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PSYCHOLOGICAL CAPITAL, GROUP PROCESSES / EMERGENT STATES AND WORK PERFORMANCE

ABSTRACT

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Summary

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Chapter 1 Work teams and groups: Conceptual approaches

1.1. Importance of using teams and groups in organizational context

In many contemporary organizations, work has become complex enough to generate the shift from the traditional forms of work organization focused on individuals to those that imply the use of teams at all hierarchical levels (DeChurch & Mesmer-Magnus, 2010; Knapp, 2010; Salas, Cooke, & Rosen, 2008; Zaccaro, Marks, & DeChurch, 2012). The successful accomplishment of the complex work tasks require to an individual large knowledge and different skills. Thus, team members become more dependent on others and the context where they work (Cummings & Ancona, 2005).

The literature suggests that work teams can effectively respond to the pressures generated by the work environment. They have a lot of benefits to their organizations Chirică, 1996; Gil, Alcover, & Peiró, 2005; Piña, Martínez, & Martínez, 2008; Wiedow & Konradt, 2011) and to their individual members (Levi, 2001). Instead of this, teams and groups are not a panacea and risk free (Chirică, 1996; Paulus & Vam der Zee, 2004; Recardo, Wade, Mention III, & Jolly, 1996). They can generate negative consequences (Chirică, 1999). Thus, the understanding of work teams and groups management emphasizes the knowledge of the factors that influence their effectiveness. However, this understanding is complicated by the fact that persons having different positions related to group or team, such as managers, customers, members, researchers and theorists, use different criteria to define and to measure its work effectiveness (Singh & Muncherji, 2007). Even more, sometimes these difficulties are exacerbated by different understanding of what a work team is.

1.2. Conceptual delimitations of work teams

The literature reveals numerous definitions of groups, teams and other forms of collectivity, developed over time. These definitions suggest a distinction between what is a group and a team. The concept of "*group*" is considered as being more inclusive than the term of "*team*". While groups may include a large number of people, even hundreds, teams include a smaller number of members (Levi, 2001). However, a team is not just a simple juxtaposition of individuals belonging to one group or acting together in one place.

Kozlowski and Bell (2003, p. 334) define work 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*". Similarly, Kozlowski and Ilgen (2006) define a team as *"(a) two or more individuals who (b) socially interact (face-to-face or, increasingly, virtually); (c) possess one or more common goals; (d) are brought together to perform organizationally relevant tasks; (e) exhibit interdependencies with respect to workflow, goals, and outcomes; (f) have different roles and responsibilities; and (g) are together embedded in an encompassing organizational system, with boundaries and linkages to the broader system context and task environment*" (p. 79).

Compared to other definitions from the literature, these two definition highlight better the interdependence of work teams and the existence of the teams in an organizational context that influence their effectiveness (Mathieu, Maynard, Rapp, & Gilson, 2008). Considering the distinction between the concept of "team" and "group", the focus on this thesis will be on work team. Team work will be considered in terms of definition given by Kozlovski and Ilgen (2006). Furthermore, the concept of "*team*" will be used interchangeable with the concept of "*group*".

1.3. Conceptual delimitations of work team effectiveness

The increase of teams use in the modern organizations (Guzzo & Dickson, 1996) contributes to the intensification of the concerns related to the improvement of their work effectiveness and efficiency (Hackman, 2002; Singh & Muncherji, 2007). Previous studies on work team effectiveness have considered this concept either as a one-dimensional or a multidimensional one (Piña et al., 2008). The dimensions or the criteria of the effectiveness of work teams on the organizational settings are more complex compared to those of teams created for laboratory and simulation settings (Jordan, Field, & Armenakis, 2002). Thus, team effectiveness is defined as the extent to which the team meets its goals and how well its output meets the team's mission (Hackman, 1987). The effectiveness criteria usually consist in team performance and affective outcomes generated by work teams, such as team member satisfaction and team viability (Gil et al., 2005; Mathieu et al., 2008). In recent years, in addition to

these criteria of work team effectiveness, the literature reveals other criteria such as those represented by the team efficiency (the extent to which the team achieves the desired results with minimum of resources) and innovation, understood as a process or a result of the team (Gil et al., 2005; Mathieu et al., 2008).

Regarding the factors that have an important role in determining the work team effectiveness, the literature highlights the diversity of these factors by the multitude of the theoretical approaches and models developed.

1.4. Theoretical approaches of work teams

The analysis conducted in this chapter included several major perspectives relevant to the study of groups and teams: the functional perspective, the psycho-dynamic perspective, the social identity perspective, the perspective centered on conflict dynamic, power and status, the symbolic-interpretative perspective, the feminist perspective, the social network perspective, the evolutionist perspective, the systemic perspective, the perspective of chaos, complexity and non-linearity, the temporal evolution perspective that includes the developmental models and the cyclic and episodic models of work team effectiveness. Each of these perspectives has advantages and limitations related to the study of work team effectiveness (sections 1.4.1 – 1.4.12). But of these, IMOI models, from the temporal evolution perspective, allow better integration and an explanation of the results obtained in the studies of teams conducted on the other perspectives mentioned.

1.5. Final theoretical remarks on work team effectiveness research

Although most theoretical perspectives on work teams and groups overlap, each of them has its own disciplinary niche (Berdahl & Henry, 2005). Combining the advantages and limitations of these theoretical perspectives provides a complementary framework for understanding the effectiveness of work teams that constitutes the basis for developing integrative-systemic perspectives of this concept. This integration reveals the complexity of causal patterns that characterize a team (Berdahl & Henry, 2005). The analysis of these perspectives indicated that work team effectiveness is central to research on teams. In all these perspectives, this concept results in a constellation of complex interrelationships and interactions between multiple demands

of performance and diverse factors located in the team members, the team as a whole, the organizational environment where the work team is embedded and, not at last, in the national and international context in which the organizations operate. Thus, a first step should be aimed at extending the analysis of the work teams and groups using a multi-level perspective. This means paying attention how the individual functions within a team, the team functions within an organization and to the interactions between these factors to determine the work team effectiveness. To be effective and efficient, work teams must use their resources (e.g. skills, abilities, effort, time, equipment) for those activities that will result in the best performance (Sawyer et al., 1999).

In recent years, in the study of the resources and capital available to contemporary organizations to create a strategic competitive advantage, a strong emphasis is placed on human resources (Barney, 1991, 1995, Barney & Wright, 1997; Luthans & Youssef, 2004). Researchers and practitioners pay more attention to "positive aspects" in human resource management, in particular, how to reinforce employees' psychological resources and to maximize their professional performance (Avey, Luthans, & Jensen, 2009; Luthans, 2007). These issues are central in the field of positive psychology applied at study of workplace

Applying positive psychology in organizational area gave rise to two major areas: (a). positive organizational scholarship (POS; Cameron & Caza, 2004) and (b). positive organizational behavior (POB; Luthans, 2002a, b; Wright, 2003). Unlike the positive organizational behavior, the positive organizational scolarship focuses on creating an optimal order optimal of the organizational factors that may facilitate positive organizational change (Cameron & Caza, 2004).

One of the central concepts in the field of positive organizational behavior is represented by the positive psychological capital. Conceptual and empirical studies have shown the relationship of this concept to different outcomes measured at the individual and group levels of analysis (Luthans, Youssef, & Avolio, 2007; Walumbwa, Luthans, Avey, & Oke, 2009). However, research on psychological capital, particularly examining its role in the context of team work, are in early stages and there were no analysis of what has been studied in this area (Clapp-Smith, Vogelgesang, & Avey, 2009).

Referring to the effectiveness of work teams, LePine, Piccolo, Jackson, Mathieu and Saul (2008) stated that, in general, its study is inconsistent because researchers have examined concepts that are not clearly defined or distinguished from other relevant

concepts for the study of work teams and groups, such as the distinction between work team performance and team learning. Team learning is considered as a relatively new concept, which starts crystallize (Jehn & Rupert, 2008, Slick & Drach-Zahavy, 2007). But despite a growing interest in the concept of team learning, most studies are limited to the laboratory settings (Edmondson, 1999b), suggesting the need to conduct studies examining this concept in the natural environment of the work teams. Studies to date on the relationship between team learning and work team effectiveness provide inconsistent results (e.g., Bunderson & Sutcliffe, 2003, Edmondson, 1999b). Some authors have considered that this inconsistency may be due to different theoretical perspectives on team learning (Mo & Xie, 2009) and the fact that it is often regarded as a multidimensional process but in practice it is measured as a one-dimensional concept (Savelsberg, van der Heijden, & Poell, 2009). Thus, knowledge of factors that may contribute to these inconsistent results may be a starting point in clarifying the relationship between team learning and team work effectiveness (Chapter 3).

Although the functional perspective of study of team and groups assumes that group processes play an important role on their work effectiveness, in the literature there is a limited number of studies revealing a mutual causality between these aspects of their functioning. The study of such causality relation between work team effectiveness and its subsequent processes received a little empirical and theoretical attention (see Ilgen et al., 2005). Considering the calls to examine the psychological capital in the context of the work team, to adopt a multidimensional and dynamic perspective on team earning and work team effectiveness, in this thesis we will present an empirical perspective on these three concepts (Chapter 4).

In conclusion, considering the theoretical and empirical considerations above, the aim of this thesis is to investigate the relationship between psychological capital, team learning and work team effectiveness understood as team performance, team member satisfaction and team viability, based on the IMOI theoretical framework. Thus, within this framework, the concept of psychological capital is proposed as an input at the level of the members. Team learning is proposed as a mediator variable that transforms the inputs in work team effectiveness. Also, team performance, team member satisfaction and team viability will be considered as outcomes of the inputs (psychological capital) and mediators (team learning).

To achieve this aim, the following research investigation approach was proposed:

- ***Objective 1 (O_1):*** To review the literature on the concept of psychological capital in the organizational context in order to highlight the theoretical aspects of the study of this concept
- ***Objective 2 (O_2):*** To analyze and synthesize the empirical studies that have examined the psychological capital in the organizational context at the employees', work teams and organizational level of analysis
- ***Objective 3 (O_3):*** To identify and analyze the psychometric properties of an instrument measuring psychological capital in the organizational context
- ***Objective 4 (O_4):*** To analyze the empirical literature that examined the team learning in relation to work team effectiveness
- ***Objective 5 (O_5):*** To analyze the psychometric properties of an instrument measuring team learning in work teams
- ***Objective 6 (O_6):*** To analyze the psychometric properties of an instrument measuring the work team effectiveness criteria represented by the team performance, team member satisfaction and team viability
- ***Objective 7 (O_7):*** To examine the relationship between psychological capital and team learning
- ***Objective 8 (O_8):*** To examine the relationship between team learning and work team effectiveness
- ***Objective 9 (O_9):*** To examine the mediator role of team learning in the relationship between psychological capital and work team effectiveness
- ***Objective 10 (O_{10}):*** To examine the feedback relationship, on one hand, from the criteria of work teams effectiveness on team learning and psychological capital, and, on the other hand, from team learning to psychological capital.

A graphical representation of the working model adopted in this thesis and its objectives is presented in ***Figure 1.3.***

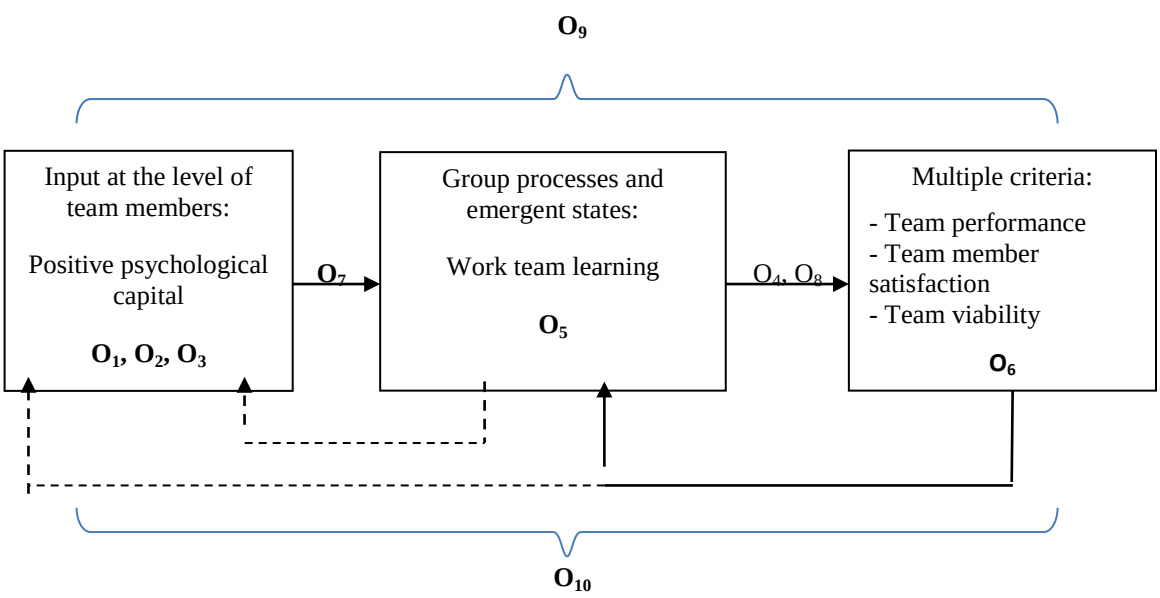


Figure 1.3. *The graphical representation of the working model adopted in this thesis*

Chapter 2 Psychological capital in organizational context

Compared to traditional physical, structural and financial resources, employees as human resources are not so easily replicated by existing competitors of an organization (Luthans, Luthans, & Luthans, 2004; Toor & Ofori, 2010). Thus, human resources constitute a valuable form of capital to organizations they belong to (Bakker & Schaufeli, 2008; Barney, 1991, 1995; Barney & Wright, 1997).

2.1. Conceptual delimitations of psychological capital

In addition to the traditional use of the capital term in economics and finance, it was used to represent the value of human resources (human capital) or the value of the intellectual, social and cultural capital (Luthans, Avolio, Avey, & Norman, 2007). While human and social capital are widely recognized and studied by the research community and practitioners, psychological capital was given less attention (Larson & Luthans, 2006).

2.1.1. Psychological capital on the economic literature

Initially, the concept of psychological capital was used in the economic literature by Goldsmith, Veum and Darity (1997, p 821) in order to describe *"personal attributes that may affect productivity"*. In the perspective proposed by Goldsmith and his colleagues (1997), psychological capital is conceptualized more in terms of self-esteem: "*Many of the features of a person's psychological capital are reflected in how it sees or his self-esteem*" (Goldsmith, 1998, p 15). Studies within this perspective have investigated this concept in relation to productivity and the financial wages (Goldsmith, Darity, & Veum, 1998; Kossek, Huber, & Lerner, 2003).

2.1.2. Psychological capital on the positive organizational behavior literature

To distinguish between the positive organizational behavior field and other scientific positive approaches and common sense descriptors, Larson and his colleagues (Larson & Luthans, 2006; Luthans, Youssef et al., 2007; Youssef & Luthans, 2007) have proposed four essential criteria that must be met by a concept to be included in this approach:

(a) to be based on a solid theory and research, and on valid measurements - to distinguish the positive organizational behavior and common sense literature)

(b) to have a relative uniqueness in the organizational behavior field - to distinguish the positive organizational behavior field and other concepts of organizational behavior literature, such as core self-evaluation (Judge & Bono, 2001)

(c) to be a state-like resource open to development and change- to distinguish between the positive organizational behavior and the positive organizational scholarship

(d) to have a positive impact on work performance (Luthans 2002a, b).

Based on these criteria, Luthans and his colleagues (Luthans, 2002 a, b; Luthans, Yousseff et al., 2007; Youssef & Luthans, 2007) have found that in the field of positive organizational behavior can be included the positive psychological constructs represented by self-efficacy, hope, resilience and optimism. The combination of these constructs is the positive psychological capital or PsyCap (Luthans, Avolio et al, 2007; Luthans, Youssef et al., 2007).

2.1.2.1. Definitions of positive psychological capital

This concept is defined as *"an individual's positive psychological state of development and is characterized by:*

(a) having confidence (self-efficacy) to take on and put in the necessary effort to succeed at challenging tasks;

(b) making a positive attribution (optimism) about succeeding now and in the future;

(c) persevering towards goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and

(d) *when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success"* (Luthans, Youssef et al., 2007, p. 3).

Like other forms of capital, the psychological capital concept consists in four elements that represent unique and measurable psychological states which can be developed and which have an impact on work performance. These elements are: self-efficacy, hope, optimism and resilience (sections 2.1.2.1.1 - 2.1.2.1.4).

2.1.2.2. Psychological capital as a second order factor

Although the four components of psychological capital present a conceptual independence and discriminant validity supported by empirical studies, Luthans, Youssef and colleagues (2007) have proposed a link between these concepts, represented by a high order factor that is their source of variance. As a second order factor, psychological capital is a positive assessment of physical and personal resources availability and the likelihood of achieving success through personal effort, achievement striving and perseverance in a particular situation.

The concept of positive psychological capital has three essential attributes of positive psychological capital to distinguish it from other constructs and positive approach: individual level of analysis, its state-like nature and its ability to predict aspects considered relevant in the organizational environment (Youssef & Luthans, 2011).

1. The level of analysis, which is an individual one. Although theoretical models have been proposed and empirical studies have been conducted taking account of factors related to organization or team, these factors are considered as contextual variables that

may facilitate, accelerate or hinder the development of psychological capital (Gooty, Gavin, Johnson, Frazier, & Snow, 2009).

2. State-like nature of the psychological capital. This attribute is highlighted by two research directions. The first provides the theoretical distinction positive psychological capital of other concepts of positive psychology. This distinction is based on state-trait continuum perspective that includes (Luthans, 2002b; Luthans, Youssef et al., 2007): pure positive traits, positive traits-like, positive states-like and positive pure states.

The second research direction that reflect the nature of the psychological capital as a state-like includes studies that shows discriminant validity of its four elements despite the fact that they share some conceptual (e.g., positivity) and empirical characteristics (e.g., positive correlations, common correlates) (Avey, Luthans, & Youssef, 2009, Luthans, Avolio et al., 2007; Stajkovic, 2006). The communality of the four elements is indicated also by the psychological resources theory (Hobfoll, 1989, 2002), the "broaden and built" theory of positive emotions (Frederickson, 2001) and the concept of core confidence (Stajkovic, 2006).

In addition to these conceptual arguments for the integration of concepts of self-efficacy, hope, resilience and optimism in a higher order factor, be it called psychological capital or core confidence, Luthans and colleagues (2005) showed that as a second order factor, positive psychological capital is a better predictor of job performance of employees rated by their supervisors, in comparison with its components. To reveal this, we analyzed the literature published between January 2000 and January 2010 in the following databases: PsychInfo databases, PsychArticles, Sage, Psychology and Behavioural Collection, ScienceDirect. Inclusion criteria for the scientific works were: (a). to investigate psychological capital as a second-order factor from the positive organizational behavior perspective (b). to examine psychological capital as a second-order factor compared to its constituent elements (self-efficacy, optimism, hope, resilience) in relation to other variables, (c). to include statistical data for comparison of the psychological capital as a second-order and the approach on its components in relation to other variables.

Of the 371 citations generated by the keyword *"positive psychological capital",* only seven have analyzed this concept as a latent factor compared with its conceptualization as a one-dimensional factor or its constituent elements. The results of this analysis shows that when conceptualized as a second-order factor, psychological capital is a better predictor of the variables measured at an individual level of analysis

(employee's level) than its elements. In addition, the structural model that conceptualizes psychological capital as a second order factor has better fit indices compared to the one-dimensional factor model.

3. The third attribute of psychological capital concerns its ability to predict a number of work related outcomes, especially work performance evaluated at the individual and group level of analysis (Peterson & Zhang, in press, apud. Youssef & Luthans, 2011; Walumbwa et al., 2009). Since the publication of the first empirical study in 2005 on this attribute of psychological capital, empirical research in this area has experienced a great boom. However, in our attempts to inform us as accurately about the predicting capacity of psychological capital in the field of positive organizational behavior, we found no systematic review or meta-analytic study to integrate the research in this field and to serve to our approach to study psychological capital in relation to team learning and work team effectiveness. So, we decided to conduct a systematic review of empirical literature on this concept.

2.2. Correlates of psychological capital: The analysis of the empirical literature (Study 1)

In the past decade, numerous studies have been conducted on the concept of psychological capital, but there have not been any efforts to integrate and synthesize the results of research to evidence whether this concept is indeed a benefit to employees, work teams or organizations (Hackman, 2009). Therefore, an analysis of the literature on the capital psychological was conducted to identify: the level of analysis (individual, group and organizational), the correlates of the psychological capital, the role of the psychological capital as a variable (predictor, criteria, mediator vs. moderator) and the instrument used to measure psychological capital. We selected papers published in January 2000 - January 2010, considered as articles, books and book chapters.

Inclusion criteria of the relevant scientific works consisted in: (a). examination of psychological capital as a second-order factor in the field of the positive organizational behavior, (b). examination of psychological capital in relation to variables related to organizational environment, (c). inclusion of qualitative and quantitative analysis of the relationship between psychological capital and other

variables of interest. Interest information extracted from the scientific papers selected after applying the selection criteria were analyzed through content analysis.

The results show that most studies have examined psychological capital in relation to other variables measured at the individual level (88.89%), less to group level (11.11%) and not at all at organizational level.

At the individual level of analysis, most studies have been published in 2008 (31.28%; **Figure 2.1**). In 93.75% of the studies analyzed, Fred Luthans, proponent of the concept of psychological capital in positive organizational behavior field, participated as an author. Most of these studies used samples between 100 and 200 participants (37.5%), and between 301-500 participants (37.5%) (**Figure 2.2**).

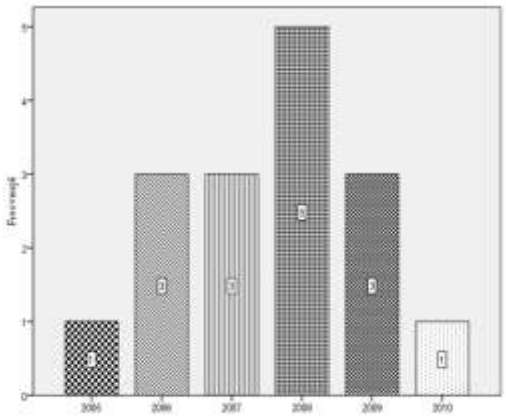


Figure 2.1. *Distribution of independent samples that examined psychological capital at an individual level of analysis during January 2000 - January 2010*

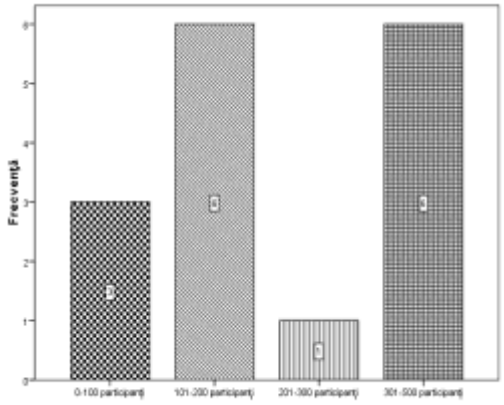


Figure 2.2. *Distribution of independent samples that examined psychological capital at the individual level of analysis in terms of sample size*

Most times, the concept of psychological capital has been examined in studies that used samples consisting of employees (81.25%). 68.75% of independent samples analyzed used a correlational design in which variables were measured at two different times, T1 and T2. In all samples, psychological capital was measured at T1. The remaining 25% of the studies used a correlational design in which variables were measured simultaneously.

Initially, in 2005 and 2006, psychological capital was measured by scales established in the literature on self-efficacy, hope, resilience and optimism (18.75%) (**Figure 2.3**). With the presentation of psychological capital instrument by Luthans, Youssef and colleagues (2007, PCQ-24), in most empirical studies carried out this

concept was measured by this instrument (68.75%). In all studies analyzed, psychological capital was measured through the self-reported form of these instruments. The instrument consisting of 24 items or 21 items and the scales established in the literature for measuring components of psychological capital had the reliability higher than .70. Only the version with 12 items of PCQ presented a reliability of .68 (Luthans, Avey, Clapp-Smith et al., 2008).

The data show that most times this concept has been studied mainly as predictor variable for different results employees (68.75%) rather than as a moderating variable (6.25%) and media (25%) (**Figure 2.4**).

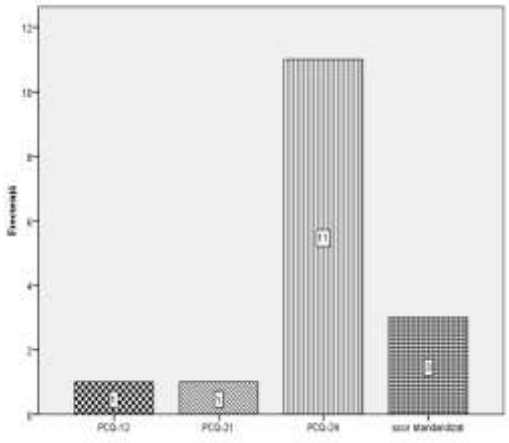


Figure 2.3. *Distribution of independent samples analyzed in terms of measuring instruments of positive psychological capital*

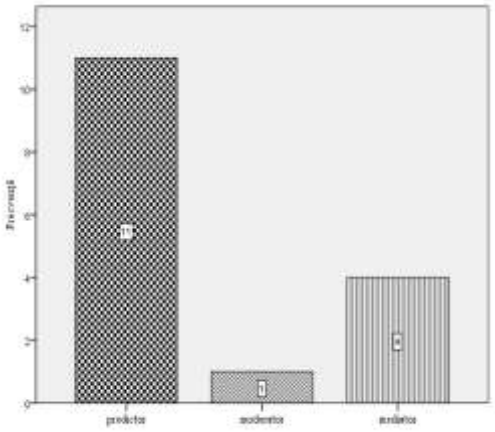


Figure 2.4. *Distribution of independent samples in terms of the role of psychological capital variable in relation to another variable*

Of the 16 independent samples, several variables have been identified in relation to which the psychological capital was studied. A summary of the variables in relation to which the psychological capital has been studied as a predictor variable is presented in **Figure 2.5**. From this figure can be identified that as a predictor variable, psychological capital has been studied in relation to various employees' outcomes, such as those related to performance, behavioral, attitudinal, intentional, emotional and health aspects.

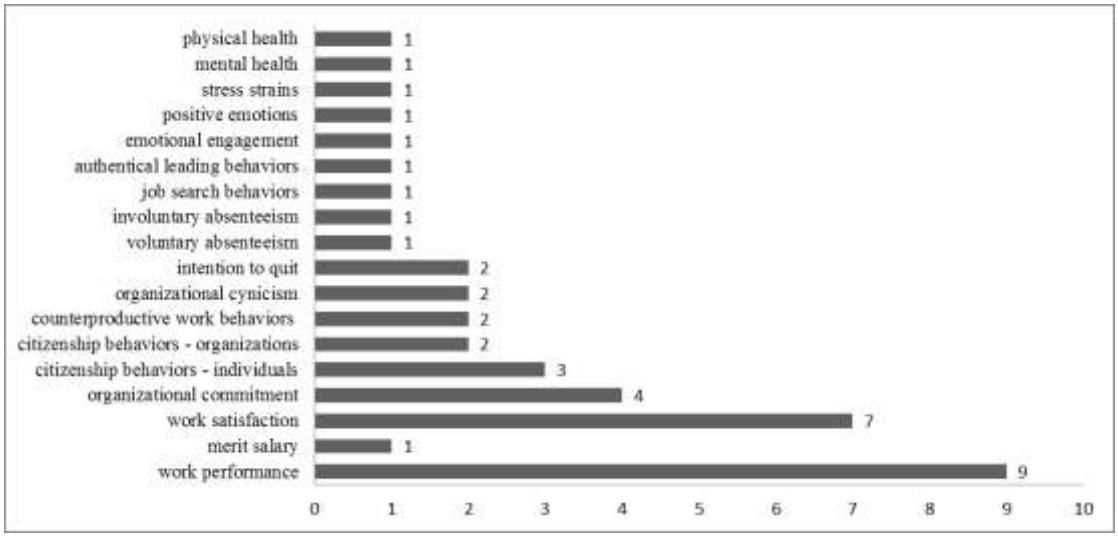


Figure 2.5. *Distribution of variables in relation to which the psychological capital has been studied as a predictor variable at the individual level of analysis*

At the group level of analysis, we identified only two studies published between January 2000 and January 2010. The analysis of their authors pointed out that two of the authors (Clapp-Smith and Avey) were concerned also with examining the individual psychological capital. These two works were published in 2009.

The studies reviewed used samples consisting of teams or work groups whose number is below 100 (Clapp-Smith, Vogelgesang, & Avey, 2009) or between 100 and 200 teams (Walumbwa et al., 2009). In the study conducted by Clapp-Smith and colleagues (2009) 89 members from several shops considered as working groups were included. In Walumbwa and his collaborators' study (2009) data were collected from 526 participants from a financial institution. Thus, all participants had the status of employees. Both studies analyzed were based on correlational design where the predictor, mediator and criterion variables were measured at different times. The PCQ-24 instrument (Luthans, Youssef et al., 2007) served as input for instruments used in these studies to measure psychological capital. Their reliability was above .70.

The data show that in one of the studies analyzed, this concept has been investigated as a predictor variable for trust in management and sales performance of the work group (Clapp-Smith et al., 2009). The second study included the analysis focused on the mediating role of psychological capital in the relationship between authentic leadership behaviors and, on one hand, performance and, on the other hand, the citizenship behaviors (Walumbwa et al., 2009). In any of independent samples

analyzed, psychological capital was not only considered as a criterion of other variables or a moderating variable.

Of two independent samples, three types of variables in relation to which the psychological capital was studied as predictor variable have been identified: trust in leadership, group performance and citizenship behaviors. In the mediation analysis, psychological capital was a criterion variable of authentic and transformational leadership style. Another variable in relation to which psychological capital was investigated is the trust in group.

In conclusion, research conducted on psychological capital is mainly a correlational one, based on one set of empirical data. Consideration of the previous results necessitates the mention that the number of papers introduced in the analysis is relatively small. Despite the impressive increase in the volume of scientific work that is mentioned the concept of positive psychological capital, there are relatively few empirical studies that have examined this concept. Because the present study aimed only to approach these studies using content analysis, in order to extract relevant information about the intensity and statistically significant association between psychological capital and the variables identified, future studies can bring a significant knowledge by conducting a meta-analytic integration of these empirical studies. Overall, the results of this analysis suggest the need to expand research on psychological capital to support its empirical many benefits that have been presented in the conceptual studies on this topic (Luthans, Youssef, et al., 2007).

2.3. Correlates of psychological capital: A meta-analytical study (Study 2)

In the previous study, it was highlighted that psychological capital was not significantly associated with all the variables in relation to which it was examined (Gooty et al., 2009). In addition, although significant relationships were found between psychological capital and the variable in relation to which it was studied, the range of indices of association obtained was quite high (e.g., job satisfaction [.32, .72]). Therefore, to obtain conclusive results on the role of psychological capital in the organizational context, it is necessary a meta-analytic integration of empirical studies conducted on this concept.

Identification of the relevant scientific literature was conducted in a first step through a computerized search in the following databases: PsychInfo, PsychArticles, Sage, Psychology and Behavioural Collection, ScienceDirect. The search was conducted using keywords of *"positive psychological capital", "collective psychological capital"* and *"team positive psychological capital"*. The search was limited to the scientific papers published between January 2000 - January 2010, in the form of articles, books and book chapters. This search generated 371 papers. This list of papers was supplemented by manually searching into following journals: *Journal of Psychology of Human Resources, Journal of Psychology, Human Resource Management, Journal of Leadership and Organizational Studies, Journal of Organizational Behavior, Journal of Management, Journal of Occupational Health Psychology, The Journal of Applied Behavioral Science, Personnel Psychology, American Behavioral Scientist, Small Group Research, Annual Review of Psychology, The International Journal of Human Resource Management, Management and Organization Review, Human Resource Development Review, Organizational Dynamics, Journal of Positive Psychology*. This search identified that the papers published in English in these journals overlapped those identified by the computerized search. Also, an analysis of the bibliographical list of works that have been identified as addressing topics of interest was done. The results of this search revealed no other papers of interest than those listed after the computerized search.

The scientific papers included in the analysis had to meet all the following criteria: (a). to examine the psychological capital from the perspective of positive organizational behavior, (b). to examine the psychological capital in relation to other variable from organizational context, and (c). to report a correlation coefficient or other statistical data can be transformed into r Pearson correlation coefficient. After applying these criteria, nine papers were retained. They included 13 independent samples and 31 correlation coefficients. These studies are presented in **Appendix 2.1.**

For data analysis, the techniques of meta-analysis based on random effects model were used. A first step was to calculate the average sample size weighted effect size ($\bar{r}_0$), the weighting variable being 1/(n-3). Mean effect size was compared with threshold values proposed by Cohen (1969): small (less than .20), medium (between .20 and .40) and large (greater than .40) (Sverke, Hellgren, & Näswall, 2002). For the mean effect size, standard deviation and its confidence interval, *95% CI* were computed. The

next step was to calculate the χ^2 and *Q* test, followed by technique of "bare bones meta-analysis" (Hunter & Schmidt, 2004).

The results showed that a high level of psychological capital is associated with better performance at work ($\bar{r}_0$ = .24), work satisfaction ($\bar{r}_0$ = .45), organizational commitment ($\bar{r}_0$ = .37), citizenship behaviors directed to individuals ($\bar{r}_0$ = .33). In addition, workers with low psychological capital have higher levels of organizational cynicism ($\bar{r}_0$ = -.43.), express more frequently counterproductive work behaviors ($\bar{r}_0$= -.51) and have a stronger intention leaving the organization ($\bar{r}_0$ = -.35). The data showed that in the relationship between psychological capital and some of the criterion variables included in the analysis, there are other factors than sampling error that act as moderators: satisfaction with work (*Q*(6) = 19.21, *p* < .01, 11%), commitment organizational (35%), and citizenship behaviors directed at individuals (*Q*(2) = 10.57, p < .05, 12%).

Table 2.15. *Results of the meta-analysis of correlations between psychological capital and other variables in relation to which it has been studied*

Variable	N	k	$\bar{r}_0$	AS	95%CI	Q	df
1. Work performance	2468	9	.24	.06	x	4.58	8
2. Citizenship behaviors oriented to individuals	658	3	.33	.17	[.10; .57]	10.67*	2
3. Citizenship behaviors oriented to organization	526	2	.41	.33	[-.01; .84]	25.34**	1
4. Work satisfaction	1474	7	.45	.14	[.24; .66]	19.21**	6
5. Organizational commitment	811	4	.37	.06	[.25; .49]	4.50	3
6. Organizational cynicism	468	2	-.43	.01	x	.04	1
7. Counterproductive work behaviors	468	2	-.51	.01	x	.04	1
8. Intention to quit	752	2	-.35	.09	x	3.12	1

Note: *N* = total number of participants from k samples; *k* = number of independent samples included in the analysis; $\bar{r}_0$ = mean effect size; *AS* = standard deviation of the mean effect size; *95%CI* = 95% confidence interval of the mean effect size; *Q* = value of the Q test; *df* = degrees of freedom of the Q test; ** p < .01, * p < .05.

Given these significant associations, the concept of psychological capital makes an important contribution to changing the perspective on the value given to existing human resources in an organization and the efficient management of such resources. Despite these results, the number of studies that have been included in the analysis for each outcome variable is different and reduced and the studies were based on correlational data, which has implications for causality between the variables of interest. This suggests again the need for more extensive studies to better capture causal relations and to include more variables at group and organizational level of analysis. Thus, the results of this study once again emphasize the need for extensive examination of the

concept of psychological capital considered from the perspective of positive organizational behavior.

2.4. The analysis of the psychometric properties of the Psychological Capital Questionnaire - 12 (Study 3)

In some of the empirical studies analyzed in the previous two studies of this thesis, the concept of psychological capital has been supported by data collected through the Psychological Capital Questionnaire (PCQ; Luthans, Youssef, & Avolio, 2007). This instrument was built on several standardized and extensively empirically examined scales developed to measure: (a). hope (Snyder et al., 1996); (b). resilience (Wagnild & Young, 1993); (c). optimism (Scheier & Carver, 1985); (d). self-efficacy (Parker, 1998). To empirically examine the psychological capital construct, the researchers have used either the PCQ 24 or the PCQ 12-item version (Luthans, Youssef et al., 2007). In most of these studies, the PCQ 24-item version and confirmatory factorial analysis was used (Roberts, Scherer, & Bowyer, 2011).

The factorial validation studies conducted with the PCQ-24 empirically support the model that theorized PsyCap as a second-order factor compared to the one-dimensional or independent model (Sweetman et al., 2011). In most of these studies conducted on American and Australian employee samples, the results indicated no item cross-loadings and error measurement covariances (e.g. Avey, Wernsing, & Luthans, 2008; Luthans, Avey, Avolio, & Peterson, 2010). However, Rego and colleagues (2010), using the Portuguese version of the PCQ-24, in order to obtain a good fit of the second-order model they had to eliminate eight items due to item cross-loadings and error measurement covariances. Thus, it was suggested that when PCQ-24 is used in other cultures than those in which it was developed, it might function differently. So, the authors encouraged the need to conduct more studies related to the factorial validity of PCQ in different cultures.

The nature of the psychological capital as a second-order factor based on data collected through PCQ 12-item was examined only in two studies conducted on Australian employees (e.g. Caza, Bagozzi, Woolley, Levy, & Caza, 2010; Woolley, Caza, & Levy, 2010). Although PCQ-12 has been used in some studies conducted on American and Asian employees, none of them has examined its factorial structure and

only the alpha Cronbach reliability of the whole scale was reported (e.g. Avey, Avolio, & Luthans, 2011; Luthans, Avey, Clapp-Smith, & Li, 2008).

So far, there are no other studies that have examined the factorial structure of the PCQ-12 instrument. Therefore, the purpose of this study is to examine construct validity, mainly the factorial validity of the PCQ-12 instrument (Luthans, Youssef et al., 2007). In addition to other existing studies in the literature, the cross-validation of the final factorial structure was performed by testing its invariance in two independent samples of employees. Also, reliability of the PCQ-12 instrument based on the factor loadings was computed.

In this study, 514 employees were included. Of these, 172 were from medical (33.5%), 116 from call center services (22.6%), 90 from the production of mobile phones (17.5%), 120 from nuclear energy (23.3%) and 16 from local government domain (3.1%). Participation in the study was voluntary. To serve the cross-validation approaches the sample of 514 employees was divided into two equivalent samples in terms of belonging to the domain of activity.

The instrument used was the Psychological Capital Questionnaire-12 (Luthans, Youssef et al., 2007) whose items are arranged in a Likert-type scale with six steps from 1 (strongly disagree) to 6 (strongly agree) and distributed into four subscales: (a). self-efficacy - 3 items, (b). hope - 4 items (c). Resiliency - 3 items, and (d). optimism - 2 items. A high score on this scale indicates a high level of psychological capital. The translated Romanian version of this scale and permission for its use was obtained from Mind Garden company (www.mindgarden.com) after sending the research proposal of this study. After obtaining the participation consent, participants filled in the paper and pencil form of the PCQ-12 instrument.

Since each subscale of the instrument was developed based on solid research and theory and the a priori factor structure of this instrument exists, in this study confirmatory factor analysis was used (CFA; Byrne, 2001; Dimitrov, 2010), following the steps proposed by Kelloway (1998) and Byrne (2006).

In the first sample, the fit indices suggested a better fit of the factorial structure that represents the psychological capital as a latent factor including self-efficacy, hope, optimism and resilience, as compared with the one-dimensional factorial structure, Δ* *CFI* = .127 **(Table 2.18).**

Table 2.18. *Fit indices and standardized factor loading for the factorial solutions proposed for the PCQ-12 instrument (Luthans, Youssef et al., 2007) (N_1 = 257)*

	One-factorial model	**Second-order factorial model**
	Factor loading	Factor loading
Self-efficacy	-	*.72*
Item 1	.66	.82
Item 2	.57	.71
Item 3	.68	.68
Hope	-	*.86*
Item 4	.59	.52
Item 5	.49	.60
Item 6	.68	.78
Item 7	.60	.69
Resilience	-	*.80*
Item 8	.57	.69
Item 9	.38	.52
Item 10	.39	.47
Optimism	-	*.53*
Item 11	.31	.64
Item 12	.31	.60
S-Bχ^2	180.27***	107.95***
df	54	50
**CFI*	.765	.892
SRMR	.081	.064
**RMSEA*	.096	.068
*90% CI *RMSEA*	[.080; .111]	[.050; .085]
*Δ*CFI*	-	.127

Note: *** p < .001.

However, unlike existing studies in the literature, in this study an improvement in the fit of the model which conceptualizes psychological capital as a multidimensional construct was obtained under conditions in which the Item 4 of the instrument was an indicator of the self-efficacy factor and not of hope and the overlap in the content of the Item 1 and 2 **(Table 2.19).**

Table 2.19. *Fit indices for the re-specified second-order factorial solutions of the PCQ-12 instrument (Luthans, Youssef et al., 2007) (N_1 = 257)*

Model	**S-Bχ^2**	**df**	***CFI**	**SRMR**	***RMSEA**	**90%CI *RMSEA**	**Δ*CFI**
Hierarchical model	107.959**	50	.892	.064	.068	[.050; .085]	-
Hierarchical model Item 4 F1, F2	91.808**	49	.920	.052	.059	[.040; .077]	.028
Hierarchical model Item 4 F1	95.181**	50	.916	.054	.060	[.041; .077]	.024
Hierarchical Item 4 F1 E10E11	74.782*	49	.952	.047	.046	[.023; .065]	.060

Note: ** p < .01; * p < .05.

Factorial validity of the structure of the PCQ-12 instrument was emphasized by the results of the cross-validation and simultaneously testing based on data from both samples included in the analysis.

Table 2.20. *Fit indices and factor loadings for standardized re-specified second-order solutions proposed for PCQ-12 instrument in the two samples (N_1 = 257, N_2 = 257)*

	Sample 1	**Sample 2**
	Factor loading	Factor loading
Self-efficacy	***.82***	***1***
Item 1	.66	.64
Item 2	.54	.55
Item 3	.78	.61
Item 4	.64	.46
Hope	***.78***	***.96***
Item 5	.63	.71
Item 6	.80	.71
Item 7	.70	.60
Resilience	***.83***	***.86***
Item 8	.71	.64
Item 9	.50	.53
Item 10	.46	.70
Optimism	***.51***	***.42***
Item 11	.62	.79
Item 12	.62	.46
Psychological capital	**(.91)**	**(.90)**
S-Bχ^2	74.782*	70.466*
df	49	49
**CFI*	.952	.959
SRMR	.047	.051
**RMSEA*	.046	.042
*90% CI *RMSEA*	[.023;.065]	[.016;.062]

***Note**: Ω_w reliability coefficient is presented in parentheses.*

Although the factorial structure of the PCQ-12 instrument is equivalent in the two samples in terms of number of factors, pattern of loading on the factor, in terms of equivalence of the factor loading values, results showed that there was a difference in factor loading of the Item 12, Δ*CFI = .006 (**Table 2.21**).

Table 2.21. *Testing invariance of the factorial structure of the PCQ-12 instrument (N_1 = 257, N_2 = 257).*

Model	**S-Bχ^2**	**df**	***CFI**	**SRMR**	***RMSEA**	**95% CI *RMSEA**
Hierarchical model Number of factors and patterns of the factor loading	145.17	98	.955	.049	.044	[.027; .058]
Hierarchical model Factor loadings	165.35	111	.949	.073	.044	[.029; .057]

The reliability of the whole scale in the two samples was above .70, Ωw = .91 for the first sample and Ωw = .90 for the second sample.

The interpretation of the present results must take into account some limitations, such as: the lack of representativeness of the samples for the Romanian working population or the major sectors of activity from the Romanian economy, the use of a single set of empirical data. Future studies can complement the results of the present study by examining other types of construct validity of the PCQ-12 instrument, such as convergent, divergent, criterion and content validity (Urbina, 2004).

Given the reduced number of the studies that used PCQ-12, more studies are needed to examine the validity of this instrument. Following the suggestions from the literature to combine the qualitative and quantitative research methods in the study of positive psychological capital, future studies should examine the content validity of PCQ-12 in terms of its item content relevance and representativeness, and processes involved in providing an answer to them (Avey, Luthans, & Mhatre, 2008; Youssef & Luthans, 2011). Such studies will allow the identification of an explanation related to the lack of equivalence of Item 12 (*"I'm optimistic about what will happen to me in the future as it pertains to work*") across the two samples. To study the content validity of an instrument, other authors have proposed the examination of the: (a). factorial structure of the construct; (b). external relations of the construct to other constructs; (c). different answer formats of the items; (d). processes related to the construct, such as its impact on specific behaviors (Dimitrov, 2010). Following this strategy, it can be argued that in the present study only the first step of this strategy was accomplished. This study examined only the factorial validity of the PCQ-12 instrument.

Considering these limitations, the results of this study can be complemented by additional research that could examine simultaneously the factorial structure of the two existing versions of PCQ using methods that combine the advantages of exploratory and confirmatory factorial analyses, such as the exploratory structural equation modeling (Asparouhov, & Muthén, 2009; Marsh et al., 2009). No study has been conducted to examine simultaneously the degree to which the two versions of PCQ measure the construct that they should be measuring, that is the positive psychological capital.

Overall, this study identified the nature of the psychological capital as a second-order factor based on data collected through PCQ-12 and suggested the need to conduct

more studies to examine how this instruments works in cultures different from those in which it was developed.

Chapter 3 Team learning and work team effectiveness (Study 4)

Although previous studies emphasized the relationship between team learning and competitivity, the relationship between this type of learning and team performance was examined in a reduced number of studies (Chan, Pearson, & Entrekin, 2003) and from different theoretical perspectives (Mo & Xie, 2009). Some of the studies that have approached the relationship between team learning behaviors and work team performance have distinguished the positive nature of the association of these two concepts (Edmonson, 1999b), while other studies have concluded that team learning has a negative effect on team performance (Liang, Moreland, & Argote; 1995; Lewis, 2003; apud. Mo & Xie, 2009). The contradictory results regarding the relationship between team learning and work team effectiveness can also be due to the fact that although team learning it is defined as a multidimensional process, most of the times it is assessed as a one-dimensional one (Savelsbergh, van der Heijden, & Poell, 2009). Moreover, LePine et al. (2008) asserted that, in general, the inconsistency of the research regarding work team effectiveness is due to the fact that the researchers approached concepts that are not clearly defined or differentiated from other similar concepts, such as work team learning.

Albeit there are analyses on team learning, these ones focused most on arranging different aspects of the specific literature and the obtained results (Edmondson, Dillon, & Roloff, 2008) or on methodological aspects of some selective studies regarding team learning from the perspective of a single definition offered to this concept (Goodman & Dabbish, 2011). But these studies did not insisted on analyzing the way in which team learning was examined in relation to work team effectiveness, although it has been suggested the fact that team learning is an important determinant of work team effectiveness (Crossan, Lane, White, & Djurfeldt, 1995; Van den Bossche, Gijselaers, Segers, & Kirschner, 2006; West, 1999; apud. Decuyper, Dochy, & Van den Bossche, 2011).

Considering the previously presented informations, attaining an analysis of the empirical studies that had examined team learning in relationship with work team effectiveness would enable to highlight some theoretical and methodological factors that could have an explanatory role to the inconsistent results regarding the relationship between these two concepts. Hereby, in this study we aim:

1. To identify the methodology used in the study of team learning in relation to work team effectiveness in terms of research sample (sample size, team type, organizational context from which the work teams derived), research design, level of reporting results (individual, group), the methods and the source of data collection.

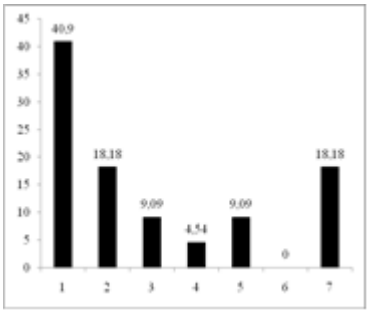
2. To identify the aspects of team learning and of work team effectiveness that have been examined in empirical studies in terms of the theoretical perspective that has been taken and the multidimensional nature of the examined concept.

Identification of the relevant studies for this analysis was conducted through a computerized research into the following databases: Web of Science, PsychArticles (EbscoHost), PsychInfo (EbscoHost) and Psychology and Behavioral Sciences Collection (EbscoHost). The search was made using the following keywords: *"team learning"* and *"work team effectiveness", "team learning"* and *"work team performance"*, *"group learning"* and *"work group effectiveness", "group learning"* and *"work group performance".* The search period of the studies was the one of between the first data admitted by the database (1899 – SI Web of KnowledgeSM, 1894 – PsychArticles, 1800 – PsychInfo, 1965 – Psychology and Behavioral Sciences Collection) and 31st July 2010. Totally, 3439 research papers were generated from wich were selected just the ones published in English.

In order to be included in the analysis, the studies had: (a). to examine team learning in relationship with team effectivenss using work teams from the organizational environment; (b). to investigate from a quantitative empirical perspective team learning in relationship with work team effectiveness; (c). to examine the team or group as an unit of analysis; (d). to determine the level of reporting the results (individual or group); (e). to examine at least two work teams or to provide two sets of data on the same team. The final number of studies included in the analysis is 21 from which 22 independent study samples were extracted. These studies are presented into **Appendix 3.1.** The coding of these studies was realized in an independent manner by

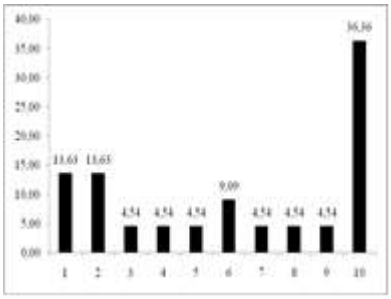
two researchers (100%). The coding information was examined through content analysis.

The results indicate that the knowledge of the relationship between the two concepts of interest it is less apprized by studies conducted with samples with a large number of participants. The size of the used samples varies from 6 to 224 work teams. Altogether, 1445 work teams were used, the average being of 65.68 teams per study. Moreover, this knowledge is based more on project teams (40.90%), service (18.18%) and multiple teams (18.18%) and less on results obtained just with samples formed by action and performance, management and production teams (**Figure 3.1**). These results are similar with those existing in the literature on work team effectiveness (Nielsen, Sundstrom, & Halfhill, 2005). Often, work team learning was examined in relation with work team effectiveness with samples consisting in work teams derived from the same activity domain (63.64%) (**Figure 3.2**).



Note: *1* = Project teams; *2* = Service teams; *3* = Action and performance teams; *4* = Management teams; *5* = Production teams; *6* = Consulting teams; *7* = Multiple teams (two or more types of teams).

Figure 3.1. *Distribution of the independent samples included in the analysis in terms of the type of teams*

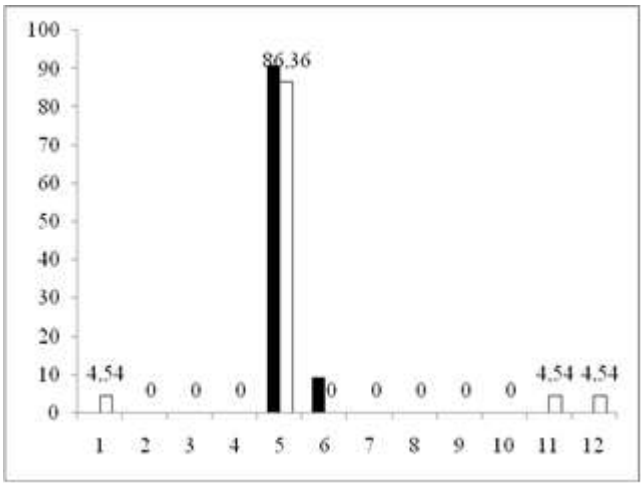


Note: *1* = Schools; *2* = Hospitals; *3* = Banks; *4* = Technological product research; *5* = Equipment industry; *6* = Furniture manufacturing; *7* = High-tech; *8* = Oil and gas industry; *9* = Pharmaceutics and medical products industry; *10* = Different activity areas.

Figure 3.2. *Distribution of the independent samples included in the analysis in terms of the organizational context of the sample*

All the analyzed studies were based on a correlational research design in which the data for both variables of interest were simultaneously collected. The level of the reporting results is by preponderance at group level (95.45%). In 86.36% from the analyzed studies, the data collection methods used for the measurement of team learning and work team effectiveness were similar, being represented by scales and questionnaires **(Figure 3.3.).** In this research category some data ware provided only by

team members (40.90%), team managers (13.63%), team members and their supervisors (4.54%), and others were collected from different sources (27.27%).



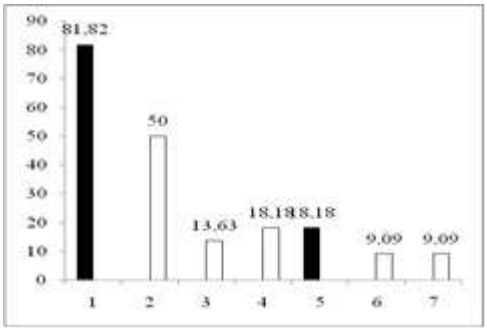
Legend:

■ Data collection methods on team learning
□ Data collection methods on work team effectiveness

Note: *1* = Observation; *2* = Psycho-physiological; *3* = Psycho-physics; *4* = Psychometrics; *5* = Scales and questionnaires; *6* = Interviews; *7* = Journal and narratives; *8* = Focus-group; *9* = Ethnographical; *10* = Action research; *11* = Archive analysis; *12* = Mixed methods.

Figure 3.3. *Distribution of the independent samples included in the analysis in terms of data collection method*

The results obtained in this study highlights that team learning was studied from different theoretical perspectives, but most of the studies were based on the definition provided by Edmondson (1999b, p. 353): „*emergent process of collective reflection and action"*. This conceptual diversity also confirms the existing results in the literature (Decuyper et al., 2010), showing the lack of clarity regarding the significance of the concept of team learning (Edmonson et al., 2008; Goodman & Dabbish, 2011; Wilson et al., 2007). Following the analysis, it was that some of the studies examined team learning from the process perspectives while others focused on this concept as an outcome **(Figure 3.4).**



Legend:

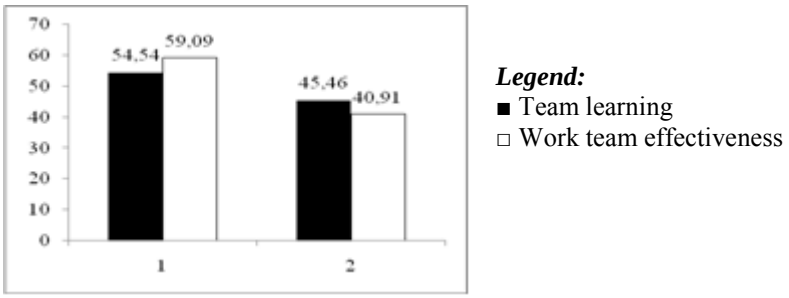
■ Theoretical perspectives on team learning
□ Theoretical aspects examined within each theoretical perspective on team learning

Note: *1* = Team learning as a process; *2* = Team learning behaviors; *3* = Team learning activities; *4* = Other aspects of team learning as a process; *5* = Team learning as an outcome; *6* = Team learning as a cognitive outcome; *7* = Team learning as a behavioral outcome.

Figure 3.4. *Distribution of the independent samples included in the analysis in terms of the theoretical perspectives of team learning*

The majority of the studies focused on team learning as a process (81.82%), particular on the team learning behaviors. Although in the literature there are conceptualizations of team learning as process and outcome (Argote et al., 2001; Decuyper et al., 2010; Goodman & Dabbish, 2011; Wilson et al., 2007), our analysis did not identified any empirical study adopting such a theoretical perspective. Thus, these results show that the focus on the investigation of the phenomenon of interest was preponderantly from a single perspective that is the process one.

In terms of the multidimensional nature of team learning (**Figure 3.5**), most of the studies examined this concept from a one-dimensional perspective (54.54%). Beyond half of the studies investigated just a singular aspect of the work team effectiveness (59.09%) represented by the team performance. The studies that analyzed multiple criteria of work team effectiveness also included criteria of efficiency, quality of interpersonal relationships, team member satisfaction and team innovation.



Note: *1* = One-dimensional concept; *2* = Multidimensional concept

Figure 3.5. *Distribution of the independent samples included in the analysis in terms of the multidimensional nature of the investigated construct*

The summary of the results of a more detailed analysis of the independent samples that examined team learning as a process in relation to work team effectiveness in terms of the multidimensional nature of the concepts, the data collection method and source is included in **Table 3.3.** The results of a more detailed analysis of the studies that investigated learning as an outcome related to work team in terms of the multidimensional nature of the concepts, the data collection method and source are included in are included in **Table 3.4.**

Table 3.3. *The summary of the analysis results regarding learning as a process and work team effectiveness*

				WORK TEAM EFFECTIVENESS									
				Singular criterion					**Multiple criteria**				
				Similar methods			Different methods		Similar methods				Different methods
				Scale			Archival data	Observation	Scale				Mixtă
				Members	Manager	Members, manager	Organizational records	Members	Members	Experts	Members, other source	Members, manager	Manager, Archival data
Multidimensional team learning behaviors	Similar methods	Scale	Members	4.54%					4.54%	4.54%	4.54%		
	Different methods	Interview	Members				4.54%						
One-dimensional team learning behaviors	Similar methods	Scale	Members	13.92%	4.54%				4.54%				
			Members, Manager			4.54%							
Multidimensional team learning activities	Similar methods	Scale	Members	9.28%								4.64%	
Multidimensional team learning mechanism	Different method	Interview	Manager					4.54%					
One-dimensional team learning process	Different method	Scale	Members										
			Manager									4.54%	4.54%
Multidimensional team learning process	Similar method	Scale	Manager		4.54%								
Total				27.27%	9.28%	4.54%	4.54%	4.54%	9.28%	4.54%	4.54%	9.28%	4.54%

Table 3.4. *Team learning as an outcome and work team effectiveness*

Reference	Team learning					Work team effectiveness			Relation
	Studied aspect	**Dimensions**	**Method**	**Source**	**Dimensions**	**Studied aspect**	**Method**	**Source**	
1. Bstieler & Hemmert (2010)	Learning as a cognitive outcome	One-dimensional	Scale	Members	Singular	Team performance	Scale	Members	.63**
2. Akgün et al. (2005)	Learning as a cognitive outcome	One-dimensional	Scale	Manager	Multiple	Speed to market Product success	Scale Scale	Manager Manager	.03 .35**
3. Akgün et al. (2006)	Learning as a behavioral outcome	One-dimensional	Scale	Manager	Singular	Product success	Scale	Manager	.55**
4. Sarin & McDermott (2003)	Learning as a behavioral outcome	One-dimensional	Scale	Members	Multiple	Speed to market Innovation level	Scale Scale	Member Members	.17** .34**

Note: ** p < .01

Overall, the results of this analysis emphasize the status of "umbrella concept" of team learning through the identification of the diversity of the theoretical perspectives from which this concept was studied in relation with work team effectiveness. This aspect is in contrast with the fact that all the studies included into the analysis used the same type of research design and most of them used similar data collection methods and sources. Given the type of work teams that have been used to study this relationship and the convergence of the analyzed independent studies in terms of the methodological issues, we consider that the results of this analysis carried out by us can be an important milestone for the development of empirical studies that will use multiple methods of data collection about the same phenomenon, using different sources.

Chapter 4 Psychological capital, team learning and work team effectiveness: An empirical perspective (Study 5)

Although in the empirical literature the multidimensional conceptualization of team learning and work team effectiveness gains an increased attention, the empirical studies that have examined team learning in relation to multiple criteria of effectiveness are relatively few (Bang, Fuglesang, Ovesen, & Eilertsen, 2010; Kostopoulos & Bozionelos, 2011; Zellmer-Bruhn & Gibson, 2006). More frequently, these studies focused on the relationship between team learning and team performance as a criterion of work team effectiveness. But within this category of studies, some of them have provided empirical support for the existence of a positive relationship between these concepts (Edmondson, 1999b), while others showed a negative association (Drach-Zahavy & Pud, 2007) or the lack of their relationship (van Woerkom & Croon, 2009). Contradictory and inconsistent results have been identified in terms of team learning relationship with other measures of work team effectiveness represented by the team viability (Bang et al., 2010, Van den Bossche, Gijselaers, Segers, & Kirschner, 2006; Zellmer-Bruhn & Gibson, 2006) and team members satisfaction (Bang et al., 2010; Yeh & Chou, 2005). This type of results was particularly evidenced when team learning was measured as a one-dimensional concept.

In the study of team learning phenomenon, researchers have paid special attention also to the factors which contribute to its development and facilitation (Gibson

& Vermeulen, 2003; van der Vegt & Bunderson, 2005). In particular, the team members beliefs about their interpersonal context were examined. These were defined as a combination of shared perceptions that emerge among team members in what regards the nature of the relationships that exist between them, such as psychological safety, task interdependence and collective self-efficacy (Van den Bossche et al., 2006; Ortega et al, 2010). Recently, in terms of collective self-efficacy, the studies in the field of positive organizational behavior have considered this team belief as part of a second order factor called collective psychological capital (Walumbwa, Luthans, Avey, & Oke, 2009; West, Patera, & Carsten, 2009). These studies have shown that collective self-efficacy and collective psychological capital were positively associated to team performance and its emerging states such as trust in group.

Unlike these researches, in the study conducted by Clapp-Smith et al. (2009), the emphasis was placed on psychological capital measured at the individual level of analysis of employees. This reveals that an important role in achieving team and organizational performance is played by the employees' beliefs about their own psychological resources. The fact that individual inputs of the team members have an influence on mediators is particularly evident within the functional perspective (McGrath, 1964), and, newly, within the IMOI models of work team effectiveness (Ilgen et al., 2005). If we refer to this IMOI theoretical framework, individual beliefs of employees can be placed at the level of the input of the individual team members. Recently, the literature has emphasized the need to examine the concept of psychological capital of employees working within the team given that teams are composed of individuals (Youssef & Luthans, 2011).

Based on these theoretical and empirical arguments, in this study we consider psychological capital as an input of the team members, a potential resource that can benefit work teams in terms of facilitating team learning behaviors. To date no studies have examined psychological capital in relation to individual, team or organizational learning. An indirect support for the existence of such relation is provided by the study conducted by Avey, Wernsing and Luthans (2009). This study evidenced that employees with high levels of psychological capital have higher levels of attention to failure and error detection, reluctance to simplify interpretations, awareness of the operations taking place, creating methods to cope with events, especially the unexpected ones, and ensuring the necessary expertise to implement these methods. Another

empirical support is provided by the studies on individual components of psychological capital. In this respect, Sitzman and Ely (2011), based on meta-analytical techniques, have shown that self-efficacy has a beneficial role on individual learning and performance both in academic and organizational settings.

Returning to the IMOI theoretical framework, team learning is considered a key mediator in the relationship between inputs (individual, group, organizational and contextual) and team work outputs or outcomes (Kozlowski & Ilgen, 2006, Mathieu et al., 2008). Empirical studies have highlighted the mediating role of team learning behaviors in the relation between psychological safety, as a team belief about the interpersonal context, and team performance (Edmodson, 1999b). Furthermore, team learning behaviors mediated the relationship between social resources and capital and team performance (van Emmerick, Jawahar, Schreurs and DeCuyper, 2010; Van der Vegt & Bunderson, 2005). In addition, van Emmerick et al. (2010) have shown that that team learning conceptualized as team learning behavior plays acts as a mediator in the relationship of social capital and team collective self-efficacy and team potency.

Thus, starting from the predictions of the IMOI models of work team effectiveness and the results of the empirical studies previously mentioned, it was hypothesized that:

$H_{1:}$ Team learning behavior mediates the relation between psychological capital and work team effectiveness in terms of team performance (H_{1a}), team member satisfaction (H_{1b}) and team viability (H_{1c})

$H_{2:}$ Global team learning behaviors mediates the relation between work team effectiveness criteria of team performance (H_{2a}), team member satisfaction (H_{2b}) and team viability (H_{2c}).

H_3: Team performance (H_{3a}), team member satisfaction (H_{3b}) and team viability (H_{3c}) are positively associated to the subsequent team learning behaviors

H_4: Team performance (H_{4a}), team member satisfaction (H_{4b}) and team viability (H_{4c}) are positively associated to the subsequent global team learning behaviors

H_5: Team performance (H_{5a}), team satisfaction (H_{5b}) and team viability (H_{5c}) are positively associated to the subsequent psychological capital.

H_6: Team learning behaviors are positively associated to the subsequent psychological capital

H_7: Global team learning behaviors are positively associated to the subsequent psychological capital.

In this study, 190 employees participated from the following five fields of activity: health - 43.7%, sales - 13.2%, topography - 22.21%, IT - 19.5% and vocational counseling - 1.6%. To test hypotheses H_3 - H_7, from the initial sample, 59 participants provided data for the second measurement. Their distribution in terms of the field of activity was as follows: sales - 40.7% IT - 54.2% and vocational counseling - 5.1%.

The instrument used to measure psychological capital was PCQ-12 questionnaire, self-evaluation form (Luthans, Youssef et al., 2007). Team learning behaviors were measured through 28 items developed by Savelsbergh and colleagues (2009).These items are distributed in the following eight subscales: (a). co-construction of meaning - 3 items, (b). exploring different perspectives - 4 items (c). error analysis - 4 items, (d). error communication - 4 items (e). reflection on processes - 4 items (f). reflection on outcomes - 3 items (h). feedback seeking - 3 items (i). experimentation - 3 items. For this study we used a translated version of the instrument from English into Romanian (**Appendix 4.1**).

Perceived team performance was measured using a Likert scale developed by Hackman (1987). This scale includes five items of which four are with reverse coding. Satisfaction with team members and team viability was assessed by Likert-scales of five items adapted from the instruments developed by Tekleab, Quigley and Tesluk (2009). For this study, a translated version of these scales from English into Romanian was used (**Appendix 4.2**). Operationalization of each variable included in the study is presented in **Appendix 4.3**.

These scales were individually filled in by each participant. The capture the influence of the work team effectiveness criteria on team learning behaviors and psychological capital, at an interval of one week the scales of team learning behaviors and psychological capital were applied again (moment T2).

Considering that the instruments used in this study are relatively new in the literature and some of them were never used on Romanian population, an analysis of the psychometric properties was conducted. Particularly, the factorial structure and the reliability of these instruments were examined through the use of a confirmatory factorial analysis performed by using the software V6.1 EQS (Bentler & Wu, 2003). The steps taken in this analysis were similar to those presented in Study 3, excepting the

cross-validation step. Hierarchical regression analysis was used to test the existence of a mediating effect (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998). This procedure was followed by the Sobel and Aroian test (http://quantpsy.org/sobel/sobel.htm). Testing hypotheses regarding associations between concepts was made through the correlational analysis. The analysis level of the results in this study is an individual one.

The test results of the two proposed models for factor structure of the PCQ-12 instrument shows that the model that conceptualizes psychological capital as a latent factor including self-efficacy, hope, resilience and optimism has a good fit compared with the one-dimensional model, Δ*CFI = .073 (**Table 4.1**.).

Table 4.1. *Fit indices and standardized factor loading for the factorial solutions of the PCQ-12 instrument (Luthans, Youssef et al., 2007)*

Scales and items	**One-dimensional model**	**Hierarchical model**
	Factor loading	**Factor loading**
Self-efficacy	-	*.89(.84)*
Item 1	.72	.80
Item 2	.65	.69
Item 3	.79	.84
Hope	-	*.95(.81)*
Item 4	.71	.73
Item 5	.72	.76
Item 6	.69	.72
Item 7	.59	.62
Resilience	-	*.86(.78)*
Item 8	.53	.53
Item 9	.53	.61
Item 10	.74	.85
Optimism	-	*.86(.70)*
Item 11	.62	.71
Item 12	.66	.76
Psychological capital	*(.91)*	*(.94)*
S-Bχ^2	118.43***	76.683**
df	54	50
**CFI*	.875	.948
SRMR	.056	.049
**RMSEA*	.079	.053
*90% CI *RMSEA*	[.060; .098]	[.027; .076]
Δ*CFI*	-	.073

Note: *** p < .001; ** p < .01; *()* = Ω_w reliability coefficient.

Similar results were obtained for the assessment of the team learning behaviors instrument (**Table 4.2**). The model that conceptualizes team learning as multiple behaviors presents a better fit compared with single factor model, Δ*CFI = .246.

Table 4.2. *Fit indices and standardized factor loading for the factorial solutions proposed for the team learning behaviors instrument (Savelsbergh et al., 2009)*

Scales and items	One-factorial model	Hierarchical model
	Factor loading	**Factor loading**
Co-construction of meaning	-	*.60(.80)*
Item 1	.39	.64
Item 2	.52	.83
Item 3	.43	.74
Exploring different perspectives	-	*.76(.75)*
Item 4	.38	.55
Item 5	.35	.45
Item 6	.56	.73
Item 7	.59	.73
Error analysis	-	*.86(.90)*
Item 8	.72	.80
Item 9	.65	.77
Item 10	.77	.87
Item 11	.78	.83
Error communication	-	*.87(.89)*
Item 12	.68	.75
Item 13	.77	.82
Item 14	.73	.81
Item 15	.75	.85
Reflection on processes	-	*.89(.87)*
Item 16	.74	.79
Item 17	.75	.86
Item 18	.60	.69
Item 19	.68	.75
Reflection on outcomes	-	*.92(.88)*
Item 20	.80	.86
Item 21	.80	.87
Item 22	.73	.78
Feedback seeking	-	*.82(.83)*
Item 23	.67	.80
Item 24	.64	.72
Item 25	.64	.82
Experimentation	-	*.58(.93)*
Item 26	.57	.83
Item 27	.51	.93
Item 28	.55	.91
Team learning behaviors	*(.96)*	*(.98)*
S-Bχ^2	1216.67***	576.83***
df	350	342
**CFI*	.663	.909
SRMR	.096	.073
**RMSEA*	.114	.060
*90% CI *RMSEA*	[.107; 121.]	[.052; .068]
*Δ*CFI*	-	.246

Note: *** p < .001, *()* = Ω_w reliability coefficient.

Results show that although the model with five items on team performance has a good fit, *S-B*χ^2(5) = 7.118, $p > .05$, **CFI* = .991, *SRMR* = .031, **RMSEA* = .047, *90%CI* **RMSEA* = [.000; .119], one of the items have a poor factor loading (**Table 4.3**). The exclusion of this items from the analysis does not contribute to a scale with a better fit

compared with the model that included it, *Δ*CFI* = - .006. Thus, when considering the total score of the scale, this item was excluded from the analysis.

Table 4.3. *Fit indices and standardized factor loading for the factorial solutions proposed for the measurement instrument of perceived team performance (Hackman, 1987)*

Scales and items	One-factorial model	Hierarchical model without Item 3
	Factor loading	Factor loading
Item 1	.57	.56
Item 2	.73	.72
Item 3	.26	-
Item 4	.83	.83
Item 5	.79	.79
Team performance	*(.85)*	*(.83)*
S-Bχ^2	7.118	5.302
df	5	2
**CFI*	.991	.985
SRMR	.031	.033
**RMSEA*	.047	.093
*90% CI *RMSEA*	[.000; .119]	[.000; .194]
*Δ*CFI*	-	-.006

Note: *()* = Ω_w reliability coefficient.

The instrument measuring team member satisfaction presented a good fit when the Item 4 was excluded from analysis, *Δ*CFI* = .145 (**Table 4.4**).

Table 4.4. *Fit indices and standardized factor loading for the factorial solutions of the team member satisfaction scale (Tekleab et al., 2009)*

Scales and items	One-factorial model	Hierarchical model without Item 4
	Factor loading	Factor loading
Item 1	.80	.86
Item 2	.86	.89
Item 3	.85	.90
Item 4	.89	-
Item 5	.91	.82
Team member satisfaction	*(.94)*	*(.91)*
S-Bχ^2	55.308***	2.271
df	5	2
**CFI*	.854	.999
SRMR	.052	.010
**RMSEA*	.231	.027
*90% CI *RMSEA*	[.177; .285]	[.000; .149]
*Δ*CFI*	-	.145

Note: *** p < .001; *()* = Ω_w reliability coefficient.

Team viability scale presents a good fit, *S-B*$\chi^2(5) = 7.234$, $p > .05$, **CFI* = .988, *SRMR* = .029, **RMSEA* = .049, *90%CI *RMSEA* = [.000; .120] (**Table 4.5**). However,

the item 5 has a poor factor loading. This item is reversely coded compared to the other items of the scale.

Table 4.5. *Fit indices and standardized factor loading for the factorial solution proposed for the team viability instrument (Tekleab et al., 2009)*

Scales and items	**One-dimensional model**
	Loading factor
Item 1	.79
Item 2	.84
Item 3	.91
Item 4	.78
Item 5	.38
Team viability	*(.91)*
S-Bχ^2	7.234
df	5
**CFI*	.988
SRMR	.029
**RMSEA*	.049
*90% CI *RMSEA*	[.000; .120]

Note: () = Ω_w reliability coefficient.

These instruments were used in the univariate descriptive, bivariate and regression analysis (**Table 4.6, Table 4.7**).

The data obtained showed that only two team learning behaviors are mediators of the relationship between psychological capital and work team performance: (a). exploring different perspectives (total mediator, β = .14, p> .05, z_{Sobel} = 2.81, p <.01, z_{Aroian} = 2.77, p < .01) and (b). error analysis (partial mediator, β = .15, p < .05, z_{Sobel} = 2.61, p < .01, z_{Aroian} = 2.58, p < .01). In addition, the results indicate that global team learning behaviors are not associated to work team performance.

Team learning behaviors partially mediate the relationship between psychological capital and team member satisfaction. This partial mediating effect is found both for team learning behaviors considered as global and a multidimensional concept. Sobel and Aroian test results confirm this mediating effect.

Team learning behaviors of co-construction of meaning (β = .16, p < .05), exploring different perspectives (β = .23, p <.01) and error analysis (β = .17, p < .05) totally mediates the relationship between capital psychological and work team viability. Statistical significance of the total effect of mediation is emphasized by Sobel and Aroian test for each of the three team learning behaviors. Instead, global team learning behaviors does not mediate the relationship between psychological capital and work team viability.

Table 4.6. *Means, standard deviation and r Pearson inter-correlation matrix between the variables included in the study (N = 190)*

Variable	M ± AS	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Psychological capital	4.77 ± .70	(.90)												
2. Team learning behaviors	3.85 ± .61	.44***	(.95)											
3. Co-construction of the mean	3.91 ± .74	.32***	.61***	(.78)										
4. Exploring different perspectives	4.05 ± .56	.37***	.67***	.53***	(.72)									
5. Error analysis	4.10 ± .75	.37***	.80***	.41***	.59***	(.89)								
6. Error communication	4.01 ± .76	.43***	.82***	.47***	.61***	.79***	(.85)							
7. Reflection on processes	3.74 ± .82	.42***	.84***	.38***	.44***	.63***	.65***	(.85)						
8. Reflection on results	3.86 ± .82	.37***	.87***	.43***	.52***	.69***	.66***	.77***	(.87)					
9. Feedback seeking	3.68 ± .86	.29***	.82***	.44***	.39***	.53***	.56***	.64***	.72***	(.81)				
10. Experimentation	3.48 ±1.00	.21**	.67***	.20**	.26***	.38***	.38***	.57***	.51***	.62***	(.92)			
11. Team performance	3.99 ± .87	.21**	.07	.15*	.23**	.21**	.16*	-.01	-.06	-.08	-.15*	(.82)		
12. Team member satisfaction	5.81 ±1.09	.31***	.41***	.24***	.42***	.41***	.37***	.35***	.33***	.25***	.20**	.41***	(.85)	
13. Team viability	6.16± 1.11	.18*	.18*	.20**	.27***	.21**	.19**	.06	.09	.07	.06	.37***	.52***	(.85)

Note: *M* = mean*; AS* = standard deviation; *** p < .001; ** p < .01*;* * p < .05; *()* = Ω_w reliability coefficient.

Table 4.7. *Results of the regression analysis on the mediating role of team learning behaviors between psychological capital and work team effectiveness (N = 190)*

Variable	Team performance				Team member satisfaction				Team viability			
	Pas 1	**Pas 2**	**z_{Sobel}**	**z_{Aroian}**	**Pas 1**	**Pas 2**	**z_{Sobel}**	**z_{Aroian}**	**Pas 1**	**Pas 2**	**z_{Sobel}**	**z_{Aroian}**
Psychological capital					.31***	.16*	4.59***	4.56***	.18*	.12	2.35*	2.32*
Team learning behaviors						.34***				.12		
ΔR^2						.09				.01		
Psychological capital	.21**	.18*	1.90	1.86	.31***	.26***	2.77**	2.73**	.18*	.12	2.47*	2.43*
Co-construction of the mean		.09				.15*				.16*		
ΔR^2		.00				.02				.02		
Psychological capital	.21**	.14	2.81**	2.77**	.31***	.17*	4.18***	4.15***	.18*	.09	3.18**	3.14**
Exploring different perspectives		.17*				.35***				.23**		
ΔR^2		.02				.10				.04		
Psychological capital	.21**	.15*	2.61**	2.58**	.31***	.18**	4.17***	4.14***	.18*	.11	2.69**	2.66**
Error analysis		.15*				.34***				.17*		
ΔR^2		.01				.10				.02		
Psychological capital	.21**	.17*	2.20*	2.18*	.31***	.18*	4.21***	4.18***	18*	.12	2.47*	2.44*
Communication error		.09				.29***				.13		
ΔR^2		.00				.06				.01		
Psychological capital					.31***	.20**	3.99***	3.96***				
Reflection on processes						.26***						
ΔR^2						.05						
Psychological capital					.31**	.21**	3.67***	3.64***				
Reflection on outcomes						.25***						
ΔR^2						.05						
Psychological capital					.31**	.26***	2.72**	2.68***				
Feedback seeking						.17*						
ΔR^2						.02						
Psychological capital	.21**	.26***	-1.76	1.70	.31**	.28***	2.10*	2.04*				
Experimentation		-.21**				.14*						
ΔR^2		.04				.02						

Note: *** p < .001; ** p < .01*;* * p < .05.

The analysis of association reflects that team performance (T1) is negatively associated to reflection on the processes (T2), $r = -.29$, $p < .05$, and the experimentation of new working methods (T2), $r = -.31$, $p < .05$ (**Table 4.8**). Work team performance was not associated with the subsequent global team learning behaviors, $r = -.15$, $p > .05$.

The results show a positive association between team member satisfaction (T1) and the team learning behavior of exploring different perspectives (T2), $r = .30$, $p < .05$. However, the association between this criteria of work team effectiveness and global team learning behaviors is not statistically significant (T2), $r = .18$, $p > .05$. These results do not reveal the influence of team member satisfaction on the subsequent global team learning behaviors.

The data shows that team viability is associated with four of the subsequent team learning behaviors: exploring different perspectives, $r = -.34$, $p < .01$, error analysis, $r = .26$, $p < .05$, reflecting on outcomes, $r = .31$, $p < .05$, and experimentation, $r = .29$, $p < .05$. Global team learning behaviors were positively associated with team viability, $r = .30$, $p < .05$.

None of the criteria of work team effectiveness is associated with the subsequent psychological capital, $r = -.25$, $p > .05$ (team performance), $r = .16$, $p < .05$ (team member satisfaction), $r = .12$, $p < .05$ (team viability).

The data reveal a positive influence of team learning behaviors on psychological capital, excepting the exploration of different perspectives, $r = .24$, $p > .05$ (**Table 4.9**). However, psychological capital is influenced by a wide range of team learning behaviors: co-construction of meaning, $r = .28$, $p < .05$, error analysis, $r = .32$, $p < .05$, error communication, $r = .27$, $p < .05$, reflection on processes, $r = .44$, $p < .01$, reflection on outcomes, $r = .28$, $p < .05$, feedback seeking, $r = .39$, $p < .01$, and experimentation, $r = .40$, $p < .01$. Furthermore, the global team learning behaviors were associated with employee's positive psychological capital, $r = .44$, $p < .01$.

Table 4.9. *Means, standard deviation and r Pearson inter-correlations matrix between the variables measured in different moments (N = 59)*

Variable	M ± AS	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Team performance	4.00 ± .78	(.79)												
2. Team member satisfaction	5.96 ± 1.08	.35**	(.93)											
3. Team viability	6.48 ± .75	.25	.64**	(.80)										
4. Team learning behaviors (T2)	4.03 ± .63	-.15	.18	.30*	(.96)									
5. Co-construction of the mean (T2)	4.08 ± .71	-.05	.10	.17.	.76***	(.80)								
6. Exploring different perspectives (T2)	4.26 ± .53	.06	.30*	.34**	.76***	.66***	(.71)							
7. Error analysis (T2)	4.12 ± .72	-.12	.13	.26*	.87***	.61***	.65***	(.90)						
8. Error communication (T2)	4.05 ± .73	-.11	.10	.19	.83***	.57**	.64**	.83**	(.90)					
9. Reflection on processes (T2)	3.83 ± .86	-.29*	.15	.25	.89***	.57***	.59***	.72***	.70***	(.91)				
10. Reflection on outcomes (T2)	4.02 ± .78	-.12	.22	.31*	.88***	.57***	.58***	.71***	.65***	.76***	(.88)			
11. Feedback seeking (T2)	3.85 ± .90	-.15	.10	.24	.74***	.52***	.48***	.60***	.54***	.79***	.79***	(.85)		
12. Experimentation (T2)	3.67 ± 1.11	-.31*	.18	.29*	.82**	.53***	.55***	.58***	.59***	.86***	.74***	.82***	(.94)	
13. Psychological capital (T2)	4.98 ± .57	.12	.28*	.64***	.41***	.37**	.44***	.54***	.57***	.42***	.49***	.61***	.56***	(.88)

Note: *T1* = moment 1; *T2* = moment 2; *M* = mean*; AS* = standard deviation; *** p < .001; ** p < .01*;* * p < .05, *()* = alpha Cronbach reliability coefficient.

.

Table 4.9. *Means, standard deviation and r Pearson inter-correlations matrix between team learning behaviors (T1) and psychological capital (T2) (N = 59)*

Variable	M ± AS	1	2	3	4	5	6	7	8	9	10
1. Team learning (T1)	4.15 ± .60	(.95)									
2. Co-construction of the mean (T1)	4.22 ± .51	.54***	(.73)								
3. Exploring different perspectives (T1)	4.12 ± .75	.64***	.52***	(.55)							
4. Error analysis (T1)	3.97 ± .71	.80***	.40**	.64***	(.89)						
5. Error communication (T1)	3.50 ± .95	.79***	.36**	.61***	.87***	(.84)					
6. Reflection on processes (T1)	3.76 ± .87	.86***	.33**	.42***	.56***	.58***	(.88)				
7. Reflection on outcomes (T1)	3.60 ± .92	.89***	.31*	.51***	.64***	.66***	.84***	(.86)			
8. Feedback seeking (T1)	3.16 ± 1.10	.85***	.38**	.35**	.56***	.57***	.74***	.76***	(.77)		
9. Experimentation (T1)	3.81 ± .63	.76***	.33*	.28*	.44***	.39**	.66***	.64***	.68***	(.93)	
10. Psychological capital (T2)	4.98 ± .57	.44***	.28*	.24	.32*	.27*	.44***	.28*	.39**	.40**	(.88)

Note: *T1* = moment 1; *T2* = moment 2; *M* = mean*; AS* = standard deviation; *** p < .001; ** p < .01*;* * p < .05, *()* = alpha Cronbach reliability coefficient.

Based on the data collected at two different times, the results highlight the complex nature of the relationships between these concepts. A first relevant result is that considering team learning from a global and a multidimensional perspective implies considerable differences in terms of its relationships with the criteria of work team effectiveness. In general, the global measurement approach to team learning behaviors masks the significant relationships of its dimensions with the multiple criteria for work team effectiveness. The use of a multidimensional instrument for the evaluation of team learning behaviors allowed a nuanced perspective of their relationships with other variables measured in this study. This is most obvious in the associations between team learning behaviors and team performance and viability as criteria of work team effectiveness. Instead, team learning behaviors, when considered as global and multidimensional concept, were positively associated with increased levels of team member satisfaction. The lack of the direct association between team learning behaviors and some of the work team effectiveness criteria may be explained by the existence of other variables that may mediate or moderate the relation between these concepts. For example, Mo and Xie (2009) have shown that the relationship between student team learning and team performance is mediated by the tranzactive memory of the team. Moreover, as it is suggested by the IMOI theoretical framework (Ilgen et al., 2005), there might be the possibility that the relations between team learning behaviors and work team effectiveness are not linear.

The results underline the association of motivational inputs at employees' level with the actions they do with other team members in order to collect and process data that would allow them to adapt and to improve their work activity. Moreover, the existence of mediation effects of the team learning behaviors shows that these contribute to explaining the way in which psychological aspects of employees, such as psychological capital, can concur to the determination of an effective work team.

It is important to note that not all team learning behaviors mediated the relationship between psychological capital and the examined criteria of work team effectiveness. Also, there are team learning behaviors that totally of partially mediates the relationship between psychological capital and all three criteria of work team effectiveness. These behaviors reflect the conversational action of team members to explore, share knowledge, views and perspectives and the discussion and analysis of errors to prevent them. Also, the common construction of the meaning behavior has an

important role in the transformation of the psychological capital into team member satisfaction and team viability. Thus, we emphasized the mediator role of the team learning behaviors in the relationship between team member resources and team effectiveness. These results are similar to those in the literature that have shown that social resources (e.g., diversity of expertise) influence group performance through team learning behaviors (Van Emmerik et al., 2010).

One of the main contributions of this study is that it has revealed a relationship between work team effectiveness criteria and subsequent learning behaviors. Furthermore, team member satisfaction facilitates conversational actions of team members to explore, share knowledge, views and perspectives. The importance of team viability as a precursor to team learning behaviors is suggested by the existence of a significant relationship between this work team effectiveness criteria and team learning behaviors considered globally. In addition, in the present study, none of the criteria of work team effectiveness influenced employees' psychological capital. Lack of this association is explained from the IMOI theoretical framework that claims that the influence of outcomes or team effectiveness criteria is weaker on inputs, but stronger on the subsequent processes and emergent states. Furthermore, also in agreement with the predictions of this theoretical framework, the relationship between team learning behaviors and subsequent psychological capital can be explained.

This study enhances knowledge about the complex and dynamic nature of the teams operating in organizational context. Results reveals how inputs from the employees' level, in terms of psychological capital, contribute to the effectiveness of work teams considered in terms of team performance, team member satisfaction and team viability. Also, in terms of feedback, work team effectiveness has an important impact on team learning behaviors. Furthermore, what happens at the team level in terms of interactions between team members dedicated to adaptation and success achievement influences the psychological capital of employees.

This study illustrates that IMOI theoretical framework can be used to interpret the existing mechanisms at the level of organizational groups goes beyond the limitations of the traditional Input-Process-Output perspective to study the complexity of the work teams.

Chapter 5 Final conclusions

As shown in the previous chapters of this thesis, our investigation process provided a wide range of theoretical and empirical contributions. First, in each of the chapters that presented a systematic analysis, meta-analysis or empirical study, a number of limitations and future research directions were indicated. All in all, these could be an impetus for the replication of the results obtained and for the empirical testing of the hypotheses or explanations introduced in this thesis. In the following paragraphs we will synthetize the theoretical, empirical and practical contributions of this thesis.

Chapter 1 focused on presenting the overall theoretical framework that provided the support to the conducted studies. In this first chapter of this thesis, the following aspects were presented:

- The critical analysis of the theoretical perspectives used in the study of work teams. The assumptions, advantages and the limitations of each of the mentioned perspectives were presented.
- The argumentation for the importance of using IMOI theoretical framework in the study of teams in organizational context in order to highlight their complex, dynamic and adaptive character.

Chapter 2 addressed the issue of psychological capital in organizational context through both theoretical studies and an empirical study. Thus, the contributions of this chapter are the following:

- The critical analysis of the concept of psychological capital from the positive organizational domain by reference to similar concepts in terms of name (the confidence concept proposed by Stajkovic, 2006)
- The first systematic review of the published empirical literature on the concept of psychological capital from the positive organizational behavior domain to highlight the extent to which it was examined at the individual, team and organizational level of analysis. This analysis suggests directions in which research of this concept should be conducted in terms of its level of analysis within an organization, the role of this concept in relation to other variables and of methodological level (measurement instruments, research design)

- The first meta-analytical integration of the published empirical literature on the concept of psychological capital examined in relation to variables measured at the employees' level of analysis
- The results of this meta-analysis can be informative for the human resources professionals who can design programs for organizational change and development
- The critical analysis of the research literature on the instrument measuring the concept of psychological capital presented by Luthans, Youssef et al. (2007)
- The first study that analyzes the psychometric properties of the PCQ-12 instrument within the European and Romanian culture. In this sense, data about the factorial validity and reliability based on factor loading of the PCQ-12 instrument were provided.

Chapter 3 focused on the relationship between team learning and work team effectiveness. The contributions of this chapter brought to this research domain included:

- The first systematic analysis of the published empirical studies that have examined team learning in relation to work team effectiveness in terms of the theoretical and methodological aspects of these studies
- This systematic review included only studies that have examined team in organizational context, outlining the specific of this topic research on real work teams
- The confirmation of the team learning concept as "an umbrella concept" and of the multidimensional complex nature of the work team effectiveness concept
- Through the results obtained, this systematic review highlighted the factors which can moderate the relationship between team learning and wor team effectiveness

Chapter 4 examined the relationship between psychological capital, team learning and work team effectiveness based on IMOI theoretical framework. The contributions brought by this chapter are as follows:

- The theoretical integration of the concept of psychological capital, team learning and work team effectiveness in the IMOI theoretical framework
- The examination of team learning in relation with multiple criteria of effectiveness from a global and a multidimensional perspective, highlighting the

influence of the measurement type of team learning on its relation with work team effectiveness

- The examination of a wide range of team learning behaviors in relation with work team effectiveness approached from a multidimensional perspective in terms of team performance, team member satisfaction and team viability
- One of the first investigations of the factorial structure of team learning behaviors developed by Savelsbergh et al. (2009) within the European culture and the first investigation within the Romanian culture. Also, the reliability of this instrument was analyzed based on the factor loading of the its items
- The examination of the psychometric properties of some measurement instruments of work team effectiveness criteria within the Romanian culture
- By the translation of these instruments and the analysis of their psychometric properties, they were delivered to be used in future studies of in organizational context
- The first empirical study that applies the IMOI theoretical framework to investigate the relationship between psychological capital (input), team learning behaviors (mediator) and multiple criteria of work team effectiveness (outcomes)
- The first study on work teams that highlights the mechanisms through which the input variables at the employees' level, such as psychological capital, are transformed in multiple outcomes of the work teams
- The first study on work teams that highlights the feedback from the work team outcomes, considered from a multiple perspective, to team learning behaviors and psychological capital
- The first study on work teams that highlights the importance of the psychological capital to work team effectiveness and the importance of the team learning behaviors as a mediator between these two concepts
- The results empirically support the IMOI theoretical framework, highlighting the dynamic nature of the variables involved in the functioning of a work group.

Beyond these contributions, it is important to mention some limitations of this thesis that restrain the generalizability of the results obtained. Thus, with regard to the first chapter, it is worth mentioning that the analysis of the theoretical perspectives on work teams is based on a set of scientific works that were often cited in the papers

related to the study of work teams. None systematic review of the empirical studies was conducted to identify the extent to which these approaches are employed in the empirical study on work teams. But given the sheer volume of the empirical studies on the work teams, such analysis would have been less attainable.

Identically, in the first study in which the empirical literature on psychological capital from the perspective of the positive organizational behavior domain was reviewed, it is worth mentioning that this analysis was limited to only one type of knowledge produced in this domain. As such, the results of this analysis are based only on studies which were identified based on the three searching strategies: the computerized search in the electronic databases, manual searching and the analysis of the reference list.

These limits are applicable to the meta-analytic study on the correlates of psychological capital presented in the second chapter of this thesis. Although this meta-analysis indicated significant relationships of the psychological capital with a wide range of outcomes measured at the employees' level, it relies on a small number of studies. Moreover, these studies did not show enough variability in terms of the characteristics coded in order to conduct a moderator analysis. Also, all the studies included the analysis were based on a single data set, which has implication for causality between the variables investigated.

In the third study that investigated the psychometric properties of the PCQ-12 instrument, the focused was on one type of validity, the factorial one, and on the reliability computed from the items factor loading derived from the confirmatory factorial analysis. Thus, this study provided only a narrow perspective on how this instrument psychometrically works in other cultures than those in which it has been developed. Also, because of the difficult access in the organizational context, the instrument of interest was applied only in a single testing session, limiting the opportunity to study its test-retest reliability or to compare data obtained with different instruments or sources.

Regarding the fourth research study of this thesis, its limitations are similar to those of the second study. In addition, given that the identification of the relevant paper included in the analysis was based only on a computerized search in mentioned electronic databases, this constrain the generalization of the results of this systematic review to one type of knowledge.

Although that in the fifth study on the empirical approach of the relationship between psychological capital, team learning team and work team effectiveness, we tried to build a methodology based on the directions taken from previous studies, due to the limited number of participants who attended the second measurement session, it was impossible to initiate the group level analysis of the relationship between the concepts studied.

Overall, results of studies conducted in this thesis support the complexity of the way in which work teams function in contemporary organizations.

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List of the references included in the analysis in Study 1

A. References included in the analysis of the psychological capital at the individual level

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Appendix 4.1

Items of the measurement instrument of team learning behaviors translated in Romanian

Item no.	Item description
Construcţia comună a semnificaţiei	
1.	Informația membrilor echipei este completată cu informație de la alți membri ai echipei.
2.	Membrii echipei trag concluzii colectiv din ideile care sunt discutate în cadrul echipei.
3.	Membrii echipei construiesc pe ideile și informațiile fiecăruia.
Explorarea perspectivelor diferite	
4.	Membrii echipei se ascultă cu atenție unii pe alții.
5.	Dacă ceva este neclar, ne adresăm întrebări unii altora.
6.	Dacă un membru al echipei își exprimă opinia, ulterior acesta solicită și opinia celorlalți.
7.	Ne încurajăm pentru a vedea munca noastră din perspective diferite.
Analiza erorilor	
8.	După realizarea unei greșeli, echipa încearcă împreună să analizeze ce a cauzat această greșeală.
9.	În această echipă, considerăm că este util să analizăm erorile.
10.	Dacă ceva a funcționat greșit, echipa se gândește la acest lucru.
11.	După ce a apărut o eroare, aceasta este analizată temeinic în această echipă.
Comunicarea erorilor	
12.	Membrii echipei comunică greșelile lor pentru a preveni ca ceilalți să facă aceeași greșeală.
13.	Discutăm erorile în cadrul echipei noastre deoarece erorile și soluțiile lor pot oferi informație importantă.
14.	În echipa noastră, greșelile sunt discutate cu ceilalți.
15.	Erorile sunt discutate deschis.
Reflecţia asupra proceselor	
16.	Adesea discutăm metodele de lucru ale echipei noastre.
17.	Ca echipă, discutăm regulat cât de eficace colaborăm.
18.	Echipa noastră reconsideră adesea procedurile noastre de lucru.
19.	Alocăm regulat timp pentru a reflecta asupra modului în care putem să îmbunătățim metodele noastre de lucru.
Reflecţia asupra rezultatelor	
20.	În echipa noastră, verificăm ceea ce putem să învățăm din realizările noastre.
21.	În echipa noastră, verificăm dacă acțiunile noastre au adus ceea ce ne aşteptam.
22.	În echipa noastră, evaluăm rezultatele acțiunilor noastre.
Căutarea feedbackului	
23.	Căutăm feedback privind metodele noastre.
24.	Analizăm performanța noastră în conformitate cu alte echipe.
25.	Solicităm feedback de la părțile interesate interne și externe privind rezultatele noastre.
Experimentarea	
26.	În echipa noastră, experimentăm şi alte metode de lucru.
27.	Echipa noastră testează noi metode de lucru.
28.	Împreună, avem în plan să testăm noi metode de lucru.

Appendix 4.2

Items of the measurement instrument of work team effectiveness translated in Romanian

Items of the measurement instrument of perceived team performance translated in Romanian

Item no.	Item description
1.	Recent, această echipă pare "să doarmă" puţin în ceea ce priveşte nivelul său de performanţă şi realizări (R).
2.	Cei care primesc sau utilizează munca acestei echipe adesea se plâng despre munca noastră (R).
3.	Calitatea muncii oferite de această echipă se îmbunătăţeşte în timp.
4.	Apar frecvent erori critice în această echipă (R).
5.	Alţii din organizaţie care interacţionează cu această echipă adesea se plâng de modul în care funcţionează (R).

***Note**: (R) – reverse-coded items*

Items of the measurement instrument of team member satisfaction translated in Romanian

Item no.	Item description
1.	Sunt mulţumit(ă) de membrii actuali ai echipei mele.
2.	Sunt mulţumit(ă) de modul în care membrii echipei mele şi eu am lucrat împreună.
3.	Sunt mulţumit(ă) să lucrez în această echipă.
4.	Sunt mulţumit(ă) de procesele de echipă pe care le-am utilizat în ultimele săptămâni.
5.	Sunt mulţumit(ă) de procesele acestei echipe din ultimele săptămâni.

Items of the measurement instrument of team viability translated in Romanian

Item no.	Item description
1.	Această echipă nu ar fi trebuit să continue să funcţioneze ca echipă (R).
2.	Această echipă nu a fost capabilă să lucreze împreună ca o unitate (R).
3.	Această echipă probabil nu ar trebui să lucreze niciodată împreună în viitor (R).
4.	Dacă aş fi avut ocazia, aş fi schimbat echipa (R).
5.	Aş fi încântat să lucrez cu aceşti membri ai echipei la alte proiecte, în viitor.

***Note**: (R) – reverse-coded items*

Appendix 4.3

Definitions of the concepts examined in Study 5

1. *Positive psychological capital:* "An individual's positive psychological state of development and is characterized by: (a). having confidence (self-efficacy) to take on and put in the necessary effort to succed at challenging tasks; (b). making a positive attribution (optimism) about succeeding now and in the future; (c). persevering towards goals and, when necessary, redirecting paths to goals (hope) in order to succeed; and (d). when beset by problems and adversity, sustaining and bouncing back and even beyond (resiliency) to attain success" (Luthans, Youssef et al., 2007, p. 3).
2. *Team learning behavior:* Activities carried out by team members through which a team obtains and processes data that allow it to adapt and improve (Edmondson, 1999b).
3. *Co-construction of meaning:* Mutual conversational actions of team members by refining, building on, or modifying the original offered meaning in some way to come to new meanings in the collaborative work that were not previously available to the team (from co-construction of meaning of Van den Bossche, Gijselaers, Segers, & Kirschner, 2006).*
4. *Exploring different perspectives:* Conversational actions of team members to explore, share knowledge, opinions and different perspectives (from construction of meaning of Van den Bossche et al., 2006).*
5. *Error analysis:* Discussing and analyzing errors collectively to prevent them (from Van Dyck, 2000).
6. *Error communication:* Sharing errors collectively to prevent them (from Van Dyck, 2000).*
7. *Reflection on processes:* Collectively discuss the team goals, assumptions, working methods and strategies, checking whether the team is doing the right things and doing things right (from reflexivity on processes, Schippers, Den Hartog, Koopman, & Wienk, 2003).*
8. *Reflection on outcomes:* Collectively look back or ahead on experiences and actions (e.g., by feedback or communicated errors) to evaluate and learn from them (from reflexivity by evaluating/ learning, Schippers et al., 2003).*
9. *Feedback seeking:* Seeking feedback internally among team members and externally from outside the team to reflect (from Schippers et al., 2003).*
10. *Experimenting*: Collectively doing things differently than before and measuring differences in outcome (from Van Woerkom, 2003).*
11. *Perceived team performance:* The extent to which the team meets its work objective (Hackman, 1987)
12. *Team member satisfaction:* The extent to which the team members are satisfied by their work team (Tekleab, Quigley, & Tesluk, 2009)
13. *Team viability:* The degree to which group members wish to work together as a team in the future (Tekleab et al., 2009)

***Note*: *** - from Savelsbergh et al. (2009)