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How Authentic Leadership Influences Team Performance: The Mediating Role of Team Reflexivity

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Abstract This study examines how authentic leadership influences team performance via the mediating mechanism of team reflexivity. Adopting a self-regulatory perspective, we propose that authentic leadership will predict the specific team regulatory process of reflexivity, which in turn will be associated with two outcomes of team performance, effectiveness and productivity. Using survey data from 53 teams in three organizations in the United Kingdom and Greece and controlling for collective trust, we found support for our stated hypotheses with the results indicating a significant fully mediated relationship. As predicted the self-regulatory behaviors inherent in the process of authentic leadership served to collectively shape team behavior, manifesting in the process of team reflexivity, which, in turn, positively predicted team performance. We conclude with a discussion of how this study extends theoretical understanding of authentic leadership in relation to teamwork and delineate several practical implications for leaders and organizations.

Keywords Authentic leadership · Reflexivity · Self-regulation · Team performance · Team processes

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Hardly a day goes by without another example of unscrupulous organizational leadership appearing in the media (Trevino and Brown 2014). This upsurge of interest in moral behavior, coupled with the falling levels of trust in leaders across the world (Avolio and Walumbwa 2014), has prompted scholars to look beyond traditional leadership theories, such as transactional and transformational leadership, and consider more contemporary positive forms of leadership as a means for promoting organizational effectiveness. In turn, frameworks such as Authentic Leadership Theory (Luthans and Avolio 2003) have flourished in the organizational psychology literature (Gardner et al. 2011). Given their focus on authenticity, self-awareness, and self-regulation (Avolio et al. 2004; Avolio and Gardner 2005), authentic leaders are thought to promote ethical conduct and discourage nefarious behavior among their followers, with a rich body of empirical studies supporting associations between authentic leadership and a host of organizationally relevant outcomes (Avolio and Walumbwa 2014).

While research into authentic leadership is blossoming and a solid theoretical basis now exists, considerable gaps in the theory pertain. Firstly, research to date has focused largely at the individual level (Gardner et al. 2011), neglecting the consideration of group-level outcomes and how authentic leaders can leverage aspects of team performance (Yammarino et al. 2008). Given that teams provide the fundamental building blocks of modern organizational designs (Mathieu et al. 2013), the prevalence of flatter group-based structures necessitates the study of team-level processes and outputs, and how authentic leaders might influence such collectives. Further, the limited research that has focused at the group level of analysis (e.g., Černe et al. 2013; Clapp-Smith et al. 2009; Rego et al., 2013, 2014) has typically adopted a positive

organizational behavior lens to explain how authentic leaders facilitate the development of collective interpersonal processes (Gardner and Schermerhorn 2004; Luthans 2002). However, given that authentic leadership theory is firmly rooted in the concept of self-regulation (Bandura 1991; Gardner et al. 2011), the omission of self-regulation theory from the examination of how authentic leaders influence teams is problematic (Yammarino et al. 2008). Avolio and Gardner (2005) argue that self-regulation is the process through which authentic leaders are able to align actions with their true values and intentions, and thus make their authentic selves transparent to followers. Through processes of positive social exchange (Blau 1964) and social information processing (Salancik and Pfeffer 1977), authentic leaders have been shown to shape the self-regulatory processes of their subordinates (Avolio et al. 2004). Despite this, research is yet to examine how such leaders might engender *collective* self-regulatory processes in the teams that they lead. Such research is important as it extends our understanding of how authentic leaders can uniquely shape not only individual behavior, but also group-level processes, beyond those which are interpersonal in nature.

Accordingly, the primary goal of this study is to explain how authentic leaders foster heightened team performance through the stimulation of a specific team regulatory process, namely team reflexivity (West 2000). Indeed, as team work becomes increasingly prevalent in modern organizations, there is a pressing need to better understand ways in which leadership can leverage aspects of team performance. We thus theorize that authentic leaders will foster the development of team self-regulation geared toward authenticity, as manifested in the process of team reflexivity, which ensures that team objectives are regularly reviewed and that collective actions remain appropriately aligned with the team's true intentions and values. In turn, we expect that team reflexivity will predict two aspects of team performance, team productivity and team effectiveness (see Fig. 1).

Our study offers a number of theoretical contributions to the literature. Firstly, by adopting a team self-regulatory perspective (Kozlowski and Ilgen 2006), we present a test of an alternative conceptual framework for explaining the authentic leadership—team performance nexus, thus extending understanding beyond the positive organizational behavior tradition that has dominated the literature to date (Avolio and Walumbwa 2014). Secondly, through utilizing Marks et al. (2001) taxonomy of team processes, the study findings serve to advance the nomological network of authentic leadership through the consideration of team reflexivity as a specific transition process that authentic leaders are able to shape. In doing so, we also contribute to the limited literature that has examined the impact of authentic leadership at the group level of analysis (Yammarino et al. 2008). Thirdly, while a handful of previous studies have considered how other leadership frameworks are related to reflexivity (e.g., Hirst et al. 2004), research on the determinants of reflexivity remains scarce (Schippers et al. 2013). We therefore contribute to the reflexivity literature by confirming authentic leadership as a key predictor of this important transition process, and examine its consequences for team performance. Furthermore, from a practical standpoint, our findings afford leaders with alternative strategies for fostering team performance through the development of authentic leadership and team meta-routines built on the notions of team reflexivity, thus contributing to organizational practice.

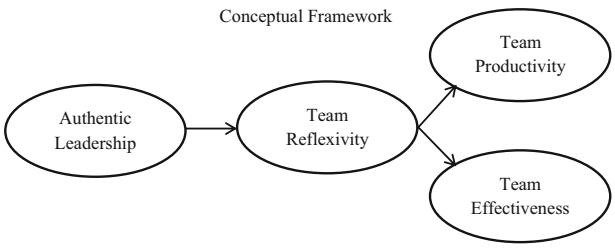

Fig. 1 Conceptual framework

Theory and Hypotheses

Authentic Leadership

Authentic leadership has been defined as "a pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development" (Walumbwa et al. 2008, p. 94). The construct comprises four dimensions: self-awareness, which reflects the degree to which a leader demonstrates an understanding of how (s)he derives and makes sense of the world; balanced processing, which refers to the degree to which the leader analyzes all relevant information before making a decision and solicits the views of others who challenge their position on matters; internalized moral perspective, which captures leader behaviors which are guided by internal moral standards and values rather than organizational and societal pressures; and finally relational transparency, which involves making personal disclosures, such as openly sharing information and expressing true thoughts and feelings (Gardner et al. 2005). From a theoretical stance, all four of these dimensions have a self-regulatory focus which is proposed to be governed, partially, through leader's internal standards and evaluations of their

own behavior (Gardner et al. 2005; Rego et al. 2012). Thus, while the four dimensions are considered to be somewhat distinct, a number of recent studies have adopted a composite measure combining them into one core factor (e.g., Rego et al. 2013; Walumbwa et al. 2008).

Authentic leadership has been linked to a number of positive outcomes at the individual level, including performance, work engagement, creativity (Grandey et al. 2005), and job satisfaction (Giallonardo et al. 2010). Studies have also examined mediating mechanisms such as follower empowerment, identification with supervisor (Leroy et al. 2012), and personal identification (Wong et al. 2010). These findings have been largely founded on the assumption that followers emulate their leader's authenticity and mirror their behavior (Avolio et al. 2004; Chan et al. 2005; Hannah et al. 2011), suggesting that an escalation of the locus of authentic leadership to the group level is possible (Avolio and Walumbwa 2014).

As previously noted, a handful of studies have begun to examine how authentic leaders are able to meaningfully influence team processes and outcomes. For example, a study by Clapp-Smith et al. (2009) found that collective trust partially mediated the relationship between authentic leadership and firm performance, and fully mediated the relationship between psychological capital and firm performance. Hannah et al. (2011) also found evidence for the transference of authentic leader behavior to average levels of authenticity exhibited by team members which, in turn, predicted team performance, while Hmieleski et al. (2012) reported that top management teams' shared authentic leadership was related to firm performance via positive affective tone. Further, Hirst et al. (2015) found that intra-team trust mediated the relationship between team authentic leadership and team helping behavior. Thus, while evidence that authentic leadership is associated with team performance is starting to emerge, the specific question of how authentic leaders influence collective self-regulatory mechanisms in teams remains neglected (Avolio and Gardner 2005; Yammarino et al. 2008). With this team self-regulatory lens as our point of conceptual departure, we posit that authentic leadership will give rise to increased team reflexivity, whereby team interactions involve deliberate reflective discussions about alignment of and progress toward shared goals, and are characterized by balanced processing of information and transparent discussions about the team's true values, motives strengths, and weaknesses. Next, we define team reflexivity before delineating our three research hypotheses.

Team Reflexivity

The evaluation of current behavior against set goals is a key aspect of self-regulation theory, whereby discrepancies between current states and end goals prompt the modification of cognitions and behavior to increase the likelihood of goal attainment (Bandura 1991; Yeow and Martin 2013). Informed primarily by three convergent theoretical perspectives, Social-Cognitive Theory (Bandura 1991), Goal-Setting Theory (Locke and Latham 1990), and Control Theory (Carver and Scheier 1998), theories of self-regulation have posited a number of psychological processes through which individual behavior is regulated, such as feedback seeking (Ashford 1986), goal setting (Locke and Latham 1990), and self-monitoring (Guillaume et al. 2013). Similarly, team regulatory processes can manifest in many different forms, including team monitoring (DeShon et al. 2004), tracking progress toward collective goal accomplishment (Rapp et al. 2014), and team goal orientations (Bunderson and Sutcliffe 2003). However, one notable team regulatory process that has received particular attention in the recent literature is that of team reflexivity (Schippers et al. 2014, 2015; Widmer et al. 2009).

Team reflexivity is defined as "the extent to which group members overtly reflect upon, and communicate about the group's objectives, strategies (e.g., decision making) and processes (e.g., communication), and adapt them to current or anticipated circumstances" (West et al. 1997, p. 296). With regards to Marks et al.'s (2001) taxonomy of team processes, reflexivity is viewed as a transition process, capturing the self-regulatory actions that a team engages in between episodes of performance (Schippers et al. 2013). These transition phases are periods of time during which a team is primarily concerned with the evaluation of its performance and focuses on planning activities toward the accomplishment of shared objectives. A growing number of studies suggest that team reflexivity is a crucial regulatory process for team performance and innovation (e.g., Carter and West 1998; Hirst et al. 2004; Nederveen Pieterse et al. 2011; Shin 2014; Tjosvold et al. 2004; Konradt et al. 2014). Further, while empirical research examining the determinants of team reflexivity remains scarce (Schippers et al. 2013), the role of leadership in facilitating reflexivity appears promising. Indeed, participative leadership (Somech 2006), facilitative leadership (Hirst et al. 2004), and transformational leadership (Schippers et al. 2008) have all been found to predict reflexivity. However, despite their common theoretical underpinning, research is yet to consider the unique role that authentic leadership might play in engendering this process.

Authentic Leadership and Reflexivity

It is well established that leadership serves as a critical input for influencing group processes and output (Hackman and Wageman 2005), and that leaders can shape followers

attitudes, beliefs, and values (van Knippenberg et al. 2004). Thus, there are reasons to expect that self-regulation processes inherent in authentic leadership can become contagious among team members and manifest in team reflexivity, primarily due to role-modeling (Shamir and Eilam 2005) and social information processing (Salancik and Pfeffer 1977). We explore these propositions in more detail below.

Firstly, the notion that teams imitate the values and task-related behaviors of influential role models, such as authentic leaders, is supported by Social Learning Theory (Bandura 1977), whereby the salience of the leader's behavior will signal the team members that self-regulatory processes geared toward authenticity are highly valued (Avolio and Gardner 2005; Hannah et al. 2011). The ability of leaders to bring about team reflexivity is also implied in Hackman and Wageman's (2005) theory of team coaching, which posits that leaders who are themselves reflective facilitate the development of team meta-routines which directly instigate critical discussion about objectives and progress, fostering information sharing and learning (Gersick and Hackman 1990). Thus, it seems reasonable to suggest that authentic leaders will become positive role models of self-regulation for their team, fostering and reinforcing a climate in which team members also strive to develop such behaviors. In turn, given that teams are regarded as social information processors capable of developing collective understandings and shared mental models (Hu and Liden 2014; Konradt et al. in press), team member self-regulation is likely to converge as a bottom-up process (Klein and Kozlowski 2000), reinforcing the authentic leader's behavior as being prototypical in the team (Chan et al. 2005). In seeking to imitate its leader, a team will thus be motivated to spend time deliberately and explicitly reflecting on its current levels of task effectiveness, and how the content and suitability of its objectives and processes align with the team's true values and intentions.

Specifically, with their strong focus on balanced processing, authentic leaders are likely to encourage their team to spend time deliberately reflecting on new information and novel perspectives, helping team members to challenge existing assumptions. An authentic leader's deepened self-awareness will also prompt systematic reflexivity geared toward building a collective awareness of the team's motives, strengths, and weaknesses, and how the wider environment could impact group functioning (West 1996). Further, the relational transparency exhibited by authentic leaders is likely to foster a team climate which values fluid information sharing and open decision making. Finally, the leader's internalized moral perspective will guide the content of reflexive discussions toward ensuring that collective processes channel the team's internal values and standards, which, in turn, will be complementary to those deeply held by the leader him/herself. Thus, just as self-regulation is the meta-cognitive process through which leaders enact their own authenticity (Avolio and Gardner 2005), we posit that team self-regulation, specifically in the form of team reflexivity, provides the collective social-cognitive mechanism for ensuring that a team's objectives and processes are suitable, effective, and appropriately aligned with its true 'authentic' intentions (Shin 2014). Taken together, these arguments lead to our first hypothesis:

H1 Authentic leadership will be positively associated with team reflexivity.

Reflexivity and Team Performance

Team performance is widely accepted as a function of a multifaceted amalgamation of team members' inputs (Rousseau et al. 2006) and is typically captured by a subjective or an objective judgment of the extent to which a team meets valued objectives (Zaccaro et al. 2009). However, assessing the performance of 'real world' teams continues to be a complex endeavor (Mathieu et al. 2013). Hackman and Wageman (2005) define team performance as the degree to which team productive output meets or exceeds the standards of *quantity*, *quality*, and *timeliness* of expectations of the stakeholders who use and/or review the output. Team productivity is thus widely considered a key dimension of team performance (Mathieu et al. 2000), capturing the extent to which a team is able to meet or exceed its goals in a timely and efficient manner (Kirkman and Rosen 1999). However, team effectiveness theory (Hackman 1987) would suggest that high performing teams are not only more productive, but are also better able to successfully integrate their diverse skills and organize their work in a more optimal manner. Indeed, Maynard et al. (2012) argue that we need to look beyond raw team productivity and consider other aspects of team performance, such as the ability of teams to generate ideas, improve the co-ordination of their work, and deploy different team member skills to deliver a quality output. Therefore, in order to ensure that this more holistic approach is reflected in the current study, we conceptualize team performance both in terms of productivity (i.e., the extent to which a team efficiently meet its goals; Kirkman and Rosen 1999) as well as effectiveness (i.e., the capability of a team to work cooperatively and make use of its skills to generate ideas and develop its work; Maynard et al. 2012). But how are such outcomes expected to be related to team reflexivity?

As discussed, an increasing number of studies have found positive relationships between team reflexivity and desirable team-level outcomes (e.g., De Dreu 2007). The

constructive systematic reflection inherent in reflexive teams enables them to quickly identify areas that need attention and implement actions leveraged toward enhancing efficiency and closing productivity gaps (Tjosvold et al. 2004). Indeed, reflexivity has been found to be positively related to the meeting of team deadlines (Gevers et al. 2009), thus facilitating the timely delivery of team outputs. Conversely, non-reflexive teams are likely to have a preference for the status-quo and will thus avoid examining sub-optimal productivity or re-occurring problems that could otherwise enhance efficiency. Therefore, in line with existing research, we expect that reflexivity will be positively associated with team productivity.

Furthermore, we also anticipate a positive relationship between reflexivity and team effectiveness. Indeed, reflexivity has been shown to enable teams to develop a shared understanding of meta-level issues relating to the appropriateness of collective strategies (e.g., Nederveen Pieterse et al. 2011), helping them to not only efficiently meet current objectives, but also to develop superior knowledge of their work, plan ahead, and actively structure anticipated situations (West 1996). Reflexive teams are thus able to establish a heightened awareness of their strengths, weaknesses, opportunities, and threats, and pay closer attention to the content and suitability of their goals for the surrounding emergent environment (Schippers et al. 2007). This increased situational awareness will also prompt such teams to better recognize and capitalize upon unique team member skills, as well as learn from previous mistakes. We therefore anticipate that reflexivity will not only improve team productivity, but also foster enhanced co-ordination and better quality decision making, and will thus be positively associated with team effectiveness. This leads to our second hypothesis:

H2 Team reflexivity will be positively associated with team performance, as captured by team productivity (2a) and team effectiveness (2b).

Authentic Leadership and Team Performance: The Mediating Role of Reflexivity

So far, we have hypothesized that authentic leadership will be positively related to team reflexivity which, in turn, will be positively associated with two aspects of team performance. Hypotheses 1 and 2 therefore assume that authentic leadership has an indirect effect on team performance outcomes through team reflexivity, with this mediation forming our third hypothesis. Indeed, in its aggregated form, authentic leadership seems to be especially important for influencing team performance through not only facilitating interpersonal processes such as trust (e.g., Clapp-Smith et al. 2009), but also through modeling self-regulatory processes that are subsequently emulated by the team. As it is it is widely argued that authentic leaders develop a transparent relational base for "sustainable, veritable performance" (Avolio et al. 2004, p. 15), we therefore expect that an authentic social-cognitive exchange relationship will emerge between the leader and the team which is characterized by phases of open constructive reflection as they pursue shared goals (Hannah et al. 2011). Given that reflexivity has been shown to be associated with improved team outcomes, it is through this collective self-regulatory behavior that we anticipate the indirect relationship between authentic leadership and team performance to emerge:

H3 Team reflexivity will mediate the relationship between authentic leadership and team performance, as captured by team productivity (3a) and team effectiveness (3b).

Method

Sample and Procedure

The sample comprised 53 work teams made up of 206 participants from three organizations. Two of the organizations were in the energy sector in the United Kingdom (UK): the first a medium-sized organization providing seven teams ($n = 23$), and the second a large organization providing 22 teams ($n = 93$). The third organization, which provided 24 teams, was a large not-for-profit organization based in Greece ($n = 90$). The teams sampled can be described as action teams (i.e., characterized by highly structured tasks, differentiated team roles, joint decision making, and coordinated workflow patterns), representing the broadest type of team prevalent in modern organizations (Sundstrom et al. 2000). The data were collected from each organization between May and June 2013, using the same procedure. Teams were identified, and team members were invited to participate via email which contained a link to an online survey. The team member survey contained measures for authentic leadership, reflexivity, and demographic information. In order to avoid potential common source bias (Podsakoff et al. 2003), external managers or supervisors (who were not team members) were invited to assess team productivity and effectiveness in a separate online questionnaire. The total period of data collection for each organization was 2 weeks.

Of the 356 participants (representing 69 teams) invited to complete the team member survey, 244 responded (68.5 % response rate). Of the 69 supervisors that were invited to participate, 60 completed the external manager survey (87 % response rate). Following Dawson's selection

rate (2003; Richter et al. 2006), seven teams did not provide a sufficient group-level response rate and were therefore excluded. Data from a further nine teams were excluded due to lack of external manager ratings. Team size ranged between three and 16 members (mean 5.26; SD = 2.80), with the mean response rate per team being 3.92 (SD = 2.11). Of the respondents, 55 percent were female; 63 % were 18–34 years old, 16 percent were 35–44 years old, 11 % were 45–54 years old, and 10 % were over 55. Of the sample, 22 % had secondary education or less, 62 % held bachelor's degrees, 11 % held graduate degrees, and 10 % did not disclose their educational background. The average organizational tenure was 5 years (SD = 6.9).

Measures

Authentic Leadership

Authentic leadership was measured using the 16-item Authentic Leadership Questionnaire (ALQ) by Walumbwa et al. (2008). Participants were instructed to rate the authentic characteristics of their immediate team leaders and provided responses on a Likert rating scale ranging from 1 *(not at all)* to 5 *(frequently, if not always)*. Sample items include: The leader '…says exactly what he or she means' (transparency); '…seeks feedback to improve interactions with others' (self-awareness); '…makes decisions based on his or her core values' (internalized moral perspective); and '…listens carefully to different points of view before coming to conclusions' (balanced processing) ($\alpha = .96$).

Reflexivity

Reflexivity was measured with the four-item scale of Swift and West (1998), which was later validated as the discussing processes dimension of reflexivity by Schippers et al. (2007). Participants provided responses to the items on a Likert rating scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*. Sample items include: 'We regularly discuss whether the team is working effectively' and 'The methods used by the team to get the job done are often discussed' ($\alpha = .83$).

Team Productivity

Team productivity was measured in the external manager survey using a six-item scale developed by Kirkman and Rosen (1999), which used a five-point Likert rating scale (1 = *strongly disagree*, 5 = *strongly agree*). Sample items include: 'The team meets or exceeds its goals' and 'The team completes its tasks on time' ($\alpha = .85$).

Team Effectiveness

Team effectiveness was also measured in the external manager survey using a four-item scale developed by Maynard et al. (2012), which used a five-point Likert rating scale (1 = *not at all*, 5 = *extremely*). Sample items include: 'How effective is your team in making use of the skills of the different team members?' and 'How effective is your team at coordinating?' ($\alpha = .88$).

Control Variables

In order to examine the incremental validity of reflexivity as a key mediating mechanism, we controlled for collective trust, given that trust is the most widely acclaimed interpersonal process used to explain the authentic leadership-performance relationship in existing studies (e.g., Clapp-Smith et al. 2009). To do so, we incorporated a five-item collective trust scale from De Jong and Elfring (2010) into the team member survey, which used a five-point Likert rating scale (1 = *strongly disagree*, 5 = *strongly agree)*. An example item was '($\alpha = .85$). Further, as the sample comprised teams from three different organizations based in the UK and Greece, we controlled for both organization and country. We also controlled for team size and average team tenure, to rule out any effects these variables might have on aspects of team performance (Hackman 2002).

Results

Measurement Evaluation

We conducted a series of confirmatory factor analyses (CFA) to examine the factor structure of the authentic leadership scale. Firstly, a second-order CFA was conducted to provide support for our treatment of authentic leadership as a higher order construct. Upon reviewing the fit indices for the second-order factor model ($X^2 = 249.528$, $df = 100$, $p = .00$; CFI = .94; NNFI = .93; RMSEA = .09; SRMR = . 04) compared to both the first-order model ($X^2 = 240.203$, $df = 98$, $p = .00$; CFI = .95; NNFI = .94; RMSEA = .09; SRMR = . 04) and a single-factor solution ($X^2 = 315.167$, $df = 104$, $p = .00$; CFI = .92; NNFI = .91; RMSEA = .10; SRMR = . 04), we found that when the four first-order dimensions loaded onto a higher order authentic leadership factor a reasonable level of fit to the data was achieved. While the fit indices were similar to those obtained for the first-order model, the second-order model had more degrees of freedom, thus providing more parsimony, and we therefore proceeded with this higher order factor structure.

Table 1 Means, standard deviations, correlations, and internal consistencies of the variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. Team size	5.26	2.8	–									
2. Team tenure	20.5	24.1	.02	–								
3. Country	.45	.50	−.03	−.62**	–							
4. Organization Dummy 1	.13	.34	−.16	.05	−.36**	–						
5. Organization Dummy 2	.42	.50	.14	.59**	−.77**	−.33*	–					
6. Collective trust	4.12	.33	−.23	−.28*	.20	−.00	−.20	(.85)				
7. Authentic leadership	3.33	.72	.04	−.47**	.83**	−.43**	−.54**	.40**	(.96)			
8. Reflexivity	3.78	.53	−.07	−.23	.17	−.03	−.15	.47**	.46**	(.83)		
9. Team productivity	3.90	.61	−.04	.35*	−.51**	.12	.43**	−.13	−.34*	.26	(85)	
10. Team effectiveness	4.17	1.05	−.10	−.34*	.70**	−.25	−.54**	.19	.64**	.32*	.06	(.88)

The correlations and internal reliabilities are based on $N = 53$ groups

Team tenure in months

Country coded (0 = UK, 1 = Greece)

* $p < .05$, ** $p < .01$

As ratings of authentic leadership and reflexivity were from the same source, we also conducted a CFA to ascertain the discriminant validity of these two constructs. The two-factor model, which included the second-order authentic leadership factor and a single reflexivity factor, produced a significantly better level of model fit ($X^2 = 327.482$, $df = 165$, $p = .00$; CFI = .95; NNFI = .94; RMSEA = .07; SRMR = . 04) compared to a single-factor solution ($X^2 = 551.925$, $df = 167$, $p = .00$; CFI = .87; NNFI = .86; RMSEA = .11; SRMR = . 11), based on the results of a χ^2 difference test ($\Delta\chi^2 = 224.443$), which was significant at the .01 level. Following the procedure outlined by Fornell and Larcker (1981), we also calculated the square root of the average variance explained by the reflexivity and authentic leadership dimensions. The average variance extracted scores from both scales were found to exceed the squared correlation between the two latent constructs, thus providing further evidence of discriminant validity (Fornell and Larcker 1981).

Data Aggregation

With regards to empirically justifying aggregation of data to the team level, interrater reliability coefficients were calculated to demonstrate consensual validity, as measured by *R*wg(*j*) (James et al. 1993) with values above .70, suggesting acceptable consensual validity. *R*wg(*j*) averaged .96 for authentic leadership, .78 for reflexivity, and .89 for collective trust suggesting that aggregation to the team level was justified (Bliese 2000). With regards to intra-class correlations, ICC(1) indices for authentic leadership and reflexivity were .51 and .21, respectively, suggesting agreement among ratings from members of the same team. Further, ICC(2) indices for authentic leadership and reflexivity were .80 and .50, respectively, suggesting that the teams could be differentiated on the variables under investigation. With regards to the control variable of collective trust, ICC(1) and ICC(2) indices fell slightly short of recommended levels (.07 and .22, respectively). However, given that the teams in this study were only nested in three organizations, *R*wg(*j*) statistics tend to be preferred over intra-class correlations (George 1990). As collective trust was not a key variable of interest, but rather a control variable, we therefore considered the satisfactory *R*wg(j) statistic as sufficient for justifying aggregation.

Hypotheses Testing

The means, standard deviations, and Pearson's correlation coefficients of all the study scales are presented in Table 1.

We used the approach outlined by Preacher and Hayes (2004) and a macro devised by Hayes (2012) in SPSS to test the indirect effect between the predictor (authentic leadership) and the two outcome variables (team productivity and team effectiveness) through the mediator (team reflexivity). Authentic leadership was found to positively predict reflexivity ($\beta = .59$, t (53) = 4.27 $p = .00$), thus supporting Hypothesis 1. In turn, reflexivity was found to positively predict team productivity ($\beta = .68$, t (53) = 3.31, $p < .05$) and team effectiveness ($\beta = .67$, t (53) = 2.19, $p < .05$), meaning that Hypothesis 2 was also supported. Teams that engaged in reflexivity were thus rated as being more productive (Hypothesis 2a) and more effective (Hypothesis 2b) by their external manager. The direct relationships between authentic leadership and both outcomes of team performance were not found to be significant, suggesting that authentic leadership may

Table 2 Direct, indirect, and total effects of authentic leadership

Variables	Effect		
Authentic leadership effects	Total	Direct	Indirect
Reflexivity	.59**	–	–
Productivity	.35	−.05	.40*
Effectiveness	.25	−.15	.39*

Dashes indicate data are not applicable

* $p < .05$, ** $p < .01$

constitute a distal antecedent of productivity and effectiveness. Therefore, to test Hypothesis 3, and in line with current practice (Cerin and MacKinnon 2009; Hayes 2009), we used bootstrapping to examine the significance of indirect effects. Bootstrap analysis revealed support for full mediation for both performance outcomes. The indirect effect for team productivity was significant with a 95 % bootstrap confidence interval of .13 to .94, meaning that Hypothesis 3a was supported. A significant indirect effect was also found for team effectiveness as the confidence intervals of .04 to 1.01 excluded zero (Mackinnon et al. 2002; Preacher and Hayes 2004), thus supporting Hypothesis 3b. The total, direct, and indirect effects of authentic leadership are presented in Table 2.

Overall, full support for the three stated hypotheses was established. These results were obtained while controlling for team size and average team tenure, as well as organization and country, in order to account for any confounding effects that these variables might have on the results. Further, these results held even when controlling for collective trust.

Discussion

Adopting a self-regulatory theoretical perspective, this study provides empirical support for the key role of reflexivity (a specific team regulatory process) in accounting for the relationships between authentic leadership and the team performance outcomes of productivity and effectiveness. The demonstrated support for all three hypotheses suggests that the self-regulatory behaviors inherent in the process of authentic leadership serve to collectively shape team behavior, manifesting in the process of team reflexivity. In turn, this heightened reflexivity enables teams to more critically examine the appropriateness and alignment of their objectives, strategies, and processes, and check that they are suitable, sustainable, and reflective of their true intentions. This very reflection, and the actions that follow, is what ensure that the team is not only able to meet its current goals in a timely and efficient way, but is also able to integrate and deploy team members' knowledge and skills accordingly and make more effective, open, and informed decisions, thus yielding higher levels of productivity and effectiveness.

Theoretical Implications

As one of the most promising contemporary leadership frameworks to emerge in recent years (Avolio and Walumbwa 2014), this study serves to highlight the importance of understanding *how* authentic leaders can influence groups to perform better, as well as identifying a specific team-level mechanism for facilitating this. Accordingly, the present findings offer a number of notable contributions to the literature.

First, through utilizing self-regulation theory we offer an alternative to the conventional theoretical lens that is most frequently used to conceptualize the effects of authentic leadership in teams, namely the positive organizational behavior perspective (Gardner et al. 2011), thus broadening our understanding of how authentic leaders can shape team regulatory processes and subsequent performance. Secondly, in extending the nomological network of authentic leadership, we utilized Marks et al.'s (2001) taxonomy of team processes to guide the selection of variables, constituting a further strength of this study. While Marks et al. (2001) posit three categories of team process, action, transition, and interpersonal, the persistent focus on the latter type has, until now, limited our understanding of the value that authentic leadership has in the context of teamwork. Through explicitly testing for the relevance of team reflexivity as a potential mediating transition process, we have helped to shift attention away from interpersonal processes and consider alternative theoretical explanations (Avolio and Gardner 2005). In doing so, this study has also looked beyond the individual level of analysis, which has dominated the authentic leadership literature to date (Avolio and Walumbwa 2014). Support for the above conceptual departure not only serves to directly integrate the literatures on authentic leadership and team reflexivity, but is also firmly grounded in empirical results that remained significant even after controlling for the effects of collective trust, thus strengthening the internal validity of the study. Finally, this research advances our understanding of the determinants of reflexivity (Schippers et al. 2013) by highlighting the instrumental value of authentic leadership for leveraging this key regulatory process, thus meaningfully contributing to reflexivity theory.

Practical Implications

A number of important practical implications for both leaders and organizations can be garnered from this research. The results highlight the benefits of facilitating

authentic leadership in the workplace and the potential leaders hold for influencing transition processes focused on self-regulation in order to achieve superior team performance. Our findings reinforce the view that authentic leaders act as influential role models, wherein their self-regulatory behaviors directly shape task-related team processes. As such, leaders should look to promote authentic behavior in the form of transparency, balanced processing, self-awareness, and high ethical standards. At a practical level, our findings could be utilized by organizations in the design of training programs looking to cultivate authentic leadership through targeted developmental initiatives built on the premise of self-regulation (Avolio and Gardner 2005; Luthans and Avolio 2003). One suggestion would be to establish regular team meetings which explicitly revolve around reviewing targets, setting goals, and engaging in open discussion of team performance and team members' expectations (West 1996). Built into these regular meetings should be phases of constructive systematic reflection as the team and leader review shared objectives (Hannah et al. 2011). As the facilitator of such meetings, authentic leaders should use this opportunity to demonstrate ethical decision making and provide a psychologically safe climate through establishing appropriate group norms (Edmondson 1999), all of which should contribute to the emergence of reflexivity through role-modeling processes and social information processing.

Further steps could be taken within organizations to assist with the development of authentic leadership. Examples include selecting leaders with authentic qualities during recruitment and ensuring that socialization processes highlight moral action; both of which may help to reinforce the expression of authenticity. Such efforts should also be mirrored at the macro level, whereby the organization itself should seek to provide a context which supports these processes (Luthans and Avolio 2003), particularly those built around authenticity and ethical conduct. Research within Upper Echelons Theory (Hambrick 2007) highlights the importance of those occupying positions at the top of the organization as being highly influential in shaping the fortune of the organization and the behavior within it. As such, top management teams are responsible for setting a precedent in terms of modeling behavior and enforcing policies (Mayer et al. 2009). Conscious efforts to ensure that these are aligned with the core notions of authentic leadership theory should therefore have downstream ramifications for its expression at various organizational levels.

More broadly, this study also highlights the importance of ethical value-based leadership for fostering performance in organizations. In the wake of a number of high-profile cases of unethical leadership, coupled with the pressure that has stemmed from the economic downturn, an impetus for alternative styles of leadership has been observed (Avolio et al. 2004). As this study demonstrates, approaches such as the authentic leadership framework are positively orientated toward setting a reflective and constructive climate in which individuals and teams are more mindful of their behavior, which in turn may serve to dissuade any potential organizational misconduct from emerging.

Limitations and Future Research Directions

This study is not without its limitations, mostly pertaining to methodological artifacts. Firstly, a key limitation relates to the cross-sectional research design. While such designs have dominated the study of authentic leadership to date (Gardner et al. 2011), they preclude inferences of causality (Podsakoff et al. 2003) and despite our efforts to collect data from multiple sources (both team members and external team managers), concerns regarding common method variance should be noted. Future studies should consider the use of prospective designs so that a meaningful time lag between measures of authentic leadership, mediating processes, and team outcomes can be achieved. Only through such efforts can a clearer picture of the causality nexus emerge (Rego et al. 2012). Secondly, future studies might also contemplate the inclusion of more objective measures of team performance, such as sales performance, errors, or client satisfaction, given that the study at hand was only able to ascertain proxy measures of team performance, based on external ratings. Thirdly, it is important to note that this study did not control for transformational or ethical leadership, which some have argued are conceptually similar to authentic leadership (Gardner et al. 2011). Nonetheless evidence in favor of discriminant validity between authentic leadership and these other leadership styles already exists (Walumbwa et al. 2008), which somewhat alleviates this concern.

As this paper highlights the merits of adopting a self-regulatory theoretical lens for examining the authentic leadership-team performance relationship, we encourage researchers to investigate further what other meaningful team processes might be facilitated by authentic leadership. To do so, it would be of value to re-visit Marks et al.'s (2001) taxonomy of team processes and consider the extent to which action processes, such as co-ordination and communication for example, may mediate the distal relationship between authentic leadership and team outcomes. Another area deserving of further attention is that of boundary conditions. Research examining contingencies under which such relationships might be strengthened (such as a climate of high psychological safety, Edmondson 1999) are highly warranted in order to achieve a more holistic understanding of authentic leadership processes

(Avolio et al. 2004). Another interesting line of inquiry would be to examine those moderating factors that are beyond the leader's immediate control (Kark and Shamir 2002). Features such as organizational culture, for example, may shape and influence the effectiveness of authentic leadership due to enacted values and norms (Avolio et al. 2004). Finally, future research may look to consider the issue of culture. While, in the present study, data were collected from two different cultural contexts, these effects were controlled for. However, one might, for example, examine whether authentic leadership is more influential in collectivistic contexts, in which both institutional and in-group collectivism are high, and team members show a greater concern for collaborative action (Waldman et al. 2006). Similarly, given that reflexivity is widely regarded as a western individualistic construct (Alvesson and Sköldberg 2000), cultural background might influence the extent to which teams engage in this process.

Conclusion

In a time of considerable pressures for cost efficiency and doing 'less with more,' team and organizational performance is at an even higher premium. However, as is frequently documented in organizations and society more broadly, when placed with pressures to perform, the dark side of leadership and its associated unethical acts have the opportunity to emerge (Brown and Mitchell 2010). Such an occurrence reinforces the importance of the research presented here, which offers practical mechanisms based on team reflexivity through which organizational leaders may seek to drive the productivity and effectiveness of their work teams, but in a way that is more aligned with the espoused ideals of modern day society relating to authentic, ethical, and socially responsible behavior.

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