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RESEARCH ARTICLE

Linking Positive Psychological Capital to Team Effectiveness through Team Learning Behaviors

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Abstract

This cross-sectional study examined the mediator role of global and multidimensional team learning behaviors in the relation between positive psychological capital (PsyCap) and multiple team effectiveness criteria (team performance, team member satisfaction, and team viability). The sample comprised 190 employees working in 20 teams activating in various fields of activity. Findings indicate the totally mediating effect of global team learning behaviors on the relation between PsyCap and team satisfaction. Furthermore, PsyCap enhances team performance and team member satisfaction as team effectiveness criteria through few individual team learning behaviors.

Keywords

positive psychological capital, team learning behaviors, team performance, team member satisfaction, team viability

Introduction

The reality for many contemporary organizations is that work has become complex enough to generate the shift from the traditional organizational forms focused on individuals to the use of teams at all hierarchical levels (DeChurch & Mesmer-Magnus, 2010; Knapp, 2010; Mathieu, Luciano, D'Innocenzo, Klock, & LePine, 2019; Rousseau & Aubé, 2010; Zaccaro, Marks, & DeChurch, 2012). This shift is driven by several forces such as increasing competition, consolidation, innovation, new technology developments, financial crisis, firm globalization, frequent mergers and acquisitions. The forces create pressures for knowledge and skill diversity, high level of expertise, rapid response, and adaptability (Kozlowski & Ilgen, 2006; Wiedow & Konradt, 2011). Teams can respond effectively to these pressures by bringing together individual expertise, skills, knowledge and abilities, generating better solutions and use of resources, increasing members' motivation, organizational productivity and success, and ensuring organizational competitive advantage (Gil, Alcover, & Peiró, 2005; Katzenbach & Smith, 1993; West, Borrill, & Unsworth, 1998; Wheelan, Murphy, Tsmura, & Kline, 1998).

Despite these benefits, teams are not a panacea and risk free (Paulus & Van der Zee, 2004; Recardo, Wade, Mention III, & Jolly, 1996). Implementation of work teams does not always result in success for organizations (Allen & Hecht, 2004). Teams can also generate negative consequences (Chirică, 1996). In this sense, it was stated that: (1) groups may be used by individuals or

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organizations to dispel or to remove responsibility altogether; (2) committees are a good way of "recognizing" problems, but not as good to solve problems; they may accept the importance of a problem, but they may delay its solution; (3) the group can annihilate the qualities of one individual and can support another one without qualities; (4) groups may be constituted for an inadequate purpose: a committee may be set up to improve the activity of two other committees; (5) groups may be poorly lead, may have inefficient procedures, may include people who are unfit for the purpose or the task of the team, or may include too many people; (6) groups may have too little power and, therefore, they may tend toward negative power.

In order to build a team it is not enough just having individuals that join the team and waiting for them to know automatically how to work within a team (Rousseau, Aubé, & Savoie, 2006). Individuals must learn to become team members and to function as a team that learns (Kayes, Kayes, & Kolb, 2005; Marquardt, Ng, & Goodson, 2010; McCarthy & Caravan, 2008). So, interest and research on team effectiveness knew a radical increase in the last few decades (Bell & Marentette, 2011). However, in this large body of research, *"the focus to date has predominantly been on who is a member of the team, how they work together, and what they do to perform their work"* (Mathieu & Gilson, 2012, p. 911) and less on team effectiveness itself.

Past research has considered the effectiveness of work teams either as a one-dimensional or as a multidimensional complex construct (Delgado Piña, María Romero Martínez, & Gómez Martínez, 2008). But, in the last years, the conceptualization of work team effectiveness as incorporating multiple dimensions or criteria gained more attention (Mathieu & Gilson, 2012; Mathieu, Gallagher, Domingo, & Klock, 2019; Singh & Muncherji, 2007). Furthermore, because most teams in organizations are not structured as teams in laboratory and other simulated research settings, the effectiveness criteria for work teams tend to be more complex (Jordan, Field, & Armenakis, 2002). Usually, work team effectiveness dimensions reflect performance and affective outcomes (Mathieu & Gilson, 2012; Mathieu, Maynard, Rapp, & Gilson, 2008; Mathieu et al., 2019).

The most used work team effectiveness criteria are team performance, satisfaction and viability (Gil et al., 2005). Each of these taps a different aspect of work team effectiveness. Team performance reflects the "*productive output of the work group should meet or exceed the performance standards of the people who receive/or review the output*" (Hackman, 1987, p. 323). It is the most prevalent criteria used in empirical research and organizations to assess the effectiveness of work teams (Mathieu et al., 2008). Satisfaction reflects the degree to which team members were satisfied by the team, while team viability is the extent to which team members are able to continue to work together in the future (Hackman, 1987; Tekleab, Qickley, & Tesluk, 2009). Recently, others criteria of team effectiveness used consist in team efficiency, team innovation as a process or outcome (Gil et al., 2005; Mathieu et al., 2008). Other relatively recent conceptual-izations (Mathieu et al., 2008; Mathieu & Gilson, 2012) proposed that team outcomes can be broadly characterized in terms of two general types: (a) tangible outputs or products of team interaction (i.e., productivity, efficiency, and quality); and (b) influences on team members (collective and individualistic outcomes). In the present study, we will focus on perceived team performance, team member satisfaction towards team, and team viability.

Considering the importance of teams in creating organizational success (Kozlowski & Bell, 2003), it is important to focus also on the factors that contribute to their work effectiveness (Singh & Muncherji, 2007). In the last years, one of these factors that received considerable attention is team learning (Marquardt, Ng, & Goodson, 2010; Ortega, Sánchez-Manzanares, Gil, & Rico, 2010; Savelsbergh, van der Heijden, & Poell, 2009, 2010; Wiese & Burke, 2019). To meet the complex and the dynamic context in which work teams are incorporated, they must continuously improve their performance, learn, reflect and adapt (Bunderson & Sutcliffe, 2003; Zaccaro, Ely, & Shuffler, 2008).

Literature reveals different thoughts on how to conceptualize team learning: as an outcome or as a process (Edmondson, 1999; Edmondson, Dillon, & Roloff, 2007; Decuyper et al., 2010; Wiese & Burke, 2019). When considered as an outcome, team learning reflects the end results of learning processes, including changes in collective knowledge (or information held by the team about the team and its surrounding system) and shift in performance (or learning curves). As a process, team learning refers to a behavioral process consisting in "an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions" (Edmondson, 1999, p. 353). This behavioral processes can be further delineated into (1) fundamental learning behaviors (i.e., basic learning processes that promotes learning in teams), (2) interteam learning behaviors (i.e., behaviors that seek and integrate information from entities outside of the immediate team that promote team learning), and (3) intrateam learning behaviors (internal behavioral processes that teams engage in that build shared meaning from existing information, identify and fill in gaps in the team's collective knowledge, as well as challenge, test, and explore assumptions) (Wiese & Burke, 2019). The learning behaviors of a team encapsulate all of the actions that aid in the development of collective knowledge (Wiese & Burke, 2019). They are the actions through which team obtains and process data that allow it to adapt and to improve" (Edmondson, 1999, p. 352).

Empirical research on team learning and team effectiveness in organizational context reveals that few studies present similarities in terms of the theoretical perspectives adopted on team learning: as a process, outcome, or process and outcome (Chan, Pearson, & Entrekin, 2003; Mo & Xie, 2009; Wilson, Goodman, & Cronin, 2007). However, thereof, most of the empirical studies considered team learning as process, and, specifically, in terms of team learning behaviors. Furthermore, team learning was preponderantly examined in relation to team performance as a team effectiveness criteria and less with other team criteria effectiveness (Rus, Băban, & Jesus, 2012). A very small body of empirical research investigated team learning behaviors in relation to multiple effectiveness criteria (e.g. Bang, Fuglesang, Ovesen, & Eilertsen, 2010; Kostopoulos & Bozionelos, 2011; Zellmer-Bruhn & Gibson, 2006).

Studies that examined team learning behaviors in relation to team performance provide mixed results. Some of them revealed a positive (Edmondson, 1999b; Ortega, Sánchez-Manzanares, Gil, & Rico, 2012) or a negative relationship between these two concepts (Drach-Zahavy & Pud, 2007), while others evidenced the lack of their relationship (van Woerkom & Croon, 2009). Similar patterns of results were found when team learning process was studied in relation to team viability (Bang et al., 2010; Van den Bossche, Gijselaers, Segers, & Kirschner, 2006; Zellmer-Bruhn & Gibson, 2006) and team member satisfaction (Bang et al., 2010; Yeh & Chou, 2005). It is considered that one of the factors contributing to these mixed results consists in the measurement of team learning as a global concept rather that a multidimensional one (Savelsbergh et al., 2009; Wilson et al., 2007). Specifically, although the conceptualization of team learning as a behavioral process encompasses several team learning behaviors, only few studies started to measure team learning process in terms of multiple behaviors (Savelsbergh et al., 2009; 2012; Wilson et al., 2007). These studies strengthen the mixed results regarding the relationship between team learning process measured as a global concept and team effectiveness. Also, they evidenced that some team learning behaviors were associated with different team effectiveness criteria, while others were not (Bang et al., 2010). Therefore, it is important to examine the relation between multiple team learning behaviors and multiple team effectiveness criteria in the organizational context.

Besides team effectiveness, the study of team learning in organizational context also looks into factors that generate and facilitate team learning (Gibson & Vermeulen, 2003; Van der Vegt & Bunderson, 2005) using the functional perspective on groups (McGrath, 1964) and the Input Mediators Output Input

models of work team effectiveness (IMOI models; Ilgen, Hollenbeck, Johnson, & Jundt, 2005). These team effectiveness frameworks describe how various individual, team, and organizational-level inputs can influence team processes and emergent states, including team learning behaviors, that can subsequently lead to multiple criteria of team effectiveness.

An individual-level input that can act as antecedent of team learning, and, in particular, team learning behaviors and team effectiveness is positive psychological capital (PsyCap). Recently, the literature has emphasized the need to examine employees' PsyCap in the context of teams and organizations as teams are composed of individuals and variables from individual-level play an essential role on team and organizational activity (Youssef & Luthans, 2011). It 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, & Avolio, 2007, p. 3). Although, PsyCap has been associated with various individual, team and organizational outcomes (Avey, Reichard, Luthans, & Mhatre, 2011; Rus & Jesus, 2010), there are no studies examining this concept in relation to individual, team or organizational learning behaviors. In the present study, PsyCap will be considered as an input at team members' level, a potential resource that can benefit work team by facilitating team learning behaviors.

Evidence for a link between PsyCap and team learning behaviors comes from various lines of research. The first line includes studies focused on the relationships between PsyCap and concepts related to learning, such as learning goals. For example, PsyCap was positively related to effective problem solving and innovation through the partially mediating effects of mastery-oriented mindset considered as learning goals, challenge seeking and persistence in the face of obstacles behaviors (Luthans, Youssef, & Rawski, 2011). The second category of evidences comes from the studies that have examined the concepts that represent the individual components of PsyCap, in particular self-efficacy, in relation to learning and performance. In this sense, Sitzman and Ely (2011), using meta-analytical techniques, have shown that in academic and organizational contexts individuals' self-efficacy has a beneficial role on their learning and performance. The third category of evidences comes from the studies that investigated PsyCap and concepts related to team learning, such as mindfulness. Analyzing the factors that influenced organizational change, Avey, Wernsing and Luthans (2009) have found that a high PsyCap is directly associated with a greater attention to detecting failure, reluctance to simple interpretation, more time observing operations, and more time developing resilience to unexpected events (Weick & Sutcliffe, 2006). In addition, other studies revealed a significant relationship between PsyCap and team dynamics and effectiveness. In this sense, Clapp-Smith, Vogelgesang and Avey (2009) found that the influence of PsyCap on financial performance of the work group was mediated by the trust in leader. Another line of evidence comes from the studies conducted on team member beliefs about their interpersonal context as antecedents of team learning, such as such as psychological safety, task interdependence and collective self-efficacy (Van den Bossche et al., 2006; Ortega et al, 2010). Studies conducted in the field of positive organizational behavior have recently considered collective self-efficacy as an indicator of a second-order factor called collective psychological capital (Walumbwa, Luthans, Avey, & Oke, 2009; West, Patera, & Carsten, 2009) or team psychological capital (Bogler & Somech, 2019; Dawkins, Martin, Scott, & Sanderson, 2015; Rego et al., 2019). It has been shown that collective self-efficacy and collective psychological capital were positively associated to citizenship behaviors as contextual team performance and trust in group as a team emergent state. Furthermore,

Bogler and Somech (2019) shown that team PsyCap functioned as a positive team resource that brings about an environment that induces exhibition of high levels of organizational citizenship behaviors (OCB). This relationship was strengthened when both team learning values and team leader's optimism are high. These lines of evidences highlight that employees' beliefs about their own psychological resources, such as employee's PsyCap play an important role in achieving team effectiveness.

In the light of the IMOI team effectiveness framework, team learning is considered an essential mediator between inputs (individual, team, organizational and contextual) and team performance and affective outcomes (Kozlowski & Ilgen, 2006; Mathieu et al., 2008). Additionally, empirical research brought evidence on the mediator effect of team learning behaviors in the relationship between beliefs about interpersonal contexts such as psychological safety and team performance (Edmondson, 1999; Ortega et al., 2012). Furthermore, it was found that team learning behaviors acted as mediators in the relation between various social resources (expertize diversity) and team performance (Van der Vegt & Bunderson, 2005). Also, team learning behaviors mediated the influence of social capital (personal networks and deep similarity) and team self-efficacy and team potency (van Emmerik, Jawahar, Schreurs, & DeCuyper, 2010). Thus, based on the predictions of IMOI models and the results of these empirical studies, team learning behaviors will mediate the relation between PsyCap and team effectiveness criteria. Given that PsyCap may influence team effectiveness criteria via other team processes and emergent states aside from team learning, such as team trust (Clapp-Smith et al., 2009), it is expected that:

$H_{1:}$ Global team learning behaviors will mediate the relation between PsyCap and team performance (H_{1a}), team satisfaction (H_{1b}) and team viability (H_{1c})

$H_{2:}$ Team learning behaviors will mediate the relation between PsyCap and team performance (H_{2a}), team satisfaction (H_{2b}) and team viability (H_{2c})

Methods

Participants

The participants were 190 employees working in 20 teams from five fields of activity: health (43.7%), sales (13.2%), topography (22.21%), IT (19.5%) and vocational counseling (1.6%). The mean age of the participants that filled in the demographic data (N = 176) was 31.19 years (SD = 9.02). The sample comprised 42.6% males, 54.2% females and 3.2% participants did not report their gender. In terms of education, the distribution was the following: 9.5% (high school degree), 59.5% (license degree), 11.1% (master degree), 2.6% (PhD degree), 8.9% (other degree) and 8.4% did not report their level of education. Team size was comprised between three and 20 members.

Instruments

The instrument used to measure employees' PsyCap was Psychological Capital Questionnaire-12, self-rater form (PCQ-12; Luthans, Avolio, Avey, & Norman, 2007; Luthans et al., 2007). The items were structured on a six-point Likert scale, from 1 (*strongly disagree*) to 6 (*strongly agree*). They measured: (a). self-efficacy - 3 items (*"I feel confident in representing my work area in meetings with management*"); (b). hope – 4 items (*"If I should find myself in a jam at work, I could think of many ways to get out of it");* (c). optimism – 2 items (*"I always look on the bright side of things regarding my job"*), and (d). resilience – 3 items ("*I can be "on my own", so to speak, at work if I have to*"). The translated version of this instrument and the permission to use it were obtained from Mind Garden (www.mindgarden.com).

Team learning behaviors were measured using 28 items developed by Savelsbergh et al. (2009). These items were distributed in the following eight subscales: (a) co-construction of meaning – 3 items (*"Information from team members is complemented with information from other team members"*); (b) exploring different perspectives – 4 items (*"Team members listen carefully to each other"*); (c) error analysis – 4 items (*"After making a mistake, the team tries together to analyze what caused it"*); (d) error communication –

4 items (*"Team members communicate their mistakes, to prevent that communication others make the same mistake"*); (e) reflection on processes – 4 items (*"We often discuss our team's work methods"*); (f) reflection on outcomes – 3 items (*"In our team, we check what we can learn from our achievements"*); (h) feedback seeking – 3 items (*"We seek feedback on our methods"*), and (i) experimenting – 3 items (*"In our team, we experiment with other working methods"*). The participants rated the degree to which the listed behaviors appeared in their teams using a five-point Likert scale from 1 (*never*) to 5 (*always*).

Team performance was measured using an adapted version of the five-item scale developed by Hackman (1987). The participants rated their performance team using a five-point Likert scale arranged from 1 (*very inaccurate*) to 5 (*very accurate*). Four items were reversely coded (*"Recently, this team seems to be "slipping" a bit in its level of performance and accomplishments"*).

Team member satisfaction toward team was measured using five items adapted from the scale developed by Tekleab et al. (2009). The participants rated their level of satisfaction on a seven-point Likert scale, from 1 (*very dissatisfied*) to 7 (*very satisfied*) (*"I am satisfied with my present team members"*).

Team viability was measured using the five items scale developed by Tekleab et al. (2009). Four items were reversely coded (*"If I had the chance, I would have switched teams"*). The participants provided their answer on a seven-point Likert scale, from 1 (*strongly disagree*) to 7 (*strongly agree*).

A high score of all scales indicated a high level of the measured construct.

Procedure

Considering that the instruments used in this study were not previously examined in Romanian samples, excepting PCQ-12, the first step was to translate them from English into Romanian. The translation was individually conducted by three licensed psychologists with advanced knowledge in English. The three translations were compared to establish the final translated form of the instruments. Ulterior, another two psychologists retranslated the instruments. The two forms were compared to the original English form in order to identify the items that imposed semantic differences. In the last step, the final form of the instruments was established. The institutional permission to conduct this study was obtained. After signing a written informed consent, the participants filled in the paper-and-pencil form of the instruments.

Data analysis

Given that these instruments were relatively new in the literature and some of them were not previously examined on Romanian samples, an analysis of their factorial structure and omega-weighted reliability was conducted through confirmatory factorial analysis (CFA) by using the software V6.1 EQS (Bentler & Wu, 2003). Data were analyzed at the individual level. First, univariate and multivariate analyses were conducted in order to identify the normality of the distributions. The asymmetry was defined as the absolute value of skewness greater than 3 and kurtosis greater than 10 (Kline, 2011). The multivariate normality was defined as values of Mardia's normalized coefficient lower than 5. In this study, for each scale, this coefficient was greater than 5. Thus, all CFAs were conducted using maximum estimation likelihood adjusted through Satorra-Bentler robust method ($S\text{-}B\chi^2$; Satorra & Bentler, 1988; apud. Byrne, 2006). In the case of multidimensional instruments (PCQ-12, team learning behaviors scale), two competitive models were tested: the unifactorial and hierarchical model. In the case of the first model, the factorial structure was specified with all the items loading into one factor. In the hierarchical model, for PCQ-12, PsyCap was specified as a second-order factor having as indicators four first-order factors: self-efficacy, hope, resilience and optimism. Similar, team learning was specified as a second-order factor with eight first-order factors as indicators represented by team learning behaviors: co-construction of meaning, exploring different perspectives, error analysis, error communication, reflection on processes and outcomes, feedback seeking

and experimenting. All these specified models were overidentified.

The global fit of the models was assessed using the robust version of the goodness of fit *S-Bχ²*. Given that *S-Bχ²* is highly influenced by sample size and characteristics of the tested model, the incremental and absolute fit indices such as **CFI*, **RMSEA* and *SRMR* were considered. Although Hu and Bentler (1999) considered that a CFI higher than .95 indicates a good fit, other authors considered that a value of the *CFI between .92 and .94 can be acceptable indicator of the good fit of a model (Byrne, 2008). A value of the **RMSEA* equal to or less than .05 indicates a good fit, while its value up to .08 indicates an acceptable fit (Browne & Cudeck, 1993; apud. Byrne, 2006). A value of .08 or less of the *SRMR* indicates a good fit. Also, the 90% confidence interval for **RMSEA* was computed. In the standardized solution of each model, the items that loaded below .32 (cf. Comrey & Lee, 1992) and had significant error covariances were excluded from the factorial structure. The exclusion of the problematic items was followed by another CFA. The identification of the miss-specified parameters was assessed using the Univariate and Multivariate Lagrange Multiplier Test using PEE and GVF options. The non-nested models were compared based only on their **CFI*. The model with the highest **CFI* fitted best. A value of .01 between the **CFI* of the tested models (*Δ*CFI*) indicated a significant difference between their fit (Byrne, 2008).

The weighted-omega reliability coefficient reliability (Ω_w) was computed based on standardized estimated parameters from CFA (Bacon, Sauer, & Young, 1995; Edwards, 2001). Its value was compared to the cut-off value of .70 (Brunner, & Süβ, 2005; Lance, Butts, & Michels, 2006).

To test the mediator role of team learning behaviors in the relationship between PsyCap and the three team effectiveness criteria (team performance, team satisfaction and team viability) we used macro PROCESS v3.4 (2019), using model 4. Data were analyzed at the individual level.

Results

Preliminary analyses

The results of the CFA conducted on PCQ-12 revealed that the second-order model had a good fit, *S-Bχ²*(50) = 76.683, $p < .001$, **CFI* = .948, *SRMR* = .049, **RMSEA* = .053, *90%CI* **RMSEA* = [.027; .076], compared to the one-factorial model, *S-Bχ²*(54) = 118.431, $p < .001$, **CFI* = .875, *SRMR* = .056, **RMSEA* = .079, *90%CI* **RMSEA* = [.060; .098] , *Δ*CFI* = .073. In the second order model, the factor loadings were higher than .53. Also, the first-order factor loadings on the latent factor were excellent (> .70).

Similar results were obtained in the case of the instrument that measured team learning behaviors. The second-order model fitted better, *S-Bχ²*(342) = 576.834, $p < .001$, **CFI* = .909, *SRMR* = .073, **RMSEA* = .060, *90%CI* **RMSEA* = [.052; .068], compared to one-factorial model, *S-Bχ²*(350) = 1216.677, $p < .001$, **CFI* = .663, *SRMR* = .096, **RMSEA* = .114, *90%CI* **RMSEA* = [.107; .121], *Δ*CFI* = .246. The analysis revealed factor loadings of the items higher than .45. Also, the first-order factors had excellent loadings on the latent factor, excepting the co-construction of the mean and experimentation factors (.60, .58).

The first CFA of the one-factorial structure of the team performance scale identified a good fit of this factorial structure, *S-Bχ²*(5) = 7.118, $p > .05$, **CFI* = .991, *SRMR* = .031, **RMSEA* = .047, *90%CI* **RMSEA* = [.000; .119]. Instead of this, the factor loading of Item 3 was below .32 and it was excluded from the analysis. The re-specified model presented a good fit, *S-Bχ²*(2) = 5.302, $p > .05$, **CFI* = .985, *SRMR* = .033, **RMSEA* = .093, *90%CI* **RMSEA* = [.000; .194], but not better than the fit of the first model, *Δ*CFI* = -.006. In consequence, the factorial structure of the second model was considered in the subsequent analyses.

The analysis of team satisfaction scale revealed that the one-factorial structure did not had a good fit, *S-Bχ²*(5) = 55.308, $p < .001$, **CFI* = .854, *SRMR* = .052, **RMSEA* = .291, *90%CI* **RMSEA* = [.177; .285], due to the significant error covariance between Item 4 (*"I am satisfied with the team processes we used in the last four weeks"*) and Item 5 (*"I am*

satisfied with this team's processes in the last four weeks") (.32, p < .05). Item 4 was eliminated based on its factor loading (.89) that was lower than the factor loading of the Item 5 (.91). The re-specified model had a good fit, *S-B*χ^2(2) = 2.271, $p > .05$, **CFI* = .999, *SRMR* = .010, **RMSEA* = .027, *90%CI* **RMSEA* = [.000; .149]. It fitted better compared to the first model, Δ**CFI* = .145. The factor loadings were excellent (> .71).

The scale of team viability presented a good fit, *S-B*χ^2(5) = 7.234, $p > .05$, **CFI* = .988, *SRMR* = .029, **RMSEA* = .049, *90%CI* **RMSEA* = [.000; .120]. All the items had excellent factor loadings, excepting the Item 5 that presented a poor factor loading (.38).

Considering the factorial structure of the instruments that fitted best, the total score for each variable included in the study was computed.

Descriptive analyses

Mean, standard deviation, correlations and omega-reliability coefficient for each variable included in the study are presented in Table 1.

Table 1. *Means, standard deviations, inter-correlations and Ωw reliability (N = 190)*

Variable	*M (SD)*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Positive psychological capital	4.78 (.71)	(.90)												
2. Global team learning behaviors	3.86 (.61)	.45***	(.95)											
3. Co-construction of the meaning	3.92 (.75)	.32***	.61***	(.78)										
4. Exploring different perspectives	4.06 (.57)	.38***	.67***	.53***	(.72)									
5. Error analysis	4.11 (.76)	.38***	.81***	.42***	.59***	(.89)								
6. Error communication	4.01 (.76)	.43***	.82***	.47***	.61***	.79***	(.85)							
7. Reflection on processes	3.74 (.83)	.42***	.84***	.38***	.45***	.64***	.66***	(.85)						
8. Reflection on outcomes	3.87 (.82)	.37***	.87***	.44***	.52***	.70***	.67***	.77***	(.87)					
9. Feedback-seeking behavior	3.69 (.87)	.29***	.82***	.45***	.40***	.53***	.57***	.65***	.73***	(.81)				
10. Experimenting	3.49 (1.00)	.22**	.68***	.20**	.26***	.39***	.38***	.57***	.52***	.62***	(.92)			
11. Team performance	4.00 (.76)	.21**	.07	.15*	.23***	.21**	.17**	-.02	.06	-.08	-.16*	(.82)		
12. Team member satisfaction	5.81 (1.09)	.31***	.41***	.24***	.43***	.41***	.37***	.35***	.34***	.26***	.21**	.42***	(.85)	
13. Team viability	6.17 (1.12)	.18*	.18*	.21**	.27***	.22**	.19**	.07	.09	.08	.06	.38***	.53***	(.85)

Note: *M* = mean; *SD* = standard deviation; * *p* ≤ *.05;* ** *p* ≤ *.01;* *** *p* ≤ *.001; Parentheses on the diagonal of the table include the value of the* Ω_w reliability coefficient of the scale

We found that a high level of PsyCap is associated with a high level of global team learning behaviors (r = .45, p ≤ .001). Also, PsyCap was related to all individual team learning behaviors including co-construction of the meaning (r = .32, p ≤ .001), exploring different perspectives (r = .38, p ≤ .001), error analysis (r = .38, p ≤ .001), error communication (r = .43, p ≤ .001), reflection on processes (r = .42, p ≤ .001), reflection on outcomes (r = .37, p ≤ .001), feedback-seeking behavior (r = .29, p ≤ .001), and experimenting (r = 22, p ≤ .01). In addition, the higher PsyCap of team members, the higher their levels of perceived team performance (r = .21, p ≤ .01), team member satisfaction (r = .31, p ≤ .001), and their intention to work in the future with the same team members (r = .18, p ≤ .05).

Furthermore, global team learning behaviors were positively associated to PsyCap, all individual team learning behaviors

(r_s between .61 and .87, $p \leq .001$) and two of the team effectiveness criteria, including team member satisfaction ($r = .41$, $p \leq .001$) and team viability ($r = .18$, $p \leq .05$).

All the inter-correlations between individual team learning behaviors were positive (r_s between .20 and .79, $p \leq .001$).

In what regards the associations between individual team learning behaviors and the three criteria of team effectiveness, we found the following. Team performance was positively related only to co-construction of the meaning ($r = .15$, $p \leq .05$), exploring different perspectives ($r = .23$, $p \leq .001$), error analysis ($r = .21$, $p \leq .01$), and error communication ($r = .17$, $p \leq .01$). A negative association was identified between experimenting and team performance ($r = -.16$, $p \leq .05$). Team member satisfaction was positively related to all individual team learning behaviors (r_s between .21 and .43). Team viability was positively associated only to co-construction of the meaning ($r = .21$, $p \leq .01$), exploring different perspectives ($r = .27$, $p \leq .001$), error analysis ($r = .22$, $p \leq .01$), and error communication ($r = .19$, $p \leq .01$).

Main analyses

Global team learning behaviors as mediator between PsyCap and team effectiveness criteria

As the global score of team learning behaviors was not related to team performance ($r = .07$, $p > .05$), the mediation analysis aimed to identify the mediator role of global team learning behaviors in the relationship between PsyCap and team performance was not conducted. Thus, hypothesis H1a did not received empirical support.

Furthermore, considering the significant correlations between PsyCap and global team learning behaviors, on one hand, and between global team learning behaviors and team satisfaction and team viability, on the other hand, we proceeded to test the hypotheses of our study using IBM SPSS v.23 and the macro PROCESS v3.4 (Hayes, 2019). These results of these analyses are reported in Table 2.

Table 2. *Results of the mediation analyses on the mediator role of global team learning behaviors between PsyCap and team effectiveness criteria (N = 190)*

Variable	Global team learning behaviors			Team performance			Team member satisfaction			Team viability		
	b	*BootLLCI*	*BootULCI*	*b*	*BootLLCI*	*BootULCI*	*b*	*BootLLCI*	*BootULCI*	*b*	*BootLLCI*	*BootULCI*
PsyCap	.39	.27	.52	-	-	-	.25	-.02	.50	.20	-.12	.48
Global team learning behaviors				-	-	-	.60	.30	.99	.22	-.08	.57
R^2	.20			-			.19			.05		
F	47.48***			-			22.11***			4.43*		

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

Results reveal that global team learning behaviors totally mediated the relation between PsyCap and team member satisfaction. These results empirically supported hypothesis H_{1b}. Specifically, it was found that a high level of PsyCap was not associated with a high team member satisfaction (b = .25, boot 95%CI [-.02; .50]), while global team learning behaviors were positively related to team member satisfaction (b = .61, boot 95%CI [.30; .99]) and PsyCap (b = .39, boot 95%CI [.28; .52]). The total effect of PsyCap on team member satisfaction was .49, $p \leq .001$, 95%CI [.28; .70] and the indirect effect through global team learning behaviors (.24) was significant, 95%CI [.10; .44]. Also, the b coefficients are graphically illustrated in Figure 1, Panel A.

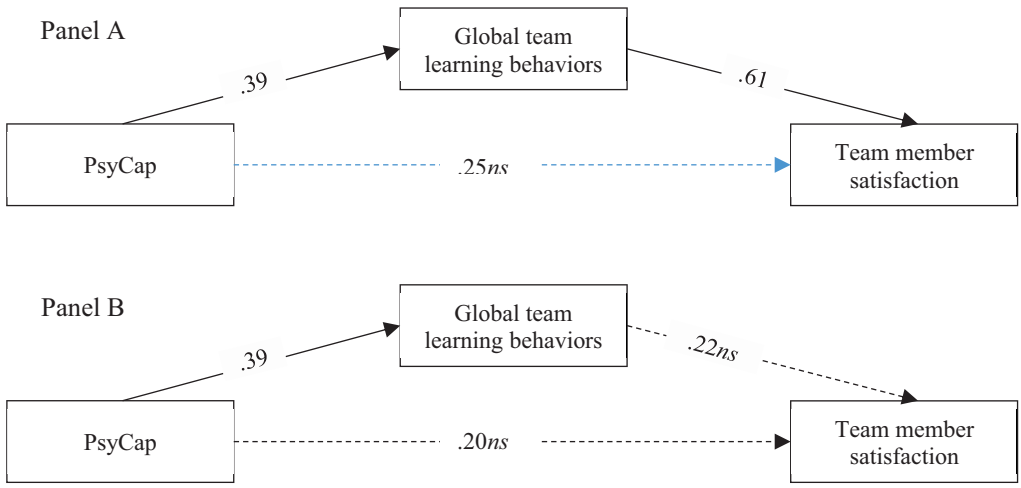

Figure 1. *Results of the simple mediation analyses (Model 4) that tested the total mediator role of global team learning behaviors in the relationship between PsyCap and two of the team effectiveness criteria, including team member satisfaction (Panel A) and team viability (Panel B)*

Furthermore, results revealed that the relation between PsyCap and team viability was not mediated by the global team learning behaviors. In particular, although PsyCap and global team learning behaviors were positively related (b = .39, boot 95%CI [.27; .52]), both were not significantly associated with team viability (b = .20, boot 95%CI [-.12; .48]; b = .22, boot 95%CI [-.08; .57]). Also, the b coefficients are graphically illustrated in Figure 1, Panel B. Thus, hypothesis H_{1c} did not received empirical support.

Taken together, these results show that the proposed linkages between PsyCap and multiple criteria of team effectiveness through global team learning behaviors did no receive full empirical supported as expected.

Individual team learning behaviors as mediators between PsyCap and team effectiveness criteria

To test the hypothesis that individual team learning behaviors mediate the relation between PsyCap and team performance (H2a), team member satisfaction (H2b) and team viability (H2c), we considered in the mediation analysis only the team learning behaviors that significantly correlated with PsyCap and the three criteria of team effectiveness. As reflection on processes, reflection on outcomes and feedback-seeking behaviors had no significant association with team performance and team viability, they were excluded from the subsequent mediation analyses. In addition, experimenting was not correlated with team viability and, in consequences, it was excluded too from the mediation analysis that had as outcome variable team viability.

The results of the mediation analyses are presented in Table 3.

Table 3. *Results of the mediation analyses on the mediator role of individual team learning behaviors between PsyCap and team effectiveness criteria (N = 190)*

Variable	Team performance			Team member satisfaction			Team viability		
	b	*BootLLCI*	*BootULCI*	*b*	*BootLLCI*	*BootULCI*	*b*	*BootLLCI*	*BootULCI*
1. PsyCap	.20	-.01	.38	.20	-.08	.45	.13	-.20	.41
2. Co-construction of meaning	.02	-.18	.23	-.04	-.27	.24	.11	-.19	.46
3. Exploring different perspectives	.23	-.09	.52	.51	.10	.83	.36	-.04	.76
4. Error analysis	.24	.02	.52	.31	-.11	.77	.16	-.16	.53
5. Error communication	-.06	-.32	.22	-.07	-.45	.34	-.12	-.47	.23
6. Reflection on processes				.15	-.21	.52			
7. Reflection on outcomes				-.04	-.33	.28			
8. Feedback-seeking behavior				-.03	-.28	.19			
9. Experimenting	-.26	-.40	-.13	.02	-.19	.22			
R^2	.15			.24			.09		
F	5.48***			6.45***			3.62		

Results of the mediation analysis revealed that Hypothesis 2a was received partial empirical support (see Figure 2). Specifically, PsyCap was positively related to co-construction of meaning (b = .34, boot 95%CI [.19; .48]), exploring different perspectives (b = .30, boot 95%CI [.21; .41]), error analysis (b = .41, boot 95%CI [.27; .54]), error communication (b = .47, boot 95%CI [.33; .60]), and experimenting (b = .31, boot 95%CI [.09; .57]). In contrast, PsyCap was not associated to team performance (b = .20, boot 95%CI [-.01; .38]). Furthermore, only error analysis and experimenting as team learning behaviors had significant relationships with team performance. An increase in error analysis was associated with a better team performance (b = .24, boot 95%CI [.02; .52]), while an increase in experimenting correlated with a lower team performance (b = -.26, boot 95%CI [-.40; -.13]). Thus, these results suggest that only error analysis and experimenting as team learning behaviors acted as mediators in the relationship between PsyCap and team performance.

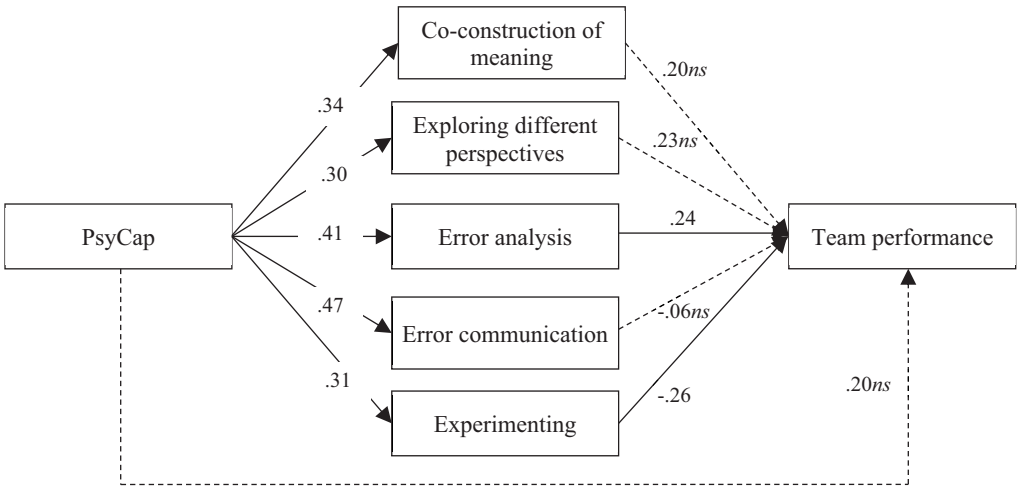

Figure 2. *Results of the parallel mediation analyses (Model 4) that tested the total mediator role of team learning behaviors in the relationship between PsyCap and team performance as team effectiveness criteria*

The results of the mediation analysis that had as criterion variable team member satisfaction indicated that only one team learning behavior totally mediated the relationship between PsyCap and team member satisfaction (Table 3, see Figure 3). Specifically, although all the eight team learning behaviors were positively related to PsyCap (Table 4), only exploring different perspectives was positively associated to team member satisfaction (b = .51, boot 95%CI [.10; .83]). In addition, PsyCap was not significantly related to team member satisfaction (b = .20, boot 95%CI [-.08; .45]). The total effect size was .49, $p \leq .001$, 95%CI [.28; .70], the total indirect effects were .28, 95%CI [.15; .50], while the indirect effect through exploring different perspectives was .15, 95%CI [.03; .28]. Thus, Hypothesis 2b received partial empirical support.

Moreover, we found that none of the four team learning behaviors included in the analysis mediated the relationship between PsyCap and team viability (Table 3). Also, PsyCap was not associated to team viability (b = .13, boot 95%CI [-.20; .41]) (Figure 4). Thus, Hypothesis 2c was not empirically supported.

Table 4. *Results of the mediation analyses on the mediator role of individual team learning behaviors between PsyCap and team effectiveness criteria – relation between PsyCap and team learning behvaiors (N = 190)*

Variable	*PsyCap*				
	b	*BootLLCI*	*BootULCI*	R^2	F
1. Co-construction of meaning	.34	.19	.48	.10	21.87***
2. Exploring different perspectives	.30	.21	.41	.14	31.09***
3. Error analysis	.41	.27	.54	.14	31.19***
4. Error communication	.47	.33	.60	.19	43.06***
5. Reflection on processes	.49	.35	.66	.18	40.23***
6. Reflection on outcomes	.44	.28	.61	.14	30.16***
7. Feedback-seeking behavior	.36	.19	.54	.09	17.54***
8. Experimenting	.31	.09	.57	.05	9.38**

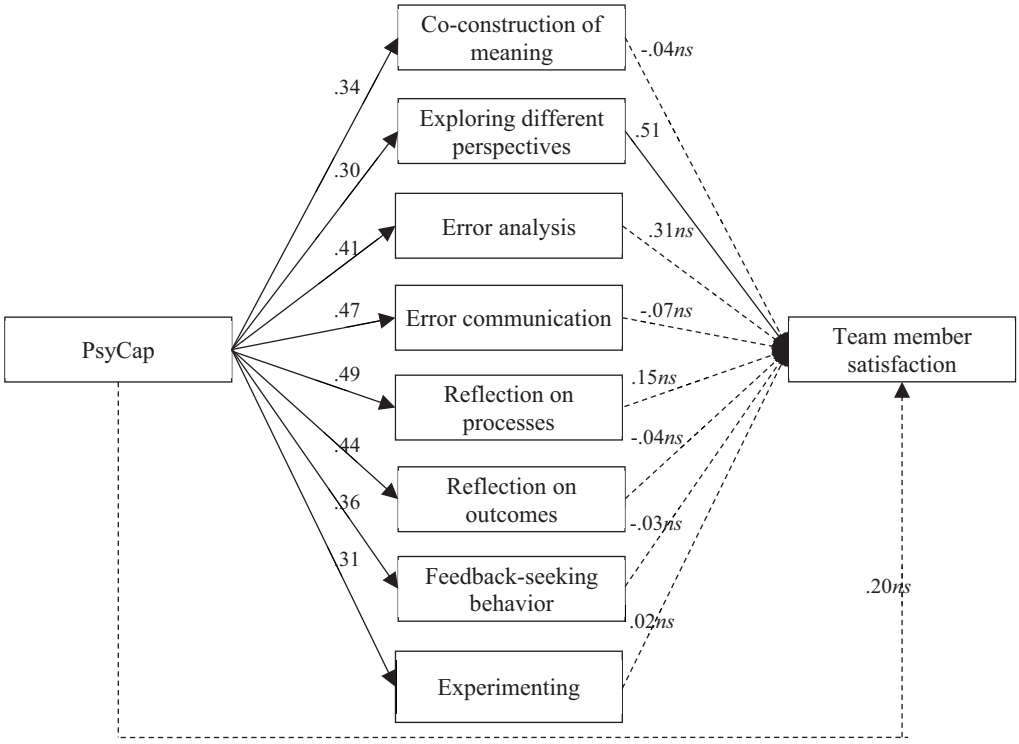

Figure 3. *Results of the parallel mediation analyses (Model 4) that tested the total mediator role of team learning behaviors in the relationship between PsyCap and team member satisfaction as team effectiveness criteria*

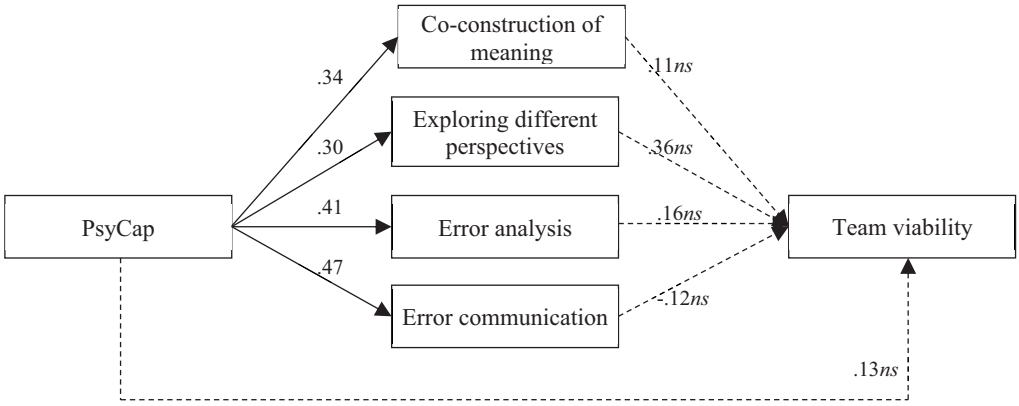

Figure 4. *Results of the parallel mediation analyses (Model 4) that tested the total mediator role of team learning behaviors in the relationship between PsyCap and team viability as team effectiveness criteria*

Discussion

This study examined the mediator role of team learning behaviors, considered simultaneously from a global and a multidimensional perspective, in the relation between PsyCap and multiple team effectiveness criteria, including team performance, team member satisfaction and team viability. Hypothesis 1 was partially supported as global team learning behaviors totally mediated only the relationship between PsyCap and team member satisfaction. These findings provide further evidence to support the assertion that team learning behaviors measured as a global concept play a different role in transforming inputs of a team, mainly employees' PsyCap, in multiple high-quality outcomes, such as a good performance, a high level of members' satisfaction towards team and a strong sense of team viability. Hypothesis 2 was also partially supported. It has been shown that exploring different perspectives, error analysis, and experimenting, are more important than other team learning behaviors in mediating the relation between employees' PsyCap and multiple team effectiveness criteria, including team performance and team member satisfaction.

Together, these findings revealed that when team learning behaviors were considered from a global and a multidimensional perspective, they had different mediator roles in the relationship between PsyCap and the three team effectiveness criteria. In this sense, it was found that global team learning behaviors masked the significant mediator role of various individual team learning behaviors in the relation between PsyCap and two of the team effectiveness criteria, including team performance and team member satisfaction. Considering team learning behaviors from a multidimensional perspective allowed a nuanced perspective on their mediator role. This is most evident in the mediating effects between PsyCap and team effectiveness criteria represented by team performance and team satisfaction. Contrary to what was expected, global and multidimensional team learning behaviors did not mediated the relation between PsyCap and team viability. Taken together, these results enhance the knowledge on the critical role of team reflection and action processes on the achievement of team desired performance and affective outcomes. Also, they confirm that one of the factors that had a substantial contribution to the inconsistent results of the research on team learning and team effectiveness is related to the measurement of this concept (Wilson et al., 2007).

Additionally, by examining multidimensional team learning behaviors in the relation between PsyCap and other team effectiveness criteria than team performance such as team satisfaction and viability, this study expands the results obtained by Savelsbergh et al. (2009). Similarly, there were no significant associations between reflection behaviors on processes and team performance. The lack of associations between global and some individual team learning behaviors and team effectiveness criteria can be explained by the existence of other mediators or moderators such as transactive memory (Mo & Xie, 2009) or shared mental models (Van den Bossche, Gijselaers, Segers, Woltjer, & Kirschner, 2011). We did not measured in our study neither transactive memory, nor shared mental models. Also, as suggested by IMOI models (Ilgen et al., 2005) the relation between team learning and team outcomes could be a non-linear one.

Another relevant finding of the present study revealed the significant relationship between employees' PsyCap and their perception on learning behaviors of their team. These findings answer the existing calls in the literature to extend the range of the studies on PsyCap in work teams (Avey, Patera, & West, 2006; Wright & Quick, 2009; Youssef & Luthans, 2009). Therefore, these findings evidenced the association between employees' motivational inputs and their actions conducted with other members of their team to collect and to process data that permit them to adapt and to improve their work activity. Additionally, the mediating effects of some team learning behaviors shows that these type of team behaviors can be considered as mechanism through which employees' psychological resources, such as PsyCap, contributes to team effectiveness. It is

important to notice that not all team learning behaviors mediated the relation between positive psychological capital and team effectiveness criteria. Furthermore, some of these behaviors were identified as total or no mediators. Similar to previous research (Van der Vegt & Bunderson, 2005), this study revealed that existing resources in the team are related to team performance through certain team learning behaviors. Even more, this study showed that PsyCap as team members' resources is related to other team effectiveness criteria such as team satisfaction only through certain team learning behaviors.

Our findings have implications on team effectiveness management, mainly on how the process of team learning should be conducted. In this sense, considering the aim for which a team was created, there can be a greater focus on team learning behaviors that strongly associate with team effectiveness criteria that are relevant to team members, managers or clients. Additionally, the total mediating effects of some team learning behaviors between PsyCap and multiple team effectiveness criteria suggest that team management should consider the resources that employees' bring in activities of their work teams.

The contributions of this study must be considered in the light of some limitations. First, it is important to mention that all the measurements were self-reports. Additionally, as in other previous study, data were collected from members of the teams. As Hackman (1987) mentioned what a group or a team considers as being a high performance it might not meet the standards required by its manager or clients. The use of the same type of instruments and sources of data to measure the variables included in this study may contribute to the increase of common-method variance (Podsakoff & Organ, 1986). This might influence our results (Johnson, Rosen, & Djurdjevic, 2011). In this sense, other recent studies have shown that although common-method variance had an inflationary effect on observed relationships, this effect completely offset by the attenuating effect of measurement error (Lance, Dawson, Birkelbach, & Hoffman, 2010). However, we consider that the use of multiple instruments and sources in the same study would have provided more informative results. Also, the participants were members of the teams activating in five fields of activity. Thus, it is important to examine if team type may act as a moderator of the relationships identified in this study. Also, the simultaneous collection of the data has implications on considering the causality nature of the relationships between variables. Another limitation regards the level of analysis. Given that the number of the work teams included in this study was below 30 (Maas & Hox, 2004), the analyses were limited only to the individual level of analysis using linear and not multilevel regression analyses. Also, the sample size is rather small relative to the number of the predictor and mediator variables considered in the mediation analyses.

Studies with multiple sets of data collected in different time points from larger samples would be more informative on the direction of causality between variables. Also, the use of mixed research designs with multiple sources and combining the advantages of qualitative and quantitative research could permit the examination of individual team members' interpretations on the investigated team phenomenon when they fill in quantitative instruments.

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