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ORIGINAL PAPER

Transformational leadership and emotional intelligence: allies in the development of organizational affective commitment from a multilevel perspective and time-lagged data

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Abstract

In the business context, models are needed to facilitate our understanding on the emergence of processes that transcend the individual level. In the case of affective organizational commitment, such models are even more necessary, due to the benefits associated with affective organizational commitment at the organizational level. From a time-lagged multilevel perspective, a model to explain the emergence of affective organizational commitment was tested by integrating the contribution of group processes. In this study, at two time points, 63 work teams from different organizations and sectors in Spain (n = 233 employees) were evaluated for transformational leadership, workgroup emotional intelligence and affective organizational commitment. The data were analyzed by a multilevel structural equation modelling (MSEM). The results showed that supervisors' transformational leadership style to both directly and indirectly (through workgroup emotional intelligence levels) mediates the development of affective organizational commitment at the individual level. The results are replicated at the team level but a direct relationship between transformational leadership and affective organizational commitment was not found. In conclusion, the results of this multilevel analysis of the relationships between transformational leadership, workgroup emotional intelligence, and affective organizational commitment contribute to the development of so-called "hybrid theories of homology" in the search for the generalization of relationships between variables across levels.

Keywords Affective commitment · Emotional intelligence · Time-lagged data · Multilevel perspective · Transformational leadership

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Organizational commitment is a construct that has been found to promote useful and beneficial employee behaviors and obtain positive results for organizations (Riketta 2005). Affective organizational commitment (AOC) has been described as "a core essence of commitment" (Meyer and Herscovitch 2001; Mercurio 2015). AOC is characterized by the intention to direct efforts and resources that contribute to the achievement of objectives in the organization whereby individuals perform their work with a heightened sense of loyalty towards the organization (Meyer and Allen 1997). Many studies have analyzed AOC at the individual level (for a review, see Meyer et al. 2002; Wright and Bonett 2002; Riketta 2005), pointing out the importance that certain leadership styles, such as transformational leadership (TFL), have in the development of AOC. TFL pertains to the antecedents of AOC known as "work experiences", or experiences that "satisfy the needs of the employees and/or are compatible with their values" (Meyer et al. 2002; p. 70). However, other AOC antecedents such as individual differences that refer to emotional patterns that are present in people's lives and used for reasoning through and solving problems (Salovey and Mayer 1990; Mayer and Salovey 1997), that is, emotional intelligence (EI), has received less attention in the literature. This type of intelligence influences how employees interpret and react to different elements of their work environment as a skill that allows them to engage in reasoning about the emotions generated by their most immediate context (Miao et al. 2017). When that work environment is confined to a work team it is important to know to what extent these emotional skills change depending on the context. This has led to the use of a construct known as workgroup emotional intelligence (WEI; Côté 2007; Troth et al. 2012) which refers to the use of people's emotional abilities when working together or as a team (Elfenbein 2006). Furthermore, and this is one of the important contributions of this study, though the scientific literature has gathered different examples of mediating processes in the relationship between TFL and AOC (Walumbwa et al. 2004; Barroso Castro et al. 2008; Goodwin et al. 2011; Pierro et al. 2013), it has not considered the WEI in the equation. Therefore, by analyzing the role that WEI has on the TFL and AOC relationship, we contribute to clarify one possible path by which transformational leaders have an effect on their followers' outcomes (i.e. AOC), thus overcoming a limitation in the TFL research (Avolio et al. 2004). Teams with members with the highest levels of EI will be the most successful due to their ability to compensate for less emotionally intelligent members (Jordan and Troth 2004). Beyond these compensatory processes, work groups will develop attraction, selection, and attrition mechanisms that produce similarity among group members (Schneider 1987) at the emotional level, thus, favoring team EI. In addition, the emotional experiences derived from the implementation of emotional abilities combine to promote the emergence of a collective affective state that affects all team members (De Dreu et al. 2001; Kelly and Barsade 2001) and that relates to the levels of AOC.

Many organizations have moved from using work systems based on individual jobs to employing team-based work structures (Lawler et al. 1995). There are few studies that consider the possible effect of antecedents of AOC at supra-individual levels (Conway and Briner 2012). These few studies have identified certain human resource practices aimed at increasing employees' skills and levels of *empowerment* as antecedents (Gardner et al. 2011), practices related to high-performance work sys-

tems development (Arthur 1994; Gong et al. 2010; Raineri 2017), a climate that is perceived as supportive (Tremblay et al. 2019), a culture of nondiscrimination due to the perception of high levels of diversity in terms of employee age (Kunze et al. 2011), and leadership styles that are based on employee support and consideration (Tremblay et al. 2019). As can be noted, at the team level, the role of EI as a background factor for AOC has not been taken into account, and the only study that analyzes the role of leadership (Tremblay et al. 2019) does not exactly focus on TFL, but analyses the directive and supportive leadership behaviors. According to social exchange theory (Blau 1964), transformational leaders distinguish themselves by representing the socioemotional elements of the organization (e.g., vision and mission) to their employees, resulting in an increase in commitment levels, especially AOC (Wu et al. 2006). Transformational leaders connect with their employees by means of emotional attraction and by creating a common vision among team members. Moreover, relationships among variables at the individual level can only be confirmed at the team level using a multilevel design (Chen et al. 2005). Studies thus far addressing this type of design to AOC analyses (El Akremi et al. 2014; Walumbwa et al. 2018) have not considered through which variables TFL exerts its influence on the levels of AOC; as they do not consider leadership (El Akremi et al. 2014) or do consider a leadership style different to TFL, as is the case of authentic leadership (Walumbwa et al. 2018). This study provides possible solutions based on the role that WEI (both at the individual and team level) has in the relationship between TFL and AOC.

Figure 1 represents the emerging model of AOC whose relationships are tested in this research. The model is based on a multilevel model of emotions in organizations (Ashkanasy 2003; Ashkanasy and Jordan 2008) and shows the importance of leadership and emotion management in achieving results (e.g. organizational performance, group behavior and performance, interpersonal relationships, considered behaviors, impulsive behaviors…), of an attitudinal type (i.e. AOC). The group norms derived from the reciprocal relationships between leaders and colleagues in a common affective framework (Barsade and Knight 2015) affect AOC levels (Gardner et al. 2011). AOC is affected by the levels of WEI and the levels of TFL within teams. It is expected that teams with the highest WEI levels and those with a greater perception of a transformational style in leadership exercised by their managers are also those that experience higher levels of AOC. At both levels (individual and team level), it is proposed that WEI has a possible mediating effect on the relationship between perceived TFL and AOC levels. For the model development, it is assumed that AOC at the team level emerges from the interactions and feelings shared by team members and that antecedent variables and their relationships are comparable to those involved in the development of the individual AOC (Kozlowski and Klein 2000; Chen and Kanfer 2006; Chen et al. 2007). Using a hierarchical data structure, in contrast to single-level analyses studies, allows for the obtainment of results with unbiased estimates of standard errors, which reduces the probability of false-positive "significant" results (Hox 2010). Likewise, using a multilevel design avoids misinterpretation of the results by confusing the level of analysis (Hoyle et al. 2001).

To better understand the proposed model and the derived hypothesis, the paper is structured in several sections. First, the advantages of having employees with high levels of AOC due to the positive consequences, both at the individual level and

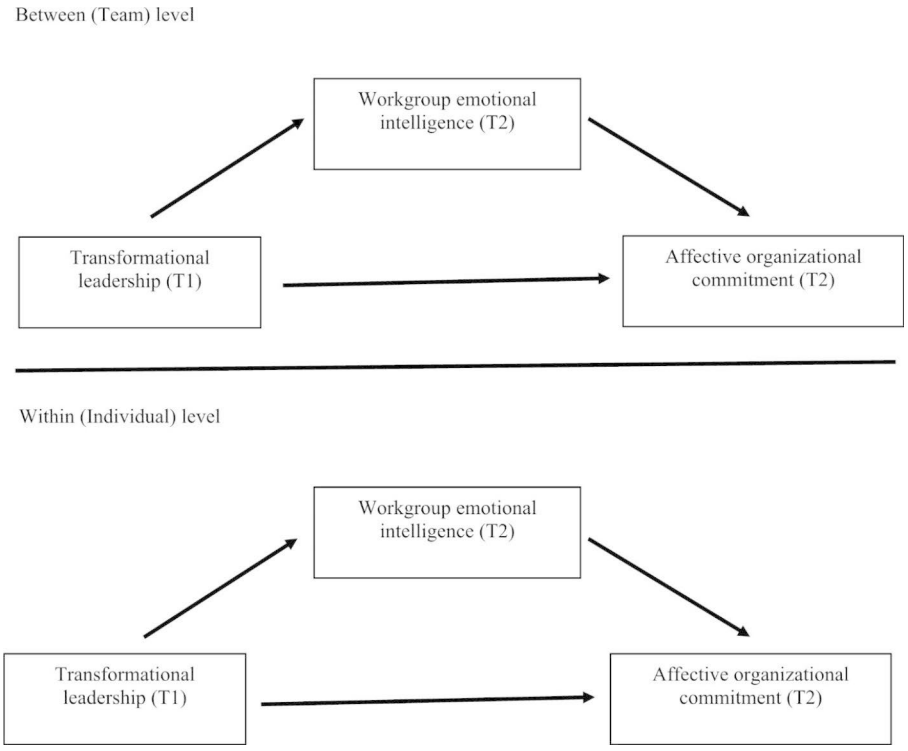

Fig. 1 Conceptual model incorporating the research hypotheses

within the work teams were analyzed. Second, a section is devoted to revising the research focused on variables that may explain AOC levels, highlighting the role, both at the individual and team level, that perceived leadership and WEI level have. Finally, considering the multilevel design which is the starting point of the study, theoretical arguments are provided to explain the emergence of AOC, both at the individual and team levels, and to explain how the relationships between TFL and AOC can be mediated by WEI.

1 Affective commitment and its critical role in organizations

Organizational commitment refers to the satisfaction felt by an employee of belonging to the organization and to the relative strength of an individual's identification with and the degree of involvement in a particular organization (Mowday et al. 1979). Ultimately, this process results in a level of congruence between the individual's goals and values with those of the organization. The research addressing organizational commitment as an attitudinal construct has sought to determine the antecedents that contribute to its development and the results that derive from high levels of identification and involvement with one's organization. The usefulness of AOC, which is understood as the emotional bonding, identification and involvement

of the employee with the organization (Meyer and Allen 1984), in achieving different results at personal and organizational levels (Meyer et al. 2002) suggests that it holds particular importance for the directives that lead individuals at the organizations (Mercurio 2015).

AOC is considered to be a key construct in explaining employee wellbeing and, from a competitive point of view, offers an advantage for organizations due to its positive relationship with performance levels and its negative relationship with employees' intention to quit the organization (Mathieu and Zajac 1990; Meyer et al. 2002; Cooper-Hakim and Viswesvaran 2005; Riketta 2005). However, AOC produces advantages at more than the individual level. The teams and units in which employees carry out their work find that their performance levels increase, and AOC facilitates the execution of interdependent tasks (Allen and Grisaffe 2001; Conway and Briner 2012).

1.1 Antecedents of affective organizational commitment

For work experiences, in Meyer and Allen's (1991) model, leadership is considered to be a process that allows for the support of team members, facilitates interactions among them, directs team efforts towards goals, and facilitates work (Bowers and Seashore 1967). Meyer et al. (2002) found a positive relationship between AOC and a specific leadership style: TFL ($\rho = 0.46$). This leadership style produces a transformation of followers' values and priorities and serves as a motivational influence that expands beyond the previous expectations (Yukl 1998). Transformational leaders achieve, through emotional appeal and sensitivity to meeting the different needs of the people in teams, the generation of almost "familiar" conditions that develop the affective (Jackson et al. 2013). The theoretical reasons that explain the relationship between TFL and AOC lie in the leader´s establishment of goals that promote a high intrinsic value of all that employees do, highlight the relationship between the efforts made and the achievement of goals, and obtain a high level of commitment to the common vision (Shamir et al. 1993; Bass and Riggio 2006).

Although Meyer et al.'s (2002) meta-analysis does not consider EI to be an antecedent of AOC, the construct, at least at the individual level, has shown a strong relationship with the commitment component (Da Camara et al. 2015; Karim et al. 2015; Castillo Sastre and Danvila del Valle 2017; Clarke and Mahadi 2017). The meta-analysis conducted by Miao et al. (2017) confirms this relationship, indicating significant positive relationships between levels of EI and levels of organizational commitment ($\rho = 0.43$). The theoretical reasons can be found in models such as self-perception theory (Bem 1967), which suggests that AOC levels are affected by the awareness of team members´ affective states. Therefore, high levels of EI would lead to more positive emotional experiences within work teams resulting from optimal adaptation to the environment and increased ability to take advantage of social situations faced at work (Byron 2007). This would lead to higher levels of EI, or WEI, when emotional abilities are related to interactions within work teams (Côté 2007; Troth et al. 2012), leading to a more positive assessment of the context in which the work is carried out and, finally, to a higher level of AOC.

1.2 Multilevel model for the emergence of affective organizational commitment

To explain the emergence of AOC, a multilevel model is proposed in which WEI and perceived TFL explain the construct, with WEI as a mediating variable at both the individual and team levels (see Fig. 1).

As a result of the introduction of work teams in organizational environments, a set of collective properties has emerged related to how team members feel, think and behave (Kozlowski and Bell 2003). The idea of collective properties refers to how individual processes within work teams occur under an interactive framework (the team itself) and are therefore explained and expressed in homogeneous, common and similar ways (see Kozlowski 2015 for an example). It is possible to define AOC as a collective property as it has been shown to be a way of thinking and psychological state that correspond with the above characteristics, i.e., it is shared by a group of employees who are part of the same unit (Kanter 1968; Gardner et al. 2011). As AOC (also termed collective AOC) is a phenomenon that arises from the interactions among elements at lower levels or within units (Cronin et al. 2011), it is necessary to understand the variables—related to the cognitions, affects and behaviors of employees at a given level or within a given unit—that give rise to AOC at the team level and how it is impacted by the interactions of those employees (Kozlowski and Klein 2000; Kozlowski 2015). Although the importance of AOC at the team level is beginning to be recognized (Conway and Briner 2012; Winkler et al. 2012), only rarely have the multilevel effects of possible antecedents been considered (El Akremi et al. 2014; Walumbwa et al. 2018).

Considering that AOC at the team level emerges due to team members' continuous interactions along with shared emotions and feelings (Gardner et al. 2011) and that it is possible to establish parallelism in the explanatory mechanisms and functions between the individual and team levels (Kozlowski and Klein 2000; Chen and Kanfer 2006; Chen et al. 2007), similar relationships are expected between antecedents and AOC at the team level.

When demonstrating the functionality of the TFL style and emotional abilities at different levels within organizations (Ashkanasy and Jordan 2008; Gareth and Gill 2012), it is important to test whether the relationships are maintained at the team level. The multilevel model of emotions in organizations (Ashkanasy 2003) indicates that WEI at the team level is a consequence of the exercise of leadership. Specifically, this model proposes the generation of a "group affective tone" as a result of emotional contagion, which is the direct influence of the emotions expressed by leaders and the emotional exchange between leaders and followers (Ashkanasy and Jordan 2008). In the scientific literature, there are few studies on this issue; however, those that exist confirm the relationship between perceived TFL and WEI levels (Lopez-Zafra et al. 2017; Yuan et al. 2012).

Hypothesis 1 *(H1).* Perceived TFL in a team leader is positively related to WEI at the individual level (*H1a*) and to WEI at the team level (*H1b*).

As mentioned in the discussion of the AOC antecedents, there is a positive relationship between TFL and commitment levels (Meyer et al. 2002; Jackson et al. 2013).

Transformational leaders inspire employees to achieve more for the good of their group (Bass and Avolio 1995), without neglecting their individual needs, resulting in an increase in AOC levels (Trivisonno and Barling 2016). Such leaders attain the development of identification and internalization processes (Kelman 1958; Shamir et al. 1993) whereby employees try to exert influence to maintain satisfactory relationships and share common values. Such processes contribute to attitudinal change and therefore affect the attitudinal component of organizational commitment, i.e., AOC (O'Reilly and Chatman 1986). Following these arguments, the following is hypothesized:

Hypothesis 2 *(H2).* Perceived TFL in a team leader is positively related to AOC at the individual level (*H2a*) and to AOC at the team level (*H2b*).

The development of interdependent behavior (Marks et al. 2001) is essential to work teams, and the success of such behavior depends on the skills of team members, including emotional abilities (Jordan et al. 2002; Troth et al. 2012). The interaction that takes place within the work teams determines the effective emotional functioning and, therefore, the levels of WEI (Druskat and Wolff 2001). For their contribution to the level of positive affective states (Collins et al. 2013) WEI levels could explain variations in AOC levels (Mignonac and Herrbach 2004). Thus, regarding AOC, the following is proposed:

Hypothesis 3 *(H3).* WEI levels (at the individual and team levels) are positively related to AOC at the individual level (*H3a*) and to AOC at the team level (*H3b*).

Importantly, there is not always a direct relationship between employees' perceptions of a TFL style and AOC levels (Trivisonno and Barling 2016). Moreover, WEI could mediate the relationship between TFL and AOC given that many of the norms related to management abilities within work groups involve supporting members of the team as well as of other work teams (Druskat and Wolff 2001). High levels of WEI represent a unique opportunity to optimize social relations and easily obtain social support (Austin et al. 2005). Moreover, a leader with a TFL style promotes employees' adoption of more positive exchange relationships from a social interaction point of view (Crawford 1995; Gottfredson and Aguinis 2017; Ng 2017) as well as a higher perception of organizational support (Eisenberger et al. 2002). Indeed, social support in the organizational context is strongly associated with AOC levels (Meyer et al. 2002), with employees who attain high emotional involvement providing such support (Eisenberger et al. 1986). Thus, a positive relationship can be assumed between TFL and WEI stemming from the possible mediating role that WEI can play in the relationship between TFL and AOC. However, Wang et al.´s (2011) meta-analysis highlighted the importance of considering mediators of the outcomes of transformational leadership, with the individual and group affective dimensions being important sources of variability (Mindeguia et al. 2021). At the group level, emotions have been shown to influence different processes (i.e. positive moods; García-Buades et al. 2019). Other emotional constructs, such as WEI, might also be an influential source of variability in different variables and could act as a mediator. Leaders generate

affective events that influence group emotions and thus shape their emotional state (Weiss and Cropanzano 1996; Weiss 2002). Moreover, a recent cross-sectional study showed WEI mediated the TFL influence on cohesion (Mindeguia et al. 2021). However, WEI has been largely unexplored (Lee and Wong 2019) and further analyses about the mediation effect of this construct on the relation of TFL results are needed.

The relationships that take place within the work teams determine the effective emotional functioning and, therefore, the levels of WEI (Druskat and Wolff 2001). For their contribution to the level of positive affective states (Collins et al. 2013) WEI levels could explain variations in AOC levels (Mignonac and Herrbach 2004). The scientific literature gathers different examples of mediating processes in the relationship between TFL and AOC (Walumbwa et al. 2004; Barroso Castro et al. 2008; Goodwin et al. 2011; Pierro et al. 2013). However, our novel contribution is to consider the potential mediation effects of emotional dimensions at different levels of analysis. To make this proposal, we consider what is already known about the TFL-AOC relations, both at the individual and team levels. The novelty is the inclusion of a new predictor (WEI) to test whether TFL has an influence on WEI and, at the same time, the influence of WEI on AOC in a multilevel analysis.

This is the most important contribution of this study, as predicting the AOC in a multilevel model in which a new variable as WEI is incorporated, could provide a base for the development of the named "hybrid theories of homology" (Chen et al. 2005). Thus, as high levels of individual EI benefit attitudinal variables as AOC, now it is intended to test whether these effects are replicated in other levels, such as the team level. In sum, the "hybrid theories of homology" allows to "extend the boundaries of generalization of various multilevel phenomena" (Chen et al. 2005; p. 382). Bearing these aspects in mind, the following is proposed:

Hypothesis 4 *(H4).* TFL will exert an indirect effect on AOC at the individual level, WEI acting as a mediator (*H4a; partial mediation*) and an indirect effect on AOC at the team level, WEI acting as a mediator (*H4b; partial mediation*).

2 Method

2.1 Participants and procedure

The participants were members of teams working at different organizations from several activity sectors in Spain. They were invited to complete a questionnaire measuring different variables in two moments (3–4 month time lag). The inclusion criteria to participate were as follows (Kozlowski and Bell 2003): to be part of an organization with other groups, to have common objectives/goals, to have a "face-to-face" continuous relationship and to require coordination to perform one's work. Moreover, members of the team had to be subordinates of the same responsible person for the team and have tenure within the organization of not less than six months.

To our knowledge, none of the extant research has considered the time-lag factor in the development of possible background factor effects on AOC at the team level.

This aspect contrasts with the numerous studies that analyze AOC from a longitudinal perspective (Morrow 2011). Selecting an appropriate time lag to analyze the development of AOC, as well as at the team level, and the possible influence of antecedent factors can be problematic since time lags, in the organizational commitment research, range from periods of weeks to months or even years (Cuskelly et al. 1998). However, being an attitudinal construct that could be affected by organizational changes and given the current VUCA environment, characterized by volatility, uncertainty, complexity and ambiguity (Bennett and Lemoine 2014), periods of a few months are recommended (Chênevert et al. 2013). The proposed model in this study considers these recommendations and includes a 3-4-month time lag for the evaluation of the variables. If longer periods of time are taken, attitudinal level changes (AOC in time 2) may be due to changes in the organizational environment and not to the possible effects of variables evaluated over time as antecedents (TFL in time 1). Furthermore, given the close interaction that occurs on a daily basis between the leader and the members of the participating teams and the reduced social distance (Dvir et al. 2002; Shamir 2011), this time lag would be enough for the leadership style to bring about changes at the WEI and AOC levels in the teams. In addition, this temporary separation in data collection would help to avoid common method bias (Podsakoff et al. 2003). Regarding the concurrent measure used for WEI and AOC (both evaluated in time 2), although the literature shows that perceived emotional skills can have a long-term effect on AOC (Cheng et al. 2012), positive emotional responses that occur within teams, in many cases as a result of WEI levels, rapidly influence the affective tone of the work teams (George 1990).

A total of 68.48% of the work groups that initially participated in the study completed the questionnaires in two moments. Thus, the final sample comprised 233 employees pertaining to 63 work groups. The mean size of the teams was 12 members (SD = 14.39). Leaders responded to the same questionnaires but were not considered in the data analyses. The participants' average length of time in the organization was 12 years (SD = 10.89). Regarding gender, 51.5% of the participants were men. The mean age of the participants was 41.60 years (SD = 10.99).

Five researchers contacted the organizations and asked them to participate. Once a team agreed to participate, an informed consent form was handed out with the details of the research objectives. The protocol and procedure were approved by the university ethics committee of the first author.

2.2 Instruments

Multifactor Leadership Questionnaire (MLQ; Bass and Avolio 1995; Spanish short version by Lopez-Zafra 1998). This is an instrument that evaluates employees' perceptions about their supervisor's leadership style. In this study, the TFL ($\alpha_{within} = 0.96$; $\alpha_{between} = 0.98$) dimension comprised 13 items, which were scored on a 5-point Likert scale (from 1 = *totally disagree* to 5 = *totally agree*) that measured four competencies: (a) idealized influence, or the ethical component of the TFL, which refers to the performance of leaders based on their moral commitments, not by their own personal goals, with high levels of integrity and humility, and showing respect for everyone; (b) inspirational motivation, which includes leadership behaviors that inspire and

reinforce others in achieving their goals and lead to the setting of challenging but attainable goals and contribute to an increase in the levels of self-efficacy of the people they lead; (c) intellectual stimulation, which includes questioning the traditional ways of thinking and dealing with their followers' problems, reinforcing independent thinking and contributing to the development of their creativity; and (d) individual consideration, which refers to leaders recognizing and to responding to their followers' needs related to personal well-being and development with compassion, care and empathy.

Work Group Emotional Intelligence Profile-Short Version (WEIP-S; Jordan and Lawrence 2009; Spanish adaptation by Lopez-Zafra et al. 2012). The WEIP-S comprises 16 items scored on 7-point Likert scale (from 1 = *totally disagree* to 7 = *totally agree*). This instrument assesses perceptions about emotional abilities that may be useful when working in a team context. To assess WEI as a group construct, the instrument should be based on the workgroup and not on individual aspects (Klein et al. 1994). The profile covers four components: (a) awareness of one´s own emotions, referring to the extent to which the employee understands his or her feelings and emotions, as well as the respective causes, and knows how to identify and attend to emotions beyond his or her own; (b) management of their own emotions, referring to the extent to which an employee is able to control his or her emotions in situations of strong emotional load as well as his or her ability to reorient and prioritize thinking to properly change and/or manage emotions; (c) awareness of others' emotions, which incorporates items related to emotional contagion and the employee's "attuning" with teammates; and (d) management of others' emotions, which is defined as the ability to modulate the expression of emotions in interpersonal contexts to achieve personal goals, helping employees create good social networks, motivate their peers, offer negative feedback without hurting one another's feelings and resolve conflicts in a team. The reliability for the total score was adequate ($\alpha_{within} = 0.88$; $\alpha_{between} = 0.93$).

Organization Attributes Questionnaire (De Frutos 1997; De Frutos et al. 1998). This instrument assesses the AOC based on the instrument by Meyer et al. (1993) and comprises seven items ($\alpha_{within} = 0.84$; $\alpha_{between} = 0.76$) on a 5-point Likert scale (from 1 = *totally disagree* to 5 = *totally agree*). This instrument evaluates the psychological link established between the employee and the organization through feelings such as loyalty, affection, warmth, attachment or belonging.

Control variables. This study includes as control variables the tenure at the organization and the total number of workers of the participants´ workgroup. Following previous research, tenure is controlled at the individual level, and team size is controlled at the team level. The positive relation between tenure (measured in years) and AOC (Meyer et al. 2002) may be due to tenure-related differences in job status. Team size is included, as it may affect group dynamics, and several studies show a slight positive and significant relation between team size and AOC (Schwarz et al. 2021).

2.3 Data aggregation issues

2.3.1 Transformational leadership

To analyze group- or team-level relationships, the research mostly aggregates team members' reports of leaders' transformational or charismatic behavior (Wang et al. 2011). Aggregating individuals' scores for a group score is usually reported on a methodological (Garson 2013), theoretical (consistent with the theoretical argument of other studies that leaders direct many of their transformational behaviors towards the entire group rather than to each individual) (Shamir et al. 1998), or empirical basis, when cases belong to known groups and there is intragroup congruency (Lopez-Zafra et al. 2017). Therefore, to incorporate the TFL perception scores, a direct consensus model was followed, which is a composition model in which individual ratings of higher-level phenomena are used to represent higher-level constructs (Chan 1998).

2.4 Workgroup emotional intelligence

WEI can be treated as the average level of emotional intelligence or the sum of the emotional intelligence levels of the individuals in the group, provided that these perceived emotional abilities in relation to the work team are sufficiently homogeneous (Elfenbein 2006; Coté 2007). To aggregate WEI levels at the team level, a direct consensus model was followed (Chan 1998). We base both on the literature about the issue (Elfenbein 2006; Coté 2007), and on the theoretical knowledge about group-level emotional aspects (George 1990, 2002). The attraction, selection, and attrition mechanisms that take place within the work teams would contribute to the homogeneous development of different group processes (Schneider 1987) among which WEI could be included.

2.5 Collective affective organizational commitment

AOC can be considered a collective property that involves the emergence of thoughts and actions aimed at achieving organizational objectives, which are shared by a group of members who are part of the same unit, together with a feeling of high loyalty (Gardner et al. 2011). This development can be contextualized within a group action framework including shared goals, the development of interdependent tasks and belonging to a higher level in the organization (Chan 1998). There is evidence that commitment depends on the specific structural patterns of work relationships within a given context, group or organization such as authority dynamics, participation in agency decision-making, and formal procedures (Morris and Bloom 2002). Similarly, teams develop climates that are shared in their work environment, creating specific cultures of supportiveness, fairness, and cohesiveness among members (Glisson 2000). These factors markedly influence organizational commitment and conceiving of organizational commitment as a purely individual-level phenomenon can lead researchers to adopt an incomplete view of the phenomenon. Team members converge in their emotional experiences at certain time points (Barsade and Knight 2015), making AOC more homogeneous with continued interactions (Kelly

and Barsade 2001; Gardner et al. 2011). Thus, the decision was made to use a direct consensus model (Chan 1998) for the aggregation of the individual scores relative to AOC, an approach that aligns with the previous research on AOC at the team level (González-Romá et al. 2002; Porter 2005; Hausknecht et al. 2008; Gardner et al. 2011; El Akremi et al. 2014).

2.6 Statistical analyses

To analyze the aggregation of data, the following interrater agreement and interrater reliability indeces were calculated: $r_{wg(j)}$ and intraclass correlation coefficients (ICCs; Bliese 2000). The $r_{wg(j)}$ index comprises values from 0 (no agreement) to 1 (perfect agreement). To interpret the results, the ranges were considered as follows: 0.00-0.30 (lack of agreement), 0.31-0.50 (weak agreement), 0.51-0.70 (moderate agreement), 0.71-0.90 (strong agreement), and 0.91 – 1.00 (very strong agreement) (LeBreton and Senter 2008). To assess the level of agreement among team members, only $r_{wg(j)}$ significant values are considered (Dunlap et al. 2003). A series of ANOVAs are performed with the individual team member scores as the dependent variables and the team to which they belong as the independent variable to compare the variance within teams with the variance between teams. Regarding ICCs, ICC(1) can be considered to be the level at which employee scores or responses depend on team membership (equivalent to an effect size), and ICC(2) allows us to obtain the estimated reliability of the aggregate assessments at the team level (LeBreton and Senter 2008). For ICC(1), a value of 0.01 = "small" effect, a value of 0.10 = "medium" effect, and a value of 0.25 = "large" effect (Murphy et al. 2014), whereas for ICC(2), values under 0.40 are poor, values between 0.40 and 0.75 are adequate, and values above 0.75 are excellent (Fleiss 1986).

Because the data contained a hierarchical structure in which responses of individual-level variables were nested within teams, a 2-2-2 path analysis mediational model was used (Preacher et al. 2010). Multilevel structural equation modelling (MSEM) analysis with two structural models was performed (within-cluster or individual-level and a between-cluster team-level) using MPlus 8.6 software. As in hypothesis 4, it is proposed to test the existence of partially mediated effects, following Mathieu and Taylor´s (2006) framework, the "no directs model" is considered the basis of the results compared with the results of the hypothetical partial mediation model. Specifically, in this type of model we determine two paths, from the TFL to WEI and from WEI to AOC, but without considering direct effects from TFL to AOC. To test the proposed meditation the Bayes estimator (iterations = 10,000) was used with a similar to bootstrapping procedure (Zyphur and Oswald 2015) to calculate the indirect effect. Finally, the tenure at the organization (individual level) was controlled for possible effects on AOC levels, and the number of members at the team (team level) for possible effects on AOC levels at the team level.

3 Results

3.1 Data aggregation

The results related to the indexes required for aggregation are shown in Table 1. These values are significant ($p < .05$), indicating, respectively, strong and very strong levels of agreement by the null distribution among team members in the evaluation of TFL levels, strong agreement for WEI levels, and moderate to strong agreement in the valuation of AOC levels. A series of ANOVAs showed that the interteam variance in the measures of all the variables considered at the group level was significantly higher than the intrateam variance. The ICC(1) values for AOC indicate a medium size effect and large effects for the remaining measures. The ICC(2) values indicate adequate levels of the estimated reliability of the aggregated assessments at the team level for WEI and AOC. TFL has excellent levels. All these results indicate that there is within-group agreement to index the consensus for TFL, WEI, and AOC, which justifies the aggregation of average scores for higher-order analyses.

3.2 Descriptive statistics and correlations

The descriptive statistics and correlations for the individual and team level variables are shown in Table 2.

3.3 Hypothesis testing

The hypothesized multilevel multiple mediation structural model, according to the most extensive adjustment criteria (Hu and Bentler 1999), showed a good fit ($\chi^2 = 0.08$; df = 2; $p = .96$; CFI = 1.00; TLI = 1.00; RMSEA = 0.00; SRMR within = 0.01; SRMR between = 0.01). The no-directed model (that is, action paths from TFL to WEI and from WEI to AOC for the individual and team levels, but not from TFL to AOC) did not achieve an optimal fit to the data ($\chi^2 = 34.07$; df = 4; $p = .00$; CFI = 0.76; TLI = 0.40; RMSEA = 0.18; SRMR within = 0.12; SRMR between = 0.17) and the hypothesized partial mediational model, versus the no-direct model, obtained a significant improvement in the fit to the data ($\Delta\chi^2 = 33.99$, $p < .01$). However, at the team level, the relation between TFL and the AOC path was not significant (H2b); thus, the analyses were rerun without considering the TFL to AOC pathway in the team

Table 1 Aggregation statistics

	Mean $r_{wg(j)}$ [a]	SD $r_{wg(j)}$ [a]	Mean $r_{wg(j)}$ [b]	SD $r_{wg(j)}$ [b]	ICC(1)	ICC(2)	F
TFL at team level (T1)	0.93	0.13	0.82	0.29	0.51	0.79	4.86***
WEI at team level(T2)	0.96	0.13	0.92	0.19	0.25	0.55	2.20***
AOC at team level (T2)	0.84	0.24	0.68	0.33	0.16	0.41	1.71***

Note. [a]$r_{wg(j)}$ is based on a uniform distribution as the null distribution; [b]$r_{wg(j)}$ is based on a distribution with a slight negative skew as the null distribution; TFL = transformational leadership; WEI = workgroup emotional intelligence; AOC = affective organizational commitment; T1 = time 1; T2 = time 2

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

N (i.e., number of teams) = 63

Table 2 Means, standard deviations, and correlations among variables for individual and team levels

Individual level	Mean	SD	1	2	3	4
1. TFL (T1)	3.80	0.89	-			
2. WEI (T2)	5.41	0.74	0.51***	-		
3. AOC (T2)	3.74	0.67	0.50***	0.49***	-	
4. Tenure	12.00	10.89	−0.21**	−0.16*	0.00	-
Team level	Mean	SD	1	2	3	4
1. TFL (T1)	3.85	0.68	-			
2. WEI (T2)	5.41	0.50	0.56***	-		
3. AOC (T2)	3.74	0.43	0.55***	0.58***	-	
4. Number of group members	12.00	14.39	−0.40**	−0.18	−0.29*	-

Note. TFL = transformational leadership; WEI = workgroup emotional intelligence; and AOC = affective organizational commitment

Individual-level N = 233; team-level N = 63

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

level model. Appropriate adjustment values were obtained ($\chi^2 = 0.13$; df = 3; $p = .99$; CFI = 1.00; TLI = 1.00; RMSEA = 0.00; SRMR within = 0.01; SRMR between = 0.02) also indicating a significant improvement versus the no direct model ($\Delta\chi^2 = 33.94$, $p < .01$). The hypothesized multilevel mediation structural model initially planned did not improve the data fit versus the model without the action path from TFL to AOC at the team level ($\Delta\chi^2 = 0.05$, p = .82). The results of the MSEM analysis for the total WEI mediation model at the individual level and partial mediation at the group level are displayed in Table 3. For the individual level, controlling for possible tenure effects on AOC levels, TFL is positively related to WEI at time 2 ($\beta = 0.43$; $p < .01$; H1a), and WEI is positively related to AOC levels at time 2 ($\beta = 0.29$; $p < .01$; H3a). Likewise, TFL and AOC at time 2 are positively and significantly related ($\beta = 0.36$; $p < .01$; H2a). Moreover, TFL had a positive and statistically significant indirect relationship with AOC through the WEI (unstandardized estimate of the product of coefficients = 0.12, 95% CI = 0.06, 0.20), supporting the partial mediation hypothesis (H4a). For the team-level model, controlling the team size on AOC, H1b was confirmed. The model resulted in a positive and significant relationship between TFL and WEI at the team level ($\beta = 0.69$; $p < .01$). In addition, confirming H3b, a positive and significant relationship between WEI and AOC was observed at the team level ($\beta = 0.81$; $p < .01$). Contrary to expectations (H3b), at the group level, TFL does not relate significantly to AOC levels. Finally, partially supporting the mediation hypothesis at the team level (H4b), WEI totally mediated the relationship between TFL and AOC. Support was found for the indirect effect (unstandardized estimate of the product of coefficients = 0.27, 95% CI = 0.11, 0.46).

4 Discussion

AOC is considered an emerging phenomenon that arises from interactions among employees who are members of a work team (Cronin et al. 2011). Thus, it is important to analyze the elements related to the cognition, affect and behavior that contribute to AOC development and to how these interactions ultimately affect an employees'

Table 3 Unstandardized estimates, posterior standard deviation, and credibility for the MSEM analysis

				95% CI	
	Estimate	Post SD	*p*	Lower	Upper
Within					
Control variables					
Tenure → AOC	0.001	0.000	0.003	0.000	0.001
Direct effects					
TFL → WEI	7.202	1.202	0.000	4.837	9.555
WEI → AOC	0.017	0.004	0.000	0.009	0.026
TFL → AOC	0.369	0.071	0.000	0.232	0.510
Indirect effect					
TFL → WEI → AOC	0.121	0.037	0.000	0.058	0.201
Between					
Control variables					
Number of members → AOC	−0.005	0.003	0.070	−0.011	0.002
Direct effects					
TFL → WEI	6.271	1.548	0.000	3.266	9.346
WEI → AOC	0.044	0.012	0.000	0.022	0.069
Indirect effect					
TFL → WEI → AOC	0.272	0.092	0.000	0.110	0.464

Note. TFL = transformational leadership; WEI = workgroup emotional intelligence; AOC = affective organizational commitment; Post SD = posterior standard deviation; CI = credible intervals

commitment (Kozlowski and Klein 2000; Kozlowski 2015). Another justification of the need for this analysis is that few studies consider the antecedents of AOC at the team level except for a few occasions in which multilevel effects have been analyzed (El Akremi et al. 2014; Walumbwa et al. 2018). Finally, there is a dearth of published studies to date that consider the possible influence of AOC at team-level antecedents from a time-lagged approach.

Given that AOC at the team level emerges from the interactions and feelings shared by team members, and that it is functionally comparable to individual AOC (Kozlowski and Klein 2000; Chen and Kanfer 2006; Chen et al. 2007), this paper proposes a model of the emergence of AOC. To make this proposal we base on multilevel model of emotions in organizations (Ashkanasy 2003; Ashkanasy and Jordan 2008). The importance of leadership and emotional management is highlighted in this model for the development of the affective component of organizational commitment (Gardner et al. 2011). This model intends to explain, using a time-lagged approach, how AOC is affected by WEI and TFL perceptions within work teams. A high WEI level and employees' greater perception of a TFL style exerted by supervisors are expected to contribute to higher levels of AOC. The model proposes, both for the individual and team levels, perceived TFL style and WEI levels as possible antecedents of AOC, with WEI serving as a mediating variable in the relationship between TFL and AOC. As the proposed model is, in essence, a multilevel model that gathers the dynamics responsible for the emergence of AOC, it contributes to a correcting of the bias indicated by Kozlowski and Klein (2000), that is, the lack of analyses of constructs at different levels in work teams. Similarly, in organizational commitment research, there is a dearth of studies that, beyond identifying the back-

ground or correlates of the construct, identify the mechanisms and processes that explain its development and maintenance (O'Reilly and Chatman 1986; Meyer and Allen 1997). The model tested in this paper also attempts to correct this limitation. In sum, the proposed model aims to explore the effect that emotional variables such as WEI has on already known relations between TFL and AOC, as a mediator. Furthermore, it allows us to test whether the mediator effect of WEI is the same at the individual or team levels. The inclusion of this construct (WEI) is novel and let to provide a basis for the development of named "hybrid theories of homology" (Chen et al. 2005).

Regarding the results related to the emergence of AOC, this model confirms the positive and significant relationship between WEI and AOC. Individual emotional abilities allow employees to take advantage of the different social situations they face at work (Lopes et al. 2003; Byron 2007) which enables positive effects to a higher extent (Mayer and Salovey 1997; Karim 2009), resulting in higher levels of AOC. These results are in agreement with those of previous studies (Kafetsios and Zampetakis 2008; Miao et al. 2017) showing one of the positive consequences of Jordan and Troth's (2004) study that derives from the compensation of emotional abilities within the team, as well as the generation of a common collective affective state for all (Kelly and Barsade 2001). The positive relationship between perceived TFL style and AOC found in other studies (Meyer et al. 2002; Jackson et al. 2013) is also confirmed by the results of this study, but only at the individual level. Transformational leaders attain changes in AOC in their subordinates by means of identification and internalization processes (Kelman 1958; Shamir et al. 1993). In exerting leadership, transformational leaders contribute to the development of affective commitment (Meyer and Allen 1991), affecting employees' work experiences by attending to their psychological needs (DeCotiis and Summers 1987; Glisson and Durick 1988) and allowing for a potentiation of competence in the development of daily tasks (Rhodes and Steers 1981; Meyer and Allen 1987, 1988). At the team level, workers' perceptions of TFL have no direct consequences on AOC levels. The process by which leaders, through setting goals, get employees to give intrinsic value to their actions, learn to connect their efforts with the achievements and show a high commitment to the proposed vision (Shamir et al. 1993; Bass and Riggio 2006) only influences AOC levels, by enhancing emotional abilities related to members' interactions. That is, by increasing the WEI levels. Perceived TFL contributes to the generation of a "group affective tone" through emotional contagion, which is the direct influence of the emotions expressed and exchanged between leaders and followers (Ashkanasy and Jordan 2008), which would develop team WEI levels (Lopez-Zafra et al. 2017) and, ultimately, AOC levels.

As TFL and emotional ability relationships with the different work results transcend the individual level (Ashkanasy and Jordan 2008; Gareth and Gill 2012), at the group-level a model for the relationships between background factors (TFL and WEI) and AOC was tested. Our results confirm these positive relationships. Moreover, the mediation of WEI between perceived TFL and the AOC relationship was confirmed. This result contributes to the identification of the antecedents and explanation mechanisms (TFL both directly and indirectly through its effect on WEI levels) in the development of AOC. Furthermore, this result sheds light on the theoretical propos-

als regarding the identification of affective commitment correlates (Meyer and Allen 1991, 1997; Meyer et al. 2002), when these correlates are able to explain levels of affective commitment. These results further confirm the influence of a third variable (WEI in this study) in the relationship between TFL and AOC, which is in agreement with other studies that have analyzed third variables effects (Walumbwa et al. 2004; Barroso Castro et al. 2008; Goodwin et al. 2011; Pierro et al. 2013; Trivisonno and Barling 2016). Finally, the positive relationship between TFL and WEI (Lopez-Zafra et al. 2017; Yuan et al. 2012) is also supported.

The AOC emergence model proposed in this research complements the previous studies relating TFL and WEI at the group level (Lopez-Zafra et al. 2017) and includes the criteria for an emergent phenomenon. Specifically, this model integrates the individual characteristics that are manifested at the team level and identifies the processual mechanisms that promote the interactions and exchanges and how the phenomenon emerges, further considering the time frame in which the emergence of the process occurs (Kozlowski et al. 2013). The results contribute to clarifying the way that leaders and team members create an affective tone within the team that derives from giving significance to emotional patterns, and how these patterns are used for reasoning and problem solving (WEI), both at the individual and the team level (Ashkanasy and Jordan 2008). Moreover, as the relationships between TFL, WEI and AOC do not occur in the same way at the individual and team levels, it helps to advance in the knowledge of the so-called "hybrid theories of homology" (Chen et al. 2005b), allowing to propose alternative paths of action to know the emergency of AOC, depending on the level of analysis (individual vs. team).

4.1 Practical implications

From an applied point of view, training with rigor on these relations could benefit organizations (Garavan et al. 2019). This study identifies variables that directly and indirectly influence AOC development within work teams. These variables are emotional abilities and supervisors' TFL style. Thus, to enhance employees' AOC at the individual and team levels, the inclusion of the development of WEI in formative activities for skills (Stevens and Campion 1994), improves emotional abilities through group development (Jordan et al. 2002) and has associated advantages. Similarly, teams who are higher in EI have proven to benefit most from TFL interventions, extending the previous findings regarding the importance of EI in organizational settings (Fitzgerald and Schutte 2010). Thus, it could be useful for human resource development to integrate AOC into wider intervention programs to develop transformational leaders (Kelloway et al. 2000; Abrell et al. 2011).

4.2 Limitations and future directions

The study presents a series of limitations that could be overcome in future research. First, all the measurement instruments used to assess the variables were self-reported which implies bias. However, they were chosen for their relatively quick and simple administration, preserved sufficient validity and reliability requirements, which enabled an examination of emotional skills within a specific context (i.e., the partici-

pant's team). Although the results showed the predictive capacity of the self-report measure of emotional skills when assessing teams, it would be worthwhile to pursue research using alternative measures of emotional capabilities such as the situational test of emotional management (McCann and Roberts, 2008) or to consider peer ratings of emotional skills. Likewise, the generalization of these study results should be considered with some reservation as the organizations participating were contacted and sampling was by convenience. For future studies, a more representative selection method would be appropriate, for example, random sampling stratified by sectors of activity. Another limitation is that the responses were obtained from one source: employees. This introduces common method bias (Podsakoff et al. 2003) in the study. In the future, to reduce this potential bias, obtaining data from different sources could help. Minimizing the influence of this bias by the score aggregation at the individual level contributes to the objectivity of the measure (Bliese and Jex 2002). Furthermore, the inclusion in this study of multiple time points (time-lag study) also helped to minimize common method bias (Han et al. 2018). However, even though the studies with two measures in time represent a small improvement compared to the cross-sectional designs (Singer and Willett 2003), to consider a real longitudinal study and to be able to verify the directionality of the relationships, a minimum of three measurements should be included in time (Ployhart and Vandenberg 2010). Finally, in future studies, an aspect to consider is the tenure of participants in their working teams. In this research, only the variables shown in previous studies as affecting AOC levels have been considered (Meyer et al. 2002; Schwarz et al. 2021). However, controlling the possible effect that participants´ tenure in workgroups could have on the AOC at the individual level, and on WEI and AOC at the team level, could also be of interest.

5 Conclusions

To better understand the mechanisms that explain the emergence of AOC and considering the beneficial effects of this construct in organizational contexts, from a multilevel and time-lagged perspective, we test the fit to the data of a structural model. Specifically, it was found that, at the individual level, AOC was explained by perceived TFL style and emotional abilities (WEI levels), with WEI serving as a mediating variable in the relationship between TFL and AOC. This study highlights the importance of considering the influence of individual- and group-level variables, related to emotional abilities and leadership in explaining AOC levels.

Authors' contributions All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Manuel Pulido-Martos, Leire Gartzia, José María Augusto-Landa, and Esther Lopez-Zafra. The first draft of the manuscript was written by Manuel Pulido-Martos and all authors revised it critically for important intellectual content. All authors read and approved the final manuscript.

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Declarations

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