given group, his or hers attitudes and behaviors will be governed by the group membership (van Dick, 2004): they tend to perceive themselves to be more similar to other group members (e.g., Mackie, 1986), to conform both in behavior and attitudes within group members (e.g., Terry & Hogg, 1996; Wilder & Shapiro, 1984), and to feel a stronger need to agree with group opinion (e.g., Deutsch & Gerard, 1955; Mackie, Gastardo-Cnaco & Skelly, 1992). In what the work group is concerned, identification has consequences for both the workgroup/organization and the individual. Group identification is related to an increase in positive outcomes such as

greater performance, commitment to the group, cohesion, altruism, positive evaluations of the group, and extra-role behaviors and to fewer negative outcomes such as withdrawal behaviors such as absenteeism, social loafing, and turnover (Riordan & Weatherly, 1999; van Dick, 2004, van Dick, Christ, Stellmacher, Wagner, Ahlswede, Grubba, Hauptmeier, Hohfeld, Moltzem & Tissingtion, 2004).

For the individual, greater identification with the group/organization should result in more physical and emotional well-being and in higher motivation (van Dick, 2004). Hakanen and Roodt (2010) put forward the idea (that so far remains untested) that work identity formation precedes individual work engagement. At the team level, work group identification can foster the development of team work engagement. Team identification is to be expected to facilitate the emergence of team work engagement for two main groups of reasons. On the one hand, identifying with the team may lead to a convergence of team members' affective and motivational state and, consequently, to similar (either high or low) displays of energy, enthusiasm and focus on work. This, in turn, will enhance the likelihood of each member perceiving the same level (high or low) of team work engagement and his or her colleagues. Since TWE is a shared state, team identification will then foster this sharedness. On the other hand, and in what the level (high or low) of TWE is concerned, a high level of group identification is likely to lead to higher team work engagement. Team members will strive to increase their team's positive differentiation. Therefore, and in order to foster better outcomes, they will be more likely to display group-oriented behaviors, and to spend higher effort on the task. This can be translated into higher levels of energy, persistence and absorption in work, characteristics of TWE.

Therefore, some actions can be taken in order to increase the degree of "groupness" of teams. Among these, we underlie the establishment of regular collective meetings with all team members. These meetings are formal moments that recursively define the teams as such, allowing for reviewing and establishing collective goals, for explicitly exchanging relevant information for the development of shared mental models (e.g., Santos & Passos, 2013) and strengthen transactive memory systems (Marques-Quinteiro, Curral, Passos & Lewis, 2013), all of which have been positively related to team performance.

Second, this work should draw human resources managers and more proximal team leaders' attention to the dynamics of teams that go beyond more objective work practices such as coordination or information sharing. Notwithstanding the value of

those practices, the regulation of collective affect should also have a place on the agenda of those practitioners, who should be attentive not only to *what* is being said or done but also to *how* those things are being said or done. From this observation, specific behaviors can be pursued: the task of mediating conflict should not be overlooked. Mediating conflict prior to its occurrence or during its manifestation can be done either by someone external to the team in specific formal moments or by any team member during taskwork, and both options are reasonable and not mutually exclusive. The former can be done in the team meetings previously mentioned, by listing the issues that have caused some perceived sense of incompatibility between team members, both at the relational or task levels. Then, the mediator should facilitate the communication between the parts by allowing each the time to express their views and argue in favor of their position and by continuously focusing on the task aspects of the conflict rather than on the more relational ones. From the continued analysis of these situations, a common pattern of conflict resolution strategies is likely to emerge and to be re-enacted by team members outside these formal moments, together with a sense of psychological safety (e.g., Edmondson, 1999), useful for future task conflict management. The relational aspects also should be put "on the table", allowing the venting of emotional malaise directed at coworkers within an environment of non-violent communication (Rosenberg, 2006). More than complaining about someone else, these moments should focus on what is happening in the team that gives rise to negative affective states such as frustration, fear or anger, particularly when these states arise from team member interaction or team performance feedback. Additionally, what team members have been doing in order to manage them should be addressed. Modeling (Bandura, 1997) acceptance and positive engagement during these meetings is, therefore, important. Outside these formal moments, workers can benefit from training on non-violent communication, on affect regulation strategies such as positive engagement or highlighting wins, and on conflict management strategies, with the respective follow-up and refresh moments to guarantee its transference into practice (Kirkpatrick, 1998).

Third, and finally, this work speaks to the need to be cautious when pursuing a "happy organization" at all costs. As tempting as the idea might be (and as disseminated across disciplines as it is), avoiding "pain" or conflict and dwell only on positive interactions does not lead to a more effective organization or team. Therefore, we recommend the use of recreational moments (e.g., organizational lunches for team building, initial chatting before working) with restraint, and always with a subsequent

explicit and verbalized moment of "getting back to work". Plus, some formal work on norms for displaying emotions can also be important. Organizations have a set of implicit and/or explicit norms about which emotions should be displayed in the context of work and about how those emotions should be displayed (Rafaeli & Sutton, 1987). For example, Sutton (1991) found that bill collectors were selected, socialized and rewarded for following the norm of conveying high arousal and slight irritation to customers (a sense of urgency).

According to Ashforth and Humphrey (1993), the standards that define the appropriate expression of emotions in the job is not focused on what employees actually feel but on their ability to project publicly observable emotions that are desirable. In order to comply with organizational display rules, employees can adopt different strategies. They can simulate emotions that they do not actually feel, by manipulating certain verbal and non-verbal cues (tone of voice, gestures, facial expression, etc.), which is known as surface acting, or they can make an effort to truly experience the emotion they are required to behaviorally manifest (deep acting). To do so, employees can use their imagination, evoking memories or thoughts related to the desired emotion, they can use internal dialogue, etc. Finally, Ashforth and Humphrey posit that spontaneous and genuine emotion as a third means to accomplish organizational requirements, when there is a convergence between what individuals feel and what they are required to express (when there is low emotional dissonance).

Most of the work on emotional display rules has been done with external customers. Nonetheless, the transactions may occur either with external or internal customers (Ashford & Humphrey, 1993). Moreover, they have also been studied as a group-level characteristic (Kelly & Barsade, 2001, Diefendorff, Erickson, Grandey, & Dahling, 2011). These unit-level display rules are thought to arise from top-down contextual factors such as the expectations of unit managers, workplace design, work activities, and so on, and on bottom-up emergent properties of the social environment: individual beliefs about what is the most appropriate emotion to be displayed in a certain circumstance may influence other members and become a shared belief through social interaction, advice giving or role modelling (Kozlowski & Klein, 2000). The empirical study by Diefendorff et al. (2011) found evidence for the existence of display rules as shared, unit-level beliefs that are associated with both satisfaction and indirectly with burnout, through individual-level display rule perceptions and emotion regulation strategies. We argue that display rules should focus not only on the expression of

positive emotions and of focus on work, but also in the questioning of team members ideas and suggestions and on constructive criticism of those ideas. At a higher level, this calls for a reflection on organization culture and climate.

12.4. Limitations and recommendations for future research

No undertaking is ever complete or immune to criticism, especially within the scientific domain. Therefore, we would like to highlight some of the present thesis' main limitations, as well as to suggest future avenues for research, in a non-exhaustive way. Specific limitations of each study can be found in the respective chapter.

First, some of our samples ware composed of teams involved in a management simulation. Therefore, the generalization of the results to "real world" teams should await replication of the studies. Second, and despite theoretically considering teamwork and team performance episodes dynamically, we did not include a longitudinal design in this work. We did consider the pattern of team members' interaction overtime in study 5, however, our data analysis was rather descriptive and exploratory. Future studies on TWE should aim at collecting data over a relevant period of time (from one month to one year), in order to understand whether changes in a given teams' level of engagement is due to the variables proposed in our theoretical model, or to other processes that we did not consider. Third, we did not study the role of the team's leader – either the formal leader or the informal leader – in the process of emergence and development of TWE. Team leadership has been proposed as one of the "Big Five" team effectiveness determinants (Salas et al., 2005), and Zaccaro et al., (2001) stress that leadership represents "perhaps the most critical factor in the success of organizational teams" (p. 452). Therefore, how the behavior of the team's leader may facilitate or hinder the emergence of collective engagement is an interesting and relevant research topic. More specifically, researchers may depart from the work of Zaccaro and colleagues (2001) and analyze the relationships between leader's performance functions' (e.g., managing personnel resources, information use in problem solving) and team affective and motivational processes, as well as with teams' shared emergent states.

Another avenue that deserves researchers' attention is the qualitative approach to teams' interaction and team processes. It has already been stressed elsewhere in this thesis that we know little about what actually happens in teams when they are working together in the prosecution of a given goal. Therefore, a more in-depth look inside the

"black box" of team processes is called upon, aiming at describing, typifying and qualifying the types of team members' interactions that may influence the way they work together and, ultimately, teams' effectiveness. Indeed, a recent call for papers for a Special Issue of Organizational Research Methods (submission date 15th October 2014) focuses on Video-Based Research Methods, reflecting the academic community's concern with less traditional ways to analyze human behavior in the work context.

Moreover, specific contexts should be studied in what TWE and interpersonal team processes are concerned. For example, emotionally demanding contexts, where extrinsic rewards (e.g., monetary compensation) are not abundant or immediate such as hospitals and health care (public) organizations. In an unfavorable economic environment, how do interpersonal relationships impact the teams' levels of energy and of dedication towards work? On a related note, specific, research-bases intervention programs could be developed and tested with those specific populations. The core of these programs should be the enhancement of the team-level conditions that allow for a progressive development of collective positive affective and motivational states, namely of the ones that do not require extra financial investment from the organizations, that is many times unavailable.

12.5 Concluding remark

We have started this work by quoting Louisa May Alcott's "it takes two flints to make a fire". Indeed, we have come to the conclusion that lighting a bonfire in a team comes from "striking" the flints against each other – team member interaction. However, we should bear in mind that excessive and uncontrolled fire may have devastating consequences and, thus, we should aim at maintaining the fire without letting it spread to where it should not be. Therefore, it is wise to "Have regular hours for work and play; make each day both useful and pleasant, and prove that you understand the worth of time by employing it well" (Alcott, 1983, p.134).

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APPENDIX

TEAM WORK ENGAGEMENT SCALE

TEAM WORK ENGAGEMENT SCALE (TWES)

No. from the original scale	Dimension	Original UWES	Proposed Team-UWES
1	Vigor	At my work, I feel that I am bursting with energy	At our work, we feel bursting with energy
4	Vigor	At my job, I feel strong and vigorous	At our job, we feel strong and vigorous
5	Dedication	I am enthusiastic about my job	We are enthusiastic about our job
7	Dedication	My job inspires me	Our job inspires us
8	Vigor	When I get up in the morning, I feel like going to work	When we arrive at work in the morning, we feel like starting to work
9	Absorption	I feel happy when I am working intensely	We feel happy when we are working intensely
10	Dedication	I am proud of the work that I do	We are proud of the work that we do
11	Absorption	I am immersed in my work	We are immersed in our work
14	Absorption	I get carried away when I am working	We get carried away when we are working