

# Shared Authentic Leadership in Research Teams: Testing a Multiple Mediation Model

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## Abstract

Research teams face complex leadership and coordination challenges. We propose shared authentic leadership (SAL) as a timely approach to addressing these challenges. Drawing from authentic and functional leadership theories, we posit a multiple mediation model that suggests three mechanisms whereby SAL influences team effectiveness: shared mental models (SMM), team trust, and team coordination. To test our hypotheses, we collected survey data on leadership and teamwork within 142 research teams that recently published an article in a peer-reviewed management journal. The results indicate team coordination represents the primary mediating mechanism accounting for the relationship between SAL and research team effectiveness. While teams with high trust and SMM felt more successful and were more satisfied, they were less successful in publishing in high-impact journals. We also found the four SAL dimensions (i.e., self-awareness, relational transparency, balanced processing, and internalized moral perspective) to associate differently with team effectiveness.

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Teams are increasingly asked to solve novel and complex problems, especially in knowledge-intensive domains, such as in technology development, professional service work, or basic and applied research (Bruns, 2013; Kotha, George, & Srikanth, 2013). Yet, it is, “ever more difficult for any leader from above to have all of the knowledge, skills and abilities necessary to lead all aspects of knowledge work” (Pearce & Manz, 2005, p. 132), often creating a need for team members to share leadership responsibilities. As such, shared leadership emerges in a team to the extent that leader influence is distributed among team members (Carson, Tesluk, & Marrone, 2007). Of specific interest to the current research is shared authentic leadership (SAL; Hmieleski, Cole, & Baron, 2012), which—in broad terms—describes a mutual influence process whereby team members share leadership responsibilities in a fashion that reflects self-awareness, balanced processing of information, relational transparency toward one another, and an internalized moral perspective.

Authentic leadership describes a genuine form of leadership through which leaders remain true to their personal values and convictions, display consistency between their words and deeds, and thereby garner high levels of trust and performance from followers (Avolio & Gardner, 2005). Interestingly, the large majority of research has studied authentic leadership at the individual level (see Gardner, Cogliser, Davis, & Dickens, 2011). Hmieleski et al. (2012), however, argued that authentic leadership also takes place at the team level and that it can be shared. That is, leadership can be distributed among team members, change at varying points depending on which member(s) meets the needs of the team at the time, and carried out in an authentic way that is respected by all members. This view aligns with a broader realization in management science that the notion of a singular strong team leader may be outdated, especially since recent evidence suggests that leadership often is a shared team responsibility (see Wang, Waldman, & Zhang, 2014). Thus, we followed the lead of Hmieleski et al. (2012) and studied SAL and its effects at the team level. By defining authentic leadership at the team level we can extend authentic leadership theory to study questions that, while practically relevant, have hitherto received little research attention. Specifically, we assess the mediating mechanisms through which SAL influences team effectiveness. We posit that by examining how such teams authentically share leadership responsibilities, a replicable model for successfully sharing leadership in knowledge-intensive teams can be developed.

We make three major contributions to the literature. First, we unearth the mechanisms through which authentic leadership may exert influence on team effectiveness. Existing research is limited to singling out a particular mediator, such as positive affective tone (Hmieleski et al., 2012) or teamwork behavior (Hannah, Walumbwa, & Fry, 2011). Instead, we develop a comprehensive, theoretically grounded framework that suggests three mediating mechanisms between SAL and team effectiveness (Luthans & Avolio, 2003; Zaccaro, Rittman, & Marks, 2001). We expect cognitive (i.e., shared mental models [SMM]), affective-motivational (i.e., team trust), and behavioral (i.e., team coordination) mechanisms to explain the SAL–effectiveness association. By developing and testing a multiple mediation model, we provide a more complete answer as to why SAL may be related to team effectiveness, limit the risk of overestimating the importance of a single mediator, and develop the knowledge necessary to design interventions that target specific mediating mechanisms (De Jong & Elfring, 2010; Wo, Ambrose, & Schminke, 2015).

Second, we study SAL at the component level. Although authentic leadership has been defined with regard to its four primary components (i.e., self-awareness, balanced processing, relational transparency, and internalized moral perspective; Gardner et al., 2011; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008), extant research on authentic leadership has rarely examined these separate components and their effects (Gardner et al., 2011). Neider and Schriesheim (2011), however, concluded from their development and assessment of the Authentic Leadership Inventory (ALI) that “future research might be best served by using the dimensions or scales separately rather than combining them all into a global measure” (p. 1156). Such separation allows for the identification of components that are most important in particular situations, as Gardner et al. (2011) and more recently, Banks, McCauley, Gardner, and Guler (2016), recommended. By investigating the effects of the SAL dimensions separately, we better align authentic leadership theory and measurement and hope to gain a more nuanced understanding of SAL.

Third, we focus on a specific kind of knowledge-intensive team, that is, research teams. A research team is a “group of researchers collaborating to produce scientific results, which are primarily communicated in the form of research articles” (Milojević, 2014, p. 3984). We study shared leadership in research teams because of the apparent shift in science from individual scholarship to scientific teamwork (Wuchty, Jones, & Uzzi, 2007), and because research teams often operate without a formally appointed leader, making them dependent on shared leadership (Jonsen et al., 2012). Although the sharing of leadership responsibilities is especially relevant in scientific

teams, it is also fraught with difficulties because scientific teams try to solve novel, complex problems while they are often geographically dispersed and pressed for time (Jones, Wuchty, & Uzzi, 2008; Salazar, Lant, Fiore, & Salas, 2012). Unfortunately, our knowledge of how to master these collaborations and leadership challenges in research teams remains limited (see Salazar et al., 2012). In this study, we suggest that SAL can help address some of these challenges.

We focus on SAL because researchers are drawn to research teams by perceived opportunities for self-determination and autonomy—qualities central to authenticity and the self-authorship of one's work and career choices (Kernis & Goldman, 2006). SAL is about being open in giving and receiving feedback and implies being skeptical toward one's own viewpoints before making decisions. These qualities also facilitate scientific discoveries, and if widespread in a research team, should foster research productivity (e.g., Schilpzand, Herold, & Shalley, 2011). SAL, thus, may motivate research teams in ways that other leadership styles cannot.

## Theoretical Background and Hypotheses

### *Authentic Leadership*

Authentic leadership describes a form of leadership whereby the leader is “true to the self” (Gardner, Avolio, Luthans, May, & Walumbwa, 2005, p. 357). Authentic leaders act in accordance with their personal values and convictions, display consistency between their words and deeds, and thereby garner high levels of trust and performance from followers (Avolio & Gardner, 2005). Authentic leadership is related to the more general concept of *authentic functioning*, which arises from “the operation of one's core or true self in one's daily enterprise” (Kernis, 2003, p. 13). Authentic functioning is manifest by being truthful, self-aware as to what is personally motivating, and “staying true to personal values through behavior” (Leroy, Anseel, Gardner, & Sels, 2015, p. 1679). Unlike authentic functioning, though, authentic leadership goes beyond simple intra- and interpersonal authenticity, as it constitutes a form of influence whereby leadership and followership is realized (Gardner et al., 2005).

As noted in psychological conceptions of authenticity, it appears that to foster such authentic leader–follower relationships, authentic leaders pursue heightened levels of self-awareness, balanced processing, relational transparency, and an internalized moral perspective for themselves and followers (see Kernis, 2003 and Kernis & Goldman, 2006 for more information on the theoretical underpinnings of authentic leadership).

Specifically, self-awareness reflects the extent to which one knows oneself; it provides a foundation for authenticity, in that one must first know the self to be true to that self. Balanced processing implies being open to process both positive and negative self-relevant information with minimal influence of ego-defensive mechanisms (Kernis, 2003). Relational transparency constitutes an ability and willingness to share personal information with close others, thereby making oneself vulnerable and fostering heightened levels of interpersonal trust (Gardner et al., 2005). An internalized moral perspective involves the internal regulation of moral reasoning and conduct, such that one makes ethical decisions and engages in ethical behavior consistent with personal values (Walumbwa et al., 2008). By modeling these behaviors and promoting open and authentic relationships, authentic leaders strive to foster the authentic development of followers. The mechanisms whereby authentic leaders are posited to influence followers in teams include behavioral modeling, personal and organizational identification, emotional contagion, support for self-determination, and social exchanges (Ilies, Morgeson, & Nahrgang, 2005).

### *Introducing SAL*

Yammarino, Dionne, Schriesheim, and Dansereau (2008) argued that at the team level, “authentic leadership can be viewed as operating similarly to the shared leadership approach” (p. 701). Shared leadership describes an “emergent team property that results from the distribution of leadership influence across multiple team members” (Carson et al., 2007, p. 1218). To the extent that shared leadership is the norm in teams, leadership functions are distributed among members (e.g., D’Innocenzo, Mathieu, & Kukenberger, 2016; Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014), and members see it as their joint responsibility to lead each other toward goal achievement (Wang et al., 2014). Consistent with the shared leadership literature and in following Hmieleski et al. (2012), we define SAL as an emergent phenomenon characterized by mutual influence and distributed responsibility that helps teams develop their “positive psychological capabilities and promotes a positive climate consistent with members’ values and beliefs” (p. 1477).

Shared leadership behaviors differ from team processes. Wang et al. (2014) summarized that difference as follows:

The former [shared leadership] stresses distributed influence and responsibility among team members (Carson et al., 2007), while the latter [teamwork or team processes] pertains to a set of cooperatively oriented cognitions, attitudes, and actions through which team members convert member inputs to team outputs. (p. 181)

Carson et al. (2007) further highlighted the fact that team processes such as cooperation or helping, unlike shared leadership, did not involve any active kind of influence. They also distinguished between shared leadership and team cognition constructs such as shared mental models because “the former [shared leadership] concerns collective influence, whereas the latter concerns collective cognition” (p. 1221). Accordingly, we argue that shared leadership and team processes constitute distinct phenomena, with the former often being conceptualized as an input to team processes and teamwork (Aubé, Rousseau, & Brunelle, 2017).

### *SAL and Research Team Effectiveness*

Effective teams manage to balance different criteria (e.g., productivity and member satisfaction), without ever “completely sacrificing any one to achieve the others” (Hackman & Wageman, 2005, p. 272). Team effectiveness, accordingly, has been conceived as a multidimensional construct (e.g., M. S. Cole, Carter, & Zhang, 2013; Kozlowski & Bell, 2003; Mathieu, Maynard, Rapp, & Gilson, 2008), distinguishing, for example, among performance output, viability, and satisfaction of members’ needs (Hackman, 1987). Here, we focus on three indicators of team effectiveness: an objective indicator of publication quality as reflected by impact factor, a measure of team performance as perceived by team members, and a measure of team satisfaction.

Based on extant theory and prior research, we anticipate that SAL will be positively related to research team effectiveness. That is, we expect that the synergistic effects of authentic leadership that have been shown to operate in dyads and teams (Banks et al., 2016; Gardner et al., 2011) will emerge within research teams as SAL, enabling members to coordinate and build upon one another’s efforts in an open and transparent fashion, thereby producing elevated levels of team effectiveness. Hmieleski et al. (2012) indeed showed that SAL in new venture management teams indirectly exerted a positive effect on firm performance, as mediated by team-level positive affective tone. Additional support comes from Hannah et al. (2011) who found that team leader authenticity influenced the average level of authenticity reflected within teams, which in turn enhanced teamwork and subsequent team productivity.

Authentic leadership theory conceptualizes the dimensions of authentic leadership as covarying, rather than exerting differential effects (Gardner et al., 2005). Thus, although studied separately in the current research for the reasons noted in the introduction, we have no theoretical reason to expect differential effects for particular dimensions of SAL, and thus hypothesize as follows:

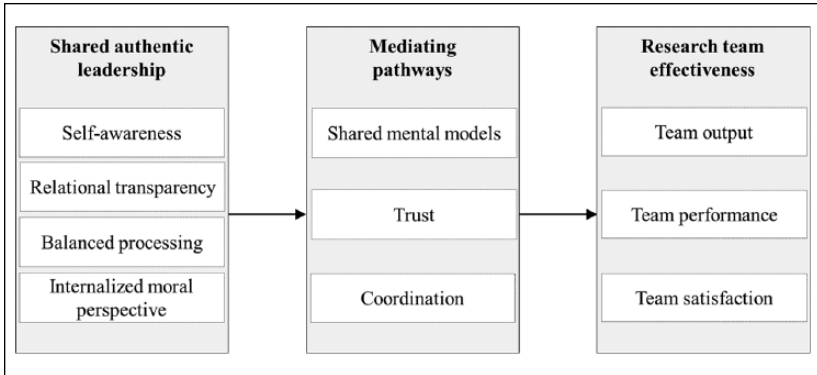
**Hypothesis1 (H1):** The SAL dimensions of self-awareness, balanced processing, relational transparency, and internalized moral perspective will be positively associated with research team effectiveness as reflected by impact factor (H1a), perceived team performance (H1b), and team satisfaction (H1c).

### *Multiple Mediating Pathways*

To theoretically ground our mediating mechanisms, we draw from functional leadership theory (McGrath, 1962). Functional leadership is a form of team leadership, which is best understood in terms of team needs. That is, the leadership role is “to do, or get done, whatever is not being adequately handled for group needs” (McGrath, 1962, p. 5). Insofar as anyone (inside or outside the team) takes on the responsibility of satisfying a team need, they are a leader of the team (Morgeson, 2005). Thus, multiple individuals may take on a team leadership role when attempting to satisfy a particular need of the team (Morgeson, DeRue, & Karam, 2010). The functional perspective of team leadership suggests that leadership can be defined in terms of social problem-solving, rather than describing a prespecified set of behaviors. Therefore, “[a]ny behavior pattern that reflects effective goal-directed action by leader role incumbents would constitute leadership” (Zaccaro et al., 2001, p. 454).

Consistent with this functional problem-solving perspective, Zaccaro et al. (2001) proposed a team effectiveness model according to which functional leadership processes influence team effectiveness via four types of mediating mechanisms (i.e., cognitive, motivational, affective, and coordination). Hoch and Kozlowski (2012) consolidated these four team mechanisms into three types of shared team leadership functions—cognitive, affective-motivational, and behavioral. We examined the influence of SAL on team effectiveness in terms of SMM (cognitive), team trust (affective-motivational), and team coordination (behavioral). We label these factors as mediating mechanisms to denote that we study both team processes and emergent states (Marks, Mathieu, & Zaccaro, 2001; see Figure 1).

The SMM concept was introduced to explain *how* teams effectively achieve coordination in complex, dynamic, and uncertain contexts (Mohammed, Ferzandi, & Hamilton, 2010). SMM (or team mental models) describe the common knowledge that team members hold about their work tasks and/or social processes (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). We follow Mohammed et al. (2010) and define SMM as “team members’ shared, organized understanding and mental representation of knowledge about key elements of the team’s relevant environment”



**Figure 1.** Hypothesized multiple mediation model of SAL and team effectiveness.  
*Note.* SAL = shared authentic leadership.

(p. 879). Team trust is defined as team members' shared positive expectations about each other's actions (De Jong & Elfring, 2007, 2010). This implies that team trust describes a shared perception that emerges from individual members' trust perceptions. Team coordination is about combining the actions of members and synchronizing the different activities to achieve a common goal (Kozlowski & Ilgen, 2006). Team coordination is defined as the "process of orchestrating the sequence and timing of interdependent actions" (Marks et al., 2001, p. 363).

We focus on SMM, team trust, and team coordination because of their relevance as mediators between SAL and team effectiveness. As we explain below, these mediators are important in their own right, but they are also meaningful when looked at together (for similar arguments, see De Jong & Elfring, 2010) because each represents one of the three critical team needs—cognitive, affective-motivational, and behavioral—that, according to functional leadership theory, must be satisfied for teams to be successful (Morgeson, DeRue, & Karam, 2010). For analytic clarity, we build separate arguments for the different mediating pathways despite our stated use of a multiple mediation model that allows us to simultaneously estimate the relative influence of SMM, team trust, and team coordination.

*The mediating role of SMM.* SAL should help develop SMM by improving communication and knowledge exchange (Del Carmen Triana, Kirkman, & Wagstaff, 2012; McIntyre & Foti, 2013). Zaccaro et al. (2001) argued that to develop SMM within a team, leaders need to effectively communicate their own mental model of team action to team members. If leader communication



is effective, the mental models of members should converge (Zaccaro et al., 2001). Following Zaccaro et al. (2001), we suggest a positive influence of SAL on SMM in research teams. SAL involves using information in an open, balanced manner by inviting supportive as well as contradictory input. As such, SAL implies that members who take on leadership responsibilities are likely to share more information with others (D’Innocenzo et al., 2016), introduce perspectives that otherwise would remain unheard (Dionne, Sayama, Hao, & Bush, 2010), and enhance team knowledge distribution (McIntyre & Foti, 2013). Members can thus learn more from others’ explanations, adapt their own mental models, and develop a shared understanding (Levesque, Wilson, & Wholey, 2001).

We expect the components of SAL to jointly facilitate SMM. First, by sharing leadership in ways reflective of deepened self-awareness, SAL facilitates SMM by building a “collective awareness of the team’s motives, strengths, and weaknesses” (Lyubovnikova, Legood, Turner, & Mamakouka, 2015). Second, by seeking positive and negative feedback from team members—indicative of balanced processing—SAL benefits SMM as teams develop “an accurate sense of their work and their relationships to superiors, followers, and peers” (Diddams & Chang, 2012, p. 597). Third, relational transparency, which involves “expressing one’s thoughts and emotions openly and sharing information that often is personal with others” (Guenter, Schreurs, van Emmerik, & Sun, 2017, p. 53), serves to promote the common understanding that characterizes SMM. Fourth, the more leaders are committed to core ethical values (i.e., internalized moral perspective), the more tangible their moral standards are, thus providing normative guideline for followers. In a team where SAL is given, the mutual expression of members’ core ethical values promotes a common understanding of the ethical behaviors accepted (see Bouckenoghe, Zafar, & Raja, 2015).

Empirical research seems to support this view. McIntyre and Foti (2013) found partial support for a positive link between shared leadership and mental model similarity in student teams. Solansky (2008) found that student teams with shared leadership developed greater metaknowledge about who in the team knew what. In addition, Marks, Zaccaro, and Mathieu (2000) found that teams formed more SMM when leaders provided members with detailed information, and Dionne et al. (2010) found that participative leadership promoted SMM development. Given that Solansky (2008) and McIntyre and Foti (2013) focused on student teams, questions about the generalizability of these findings remain. To advance insights that go beyond these findings, we propose that SAL is positively associated with SMM in research teams.

SMM should enable teams to similarly interpret information and anticipate others’ needs and actions, ultimately benefiting team effectiveness.

Maynard and Gilson (2014), for instance, proposed mental model convergence to positively associate with virtual team performance. Field and laboratory studies demonstrate a positive link between SMM and team effectiveness (DeChurch & Mesmer-Magnus, 2010). Although studied less often, SMM have also been associated with team satisfaction and team viability (e.g., Resick, Dickson, Mitchelson, Allison, & Clark, 2010). Thus, we hypothesize as follows:

**Hypothesis 2 (H2):** SMM will mediate the positive relationship between the SAL dimensions of self-awareness, balanced processing, relational transparency, and internalized moral perspective, and team effectiveness as reflected by impact factor (H2a), perceived team performance (H2b), and team satisfaction (H2c).

*The mediating role of team trust.* A second reason why SAL benefits research teams is that it promotes trust. When engaging in SAL, members use the influence granted by others in a balanced manner, thereby creating trust and ultimately benefiting team functioning. Gardner et al. (2005) argued that members will develop trust in leaders who make decisions in a manner that is self-reflective, transparent, and grounded in a moral perspective. Authentic leaders strive toward openness and truthfulness in relationships and engage in balanced processing instead of forcing their own agenda (Ilies et al., 2005). Followers can rely on past experiences to predict leaders' reactions, and, thus, are more willing to trust the leader in the future (Clapp-Smith, Vogelgesang, & Avey, 2009). The more truthful and transparent leaders are in their decision making, the more insights followers gain about the leaders' expectations and values, which consolidates trust (Gardner et al., 2005).

Wang et al. (2014) indeed suggested that team trust emerges when members "work toward a common goal and lead each other's behaviors" (p. 185). Boies, Lvina, and Martens (2010) argued that it is the sharing of responsibility with respect to work and each other that provides a foundation for trust. Drescher et al. (2014) suggested that acts of mutual influence provide members opportunities to interact and exchange resources. Such exchanges signal trustworthiness, and, if successful and repeated, help to build trust (Bergman, Rentsch, Small, Davenport, & Bergman, 2012). Thus, by sharing leadership responsibilities, members accept each other's influence, and, if that influence is used responsibly, trust is likely to emerge. We thus propose that when team members share leadership responsibilities in an authentic manner, the outcomes tend to be positive.

This is because of the way that the four components of SAL benefit team trust. Leaders who are self-aware know their own strengths and weaknesses

and how they affect others, which helps them to connect with and build trust with others. Second, balanced processing helps generate trust at the team level because leaders, by questioning their own positions, signal that they value open communication; by signaling openness to one another, team members who share leadership responsibilities promote feelings of safety and trust (for similar arguments, see Guenter et al., 2017). Third, SAL instills trust among fellow team members through transparent communication of their true values and preferences (e.g., Ilies et al., 2005; Norman, Avolio, & Luthans, 2010). Fourth, guided by internalized moral standards, team members—who assume and share the leader role—make decisions that are consistent with their personal values; the more consistent a focal leader’s words and deeds, the more trust will develop among fellow team members (e.g., Palanski, Kahai, & Yammarino, 2011). In support of these arguments, Bergman et al. (2012) and Drescher et al. (2014) found a positive association between shared leadership and team trust in student teams. Clapp-Smith et al. (2009), using data from retail store employees, revealed that trust in management partially mediated a positive link between authentic leadership and sales growth.

Team trust, again, has been shown to enhance team effectiveness. De Jong, Dirks, and Gillespie (2016) established a significant positive association between team trust and team performance. Across 112 independent studies, they found team trust to have an above-average effect on team performance. Breuer, Hüffmeier, and Hertel (2016) provided additional information with regard to attitudinal outcomes. Across 15 virtual team studies, Breuer et al. (2016) found a strong positive association between team trust and team attitudes (e.g., team satisfaction). Thus, consistent with earlier work, we hypothesize as follows:

**Hypothesis 3 (H3):** Team trust will mediate the positive relationship between the SAL dimensions of self-awareness, balanced processing, relational transparency, and internalized moral perspective, and team effectiveness as reflected by impact factor (H3a), perceived team performance (H3b), and team satisfaction (H3c).

*The mediating role of team coordination.* SAL also enhances research team effectiveness because it is likely to benefit team coordination. SAL should help teams orchestrate the timing and sequencing of member actions, making teams more effective (Wang et al., 2014). Zaccaro et al. (2001) described team coordination as one of the main mechanisms explaining why team leadership increases team effectiveness. They argued that to ensure team effectiveness, leaders help teams identify and integrate the resources and

contributions of members. To the extent that members share the responsibility for doing so, and to the extent that members share information about their thoughts and emotions while limiting the display of inappropriate feelings (i.e., reflective of relational transparency), teams should find it easier to coordinate their actions, especially when working on complex tasks characterized by high uncertainty.

We expect to find positive relationships between the four SAL components and team coordination. First, by leading each other in a self-aware manner, team members are likely to gain a “greater awareness of, and attention to, their own processes” (Rico, Sánchez-Manzanares, Gil, & Gibson, 2008, p. 179). This, in turn, should help them anticipate problems, adapt behavior, and improve coordination. Second, team leaders who exhibit balanced processing of information, by exploring alternate approaches and questioning dominant views of the situation, are less likely to overlook issues and problems that may hamper coordination (e.g., Eid, Mearns, Larsson, Laberg, & Johnsen, 2012). Third, relational authenticity implies that leaders promote open communication, “especially among employees whose voices may have otherwise been absent” (Boekhorst, 2015, p. 246), which, in turn, should facilitate coordination among team members. In contrast, if members do not share relevant information, it is more likely that coordination will fail because members will be more prone to act on conflicting information. Fourth, the behaviors of leaders with an internalized moral perspective become more predictable because they seek consistency in intentions and actions (Spitzmuller & Ilies, 2010); as team members who assume and share leadership roles become more predictable, it becomes easier for fellow team members to proactively adapt their behavior, which will facilitate team coordination.

Although empirical research into the association between shared leadership and team coordination is largely absent, findings from Hoch, Pearce, and Welzel (2010) do suggest a positive correlation between shared leadership and team coordination. Team coordination, in turn, is critical for team performance because it helps to “prevent rework, redundancy, and performance gaps” (Morgeson, Lindoerfer, & Loring, 2010, p. 298). LePine, Piccolo, Jackson, Mathieu, and Saul (2008), using meta-analytic techniques, showed that coordination is positively related with team performance and team satisfaction. Taken together, these arguments suggest that team coordination explains the association between SAL and research team effectiveness.

**Hypothesis 4 (H4):** Team coordination will mediate the positive relationship between the SAL dimensions of self-awareness, balanced processing, relational transparency, and internalized moral perspective, and team

effectiveness as reflected by impact factor (H4a), perceived team performance (H4b), and team satisfaction (H4c).

## Method

### Sample

We tested our hypotheses on author teams of scientific articles in peer-reviewed management journals (see Berka, Olien, Rogelberg, Rupp, & Thornton, 2014; Rupp, Thornton, Rogelberg, Olien, & Berka, 2014). We selected a sample of journals representative of the quality of research done in management science; specifically, we selected journals based on their classification in the 2012 Social Science Citation Index (SSCI) under the category of management/business. Six journals were classified as high SSCI, six were classified as medium SSCI, and five were classified as low according to the SSCI. The journals included were, for example, *Academy of Management Journal*, *Journal of Business and Psychology*, and *European Management Journal*.<sup>1</sup> For each journal, we selected all articles labeled *online first*, that is, accepted, peer reviewed articles (but not editorials, invited contributions, or commentaries) that were available online but not yet assigned to a volume/issue. We included recently accepted articles to minimize memory bias in respondents.

We only included articles coauthored by at least two scholars, consistent with extant team definitions (Kozlowski & Ilgen, 2006; Salas, Dickinson, Converse, & Tannenbaum, 1992). While two-person teams may seem small, we decided to include these teams (rather than only teams with three or more members) because of the nature of the teams under investigation, that is, scientific research teams. The average number of coauthors in the social sciences, in 2000, was roughly two (Wuchty et al., 2007); the average number of coauthors in management journals such as the *Academy of Management Journal* was slightly below 2.5 in 2008 (Certo, Sirmon, & Brymer, 2010). Apart from these statistics, it is difficult to imagine how the breakthroughs of Kahneman and Tversky (1979), March and Simon (1958), or Locke and Latham (1990)—to name only a few—could have been achieved without teamwork.

We collected data in two waves in 2013 and 2014. In the 2013 wave, we included articles published online first over a period ranging from May 2011 to December 2013. In the 2014 wave, we included online first articles ranging from April 2013 to April 2014. The second wave was necessary because the sample distribution of journal impact factors from Wave 1 was skewed (61.5% of the articles had a journal impact factor of 2.71 and higher). Thus, in Wave 2,

we purposively oversampled articles from lower tier journals (based on impact factor). Because these journals tended to have a far shorter time period from paper acceptance to publication in a volume/issue than higher tier journals, the number of articles available “online first” at these journals was lower. Hence, for the lower tier journals, we also included manuscripts from the two most recently published issues in Wave 2. In all, we invited 2,745 authors (Wave 1: 1,670 authors; Wave 2: 1,075 authors) to complete the survey.

We received 716 surveys (Wave 1: 489; Wave 2: 227) resulting in a response rate of 26.1%. After deletion of respondents with missing data, we were left with 628 respondents. We omitted teams with less than two respondents to be able to assess interrater reliability and agreement before data aggregation (Schippers, Den Hartog, & Koopman, 2007). We were left with complete data for 317 authors (Wave 1: 233, Wave 2: 84) from 142 research teams. Although the response rate obtained is lower than desired, it is not unusual for studies found in the organizational sciences (Baruch & Holtom, 2008). Moreover, it is not the response rate per se that is a concern, but the representativeness of the sample, that is critical to avoiding potential nonresponse bias (Rogelberg & Stanton, 2007).

We followed advice by Rogelberg and Stanton (2007) to assess nonresponse bias. First, we compared individual characteristics of authors included in the analysis with those excluded (i.e., age, gender, H-index, country of affiliation, and impact factor). This analysis revealed no significant differences for age, gender, and H-index. Differences existed for country of affiliation and impact factor. The ratio of authors from North America was higher among those included versus those excluded from the analysis. In addition, the impact factor was significantly higher among those included as compared with those authors excluded from the analysis. This indicates that although we purposively oversampled articles from lower tier journals in the second wave of data collection, more versus less successful teams were still more likely to respond to our survey.

The average size of each author team was 3.45 ( $SD = 1.28$ ); the average number of respondents per author team was 2.23 ( $SD = 0.51$ ). There were no significant team-level differences between the two data collection waves for the main model variables except for SMM (team-level mean values were higher in Wave 2 [6.07] than Wave 1 [5.76]). As intended, the impact factor in Wave 2 (3.20) was lower than in Wave 1 (4.17). Table 1 provides further details on the respondents who participated in our study.

## Procedure

We contacted authors via e-mail with a link to an online survey (contact information used was publicly available). We mentioned the title of the

**Table 1.** Sample Characteristics.

Variables	Sample (N = 317)	
Gender		
Men	198	(62.5%)
Women	114	(36%)
Age		
18-30	52	(16.4%)
31-40	121	(38.2%)
41-50	82	(25.9%)
51-60	39	(12.3%)
>60	21	(6.6%)
Author location		
United States/Canada	219	(69.1%)
Europe	65	(20.5%)
Asia/Pacific	28	(8.8%)
Other	2	(0.6%)
Academic or business professional		
Academic	304	(95.9%)
Business professional	10	(3.2%)
Author discipline		
Management	252	(79.5%)
Other	51	(16.1%)
Management subdiscipline		
Organizational behavior	115	(36.3%)
Strategic management	42	(13.2%)
Human resources	31	(9.8%)
Entrepreneurship	24	(7.6%)
Organization theory	16	(5%)
Operations management	1	(0.3%)
Academic appointment		
PhD student	35	(11%)
Postdoc	8	(2.5%)
Lecturer	7	(2.2%)
Assistant professor	85	(26.8%)
Associate professor	75	(23.7%)
Full professor	67	(21.1%)
Other	6	(1.9%)

Note. Numbers sometimes do not add up to 100% because not all respondents provided the respective information.

selected scientific article and instructed authors to complete the survey with this publication in mind. In accordance with the institutional review board's protocols, we informed participants that participation was voluntary. We also told authors that they would receive a US\$10 Amazon gift certificate if they completed the survey, and followed up by providing these certificates to all participants.

## Measures

We measured all constructs using established scales. Unless indicated otherwise, we only made minor changes in wording to increase item clarity or to adapt the instrument to the study context (e.g., substituting the word "group" with "team" and rephrasing questions in the past tense). A stem that reminded authors to answer all questions, keeping the author team and their experiences during the publication process in mind, preceded each scale. To assess the internal consistency of each scale (Cronbach's alpha), we used the item mean for each team to align internal consistency information with the team level of analysis used for the substantive tests (Chen, Bliese, & Mathieu, 2005; Mathieu & Schulze, 2006).

**Team effectiveness.** We measured team effectiveness in terms of impact factor, perceived team performance, and team satisfaction. With regard to impact factor, we used the 2013 impact factor of the journal where the article was published. This indicator expresses the "average number of citations to journal articles in their first two years following publication" (Rynes, 2007, p. 1273). The impact factor, although debated, is a widely "accepted standard for quantifying the scholarly influence of journals" (Simsek, Heavey, & Jansen, 2013, p. 1374). Next, to measure perceived team performance, we used a four-item scale taken from Gibson, Cooper, and Conger (2009). A sample item reads, "This team was effective." Responses were given on a 7-point Likert-type scale ranging from 1 (*very inaccurate*) to 7 (*very accurate*). Cronbach's alpha for this scale was .86. Finally, we used a five-item scale taken from Behfar, Peterson, Mannix, and Trochim (2008) to measure team satisfaction. A sample item reads, "To what extent were you satisfied working with this team?" Responses were given on a seven-point Likert-type scale ranging from 1 (*not at all*) to 7 (*totally*), with the exception of one item for which the scale ranged from 1 (*never*) to 7 (*always*). Cronbach's alpha for this scale was .91.

**SAL.** We measured SAL in terms of self-awareness, relational transparency, balanced processing, and internalized moral perspective using the 16 items



developed by Walumbwa et al. (2008). For the overall scale, Cronbach's  $\alpha$  was .94. Responses were given on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*frequently, if not always*). We applied a referent-shift composition logic (Chan, 1998) to change the stem from "my leader" to "members of this team." This was necessary to capture authentic leadership behaviors as they apply to the whole research team instead of only to an individual leader.<sup>2</sup>

Following the recommendations of Banks et al. (2016), Gardner et al. (2011), and Neider and Schriesheim (2011), we conducted analyses at the SAL component level.<sup>3</sup> We used four items to measure self-awareness (Cronbach's  $\alpha = .88$ ), such as, "Members of this team sought feedback to improve interactions with others" and "accurately described how others view their capabilities." We used five items to measure relational transparency (Cronbach's  $\alpha = .88$ ), such as, "Members of this team admitted mistakes when they were made" and "said exactly what they meant." We used three items to measure balanced processing (Cronbach's  $\alpha = .74$ ), such as, "Members of this team solicited views that challenged their deeply held positions" and "listened carefully to different points of view before coming to conclusions." To measure internalized moral perspective, we used four items (Cronbach's  $\alpha = .83$ ), such as, "Members of this team demonstrated beliefs that were consistent with actions" and "made decisions based on their core values."

**SMM.** We used a five-item scale taken from Fransen, Kirschner, and Erkens (2011) to measure SMM (Cronbach's  $\alpha = .91$ ). A sample item reads, "Shortly after the start, this team had a common understanding of the task we had to handle." Responses were given on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

**Team trust.** We used three items from Walumbwa, Luthans, Avey, and Oke (2011) to measure trust (Cronbach's  $\alpha = .87$ ).<sup>4</sup> The three items were "How much did members of your team trust each other?" "Were your team members truthful and honest?" and "How comfortable did members of your team feel delegating to other team members?" Responses were given on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*).

**Team coordination.** We used a three-item scale taken from DeChurch and Haas (2008) to measure team coordination (Cronbach's  $\alpha = .90$ ). A sample item reads, "The team effectively coordinated member actions." Responses were given on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*to a great extent*).

**Control variables.** First, we expected team familiarity to positively relate to research team effectiveness (Huckman, Staats, & Upton, 2009). Kotha et al.

(2013) argued that prior collaboration experience (akin to familiarity) helps research teams to develop shared understanding and coordination routines, ultimately reducing coordination costs and benefiting team effectiveness. We used a three-item scale taken from Gevers, van Eerde, and Rutte (2009) to measure team familiarity (Cronbach's  $\alpha = .83$ ). A sample item reads, "In my team, we were acquainted with each other's way of working." Responses were given on a five-point Likert-type scale ranging from 1 (*disagree completely*) to 5 (*agree completely*). Second, we included team size because we expected team size to associate with research team effectiveness. Prior research, although inconsistent, provides some support for this view (Stewart, 2006). Third, in alignment with team research more generally (Stewart & Barrick, 2000), we expected task interdependence to associate with research team effectiveness. We used a three-item scale taken from Campion, Medsker, and Higgs (1993) to measure task interdependence (Cronbach's  $\alpha = .79$ ). A sample item reads, "I was not able to accomplish my tasks without information or materials from other members of my team." Responses were given on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Fourth, we controlled for the team's past research productivity because prior author success may predict future success (Judge, Cable, Colbert, & Rynes, 2007). We used the H-index to reflect publication productivity and impact. We retrieved the H-index per author from public databases (e.g., Scopus) and calculated the team average.

### **Data Analysis Approach**

We used structural equation modeling (SEM) to test our multiple mediation model (see Preacher & Hayes, 2008). To test our hypotheses, we adopted Mplus 7.2 using maximum-likelihood estimation (Muthén & Muthén, 1998-2014). First, we used confirmatory factor analysis (CFA) to test the convergent and discriminant validity of our team-level model variables (i.e., four dimensions of SAL, SMM, trust, coordination, and three indicators of research team effectiveness). We assessed the model factor structure at the team level to align our psychometric analyses with the level of theory for the team constructs involved (Hitt, Beamish, Jackson, & Mathieu, 2007; Mathieu & Chen, 2011). We performed three distinct analyses because we used three indicators of team effectiveness. For all models, we set the first loading for each factor to 1 to define the latent factor scale. To assess model fit, we used fit indices recommended by Hu and Bentler (1999) including the comparative fit index (CFI), root mean squared error of approximation (RMSEA), and standardized root mean squared residual (SRMR). For sake of completeness, we also report the chi-square statistic. RMSEA values of .05 or less

indicate a good model fit and values of .08 and less a reasonable model fit (Browne & Cudeck, 1993). SRMR values close to .08 indicate acceptable model fit (Hu & Bentler, 1999). CFI values of .95 and higher signify a good model fit and values in the range of .90 and .95 indicate acceptable fit (Hu & Bentler, 1999).

Second, to formally test our model, we constructed bias-corrected bootstrapped confidence intervals for testing specific indirect effects (Lau & Cheung, 2012). In using bootstrapping, we circumvented problems that limit ordinary least square regression analysis such as uncorrected measurement errors (D. A. Cole & Preacher, 2013) and nonnormality in the sample distribution (Preacher & Hayes, 2008). Other advantages of bootstrapping described by Lau and Cheung (2012) are that the effects of control variables can be implemented easily and that the significance of the specific indirect effects is tested. Overall, bootstrapping is a robust method for testing specific mediation effects in a latent variable model.

## Results

### Aggregation Statistics

To assess whether aggregation of our main model variables was viable, we relied on a set of complementary statistics using the multilevel package in R (version 3.0.2) (Bliese, 2013). We followed James, Demaree, and Wolf's (1984) example for calculating agreement indices for multi-item scales ( $r_{WG(j)}$ ) and single-item scales ( $r_{WG}$ ). The agreement values for our main model variables were satisfactory, ranging from .74 to .91 (see Table 2) (LeBreton & Senter, 2008). We also computed intraclass correlation coefficients (i.e., ICC(1) and ICC(2) values) to assess interrater reliability. ICC(1) values reflect the proportion of variance in individuals' ratings that is due to team membership (Bliese & Ployhart, 2002). The ICC(1) values ranged from .11 to .36 (see Table 2), and are largely consistent with those typically reported in management field research (Aguinis, Gottfredson, & Culpepper, 2013). These values indicate that a medium to large proportion of nonindependence in the data can be explained by team membership (LeBreton & Senter, 2008).

ICC(2) values express the reliability of group mean values. ICC(2) values ranged from .22 to .56 (see Table 2), which is below the critical cut-off of .60 suggested by Glick (1985). ICC(2) values are a direct function of team size (Bliese, 1998), which is why we modeled how ICC(2) values would change if we had sampled larger teams with more respondents (see Brown & Trevino, 2006). To simulate the ICC(2) values for teams of 5 and 10 respondents, we used the Spearman-Brown formula (Bliese, 2000). Results showed ICC(2)

**Table 2.** Aggregation Statistics.

Measure	$r_{wg(j),uniform}$	ICC(1)	ICC(2)
Team performance	.91	.26	.44
Team satisfaction	.91	.36	.56
SAL	.90	.21	.37
Self-awareness	.74	.16	.30
Relational transparency	.89	.20	.35
Balanced processing	.76	.11	.22
Internalized moral perspective	.82	.18	.32
Team coordination	.86	.23	.40
Team trust	.89	.24	.41
SMM	.87	.22	.39

Note.  $N = 142$  teams. ICC = intraclass correlation coefficients; SAL = shared authentic leadership; SMM = shared mental models.

values would have been higher, ranging from .38 to .74, and .55 to .85, respectively. Consistent with other scholars (Chen & Bliese, 2002) and because we found evidence for within-team agreement, demonstrated team-level effects, and used referent-shift items appropriate with higher-unit phenomena (Chan, 1998), we progressed with the analysis. Still, given our rather low ICC(2) values, it may be somewhat difficult to identify team-level relationships (Bliese, 2000).

### *Measurement Model: Convergent and Discriminant Validity*

We compared the fit of five nested models, including the hypothesized eight-factor model (i.e., four dimensions of SAL, team trust, coordination, SMM, and team effectiveness) and four alternative models, such as a five-factor model (i.e., identical to the eight-factor model except that the SAL items loaded on a single factor; see Table 3 for details). We also reran the analysis treating SAL as a unidimensional construct (see Table 8). As we discuss in detail below, these findings are not substantially different from our multidimensional results.

As presented in Table 3, our hypothesized measurement model provided a better fit to the data than any of the alternative models. We found the hypothesized eight-factor model to have the most acceptable CFI, RMSEA, and SRMR values. Fabrigar, Porter, and Norris (2010) argued that—given moderately favorable conditions—a sample of 200 or more respondents is needed to obtain precise model estimates in SEM. Because our sample size

**Table 3.** Results of Confirmatory Factor Analysis.

Model	$\chi^2$	df	RMSEA	SRMR	CFI
<b>Impact factor</b>					
Eight-factor model <sup>a</sup>	577.14** (765.72**)	323 (323)	.07 (.06)	.06 (.05)	.91 (.94)
Six-factor model <sup>b</sup>	877.83** (1751.81**)	336 (336)	.11 (.10)	.08 (.07)	.82 (.82)
Five-factor model <sup>c</sup>	763.81** (1190.15**)	341 (341)	.09 (.08)	.07 (.06)	.86 (.89)
Three-factor model <sup>d</sup>	1052.20** (2153.20**)	348 (348)	.12 (.11)	.09 (.08)	.76 (.77)
One-factor model <sup>e</sup>	1360.49** (2724.39**)	350 (350)	.14 (.12)	.10 (.08)	.66 (.70)
<b>Team performance</b>					
Eight-factor model <sup>a</sup>	709.59** (951.18**)	406 (406)	.07 (.06)	.06 (.05)	.91 (.94)
Six-factor model <sup>b</sup>	1005.15** (1929.65**)	419 (419)	.10 (.09)	.08 (.07)	.83 (.84)
Five-factor model <sup>c</sup>	890.54** (1366.28**)	424 (424)	.09 (.07)	.07 (.05)	.87 (.90)
Three-factor model <sup>d</sup>	1174.72** (2322.37**)	431 (431)	.11 (.10)	.08 (.07)	.79 (.79)
One-factor model <sup>e</sup>	1588.13** (3237.46**)	434 (434)	.14 (.12)	.10 (.08)	.67 (.70)
<b>Team satisfaction</b>					
Eight-factor model <sup>a</sup>	861.99** (1058.67**)	436 (436)	.08 (.06)	.06 (.05)	.89 (.94)
Six-factor model <sup>b</sup>	1188.92** (2118.87**)	449 (449)	.11 (.09)	.08 (.07)	.81 (.83)
Five-factor model <sup>c</sup>	1042.89** (1472.09**)	454 (454)	.10 (.07)	.07 (.05)	.85 (.90)
Three-factor model <sup>d</sup>	1362.74** (2513.83**)	461 (461)	.12 (.10)	.09 (.07)	.76 (.79)
One-factor model <sup>e</sup>	1813.25** (3532.99**)	464 (464)	.14 (.12)	.10 (.08)	.64 (.69)

Note. *N* = 142 (and 453) teams. RMSEA = root mean squared error of approximation; SRMR = standardized root mean squared residual; CFI = comparative fit index.

<sup>a</sup>Eight factors include self-awareness, balanced processing, relational transparency, moral awareness, SMM, team trust, team coordination, and team performance.

<sup>b</sup>Eight-factor model but items measuring SMM, team trust, and team coordination are combined into one factor.

<sup>c</sup>Eight-factor model but items measuring self-awareness, balanced processing, relational transparency, and moral awareness are combined into one factor.

<sup>d</sup>Eight-factor model but self-awareness, balanced processing, relational transparency, and moral awareness are combined into one factor, and SMM, team trust, and team coordination into another factor.

<sup>e</sup>All measuring items were combined into one factor.

\**p* < .05. \*\**p* < .01.

(*N* = 142) is lower, we tested the robustness of our results by rerunning all analyses using the teams with one respondent only (Hirschfeld, Cole, Bernerth, & Rizzuto, 2013; Maloney, Johnson, & Zellmer-Bruhn, 2010). We also report these results (based on 453 teams) in Table 3. Results based on this larger sample confirmed the superior relative fit of the eight-factor model.

### Descriptive Statistics

Means, standard deviations, and zero-order correlations for our main study variables are presented in Table 4. The dimensions of SAL correlated with the

**Table 4. Descriptive Statistics and Bivariate Correlations.**

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Impact factor	3.91	2.47														
2. Team performance	5.94	0.66	.21*													
3. Team satisfaction	6.25	0.72	.02	.64**												
4. SAL	4.18	0.49	.12	.65**	.70**											
5. SAL: self-awareness	3.97	0.66	.10	.59**	.56**	.87**										
6. SAL: relational transparency	4.31	0.47	.04	.58**	.67**	.86**	.58**									
7. SAL: balanced processing	4.12	0.57	.16	.55**	.58**	.90**	.76**	.69**								
8. SAL: internalized moral perspective	4.29	0.54	.13	.56**	.66**	.92**	.71**	.77**	.78**							
9. SMM	5.84	0.80	.01	.67**	.49**	.54**	.53**	.43**	.50**	.47**						
10. Team trust	4.52	0.49	-.02	.67**	.76**	.67**	.51**	.67**	.58**	.63**	.52**					
11. Team coordination	4.32	0.55	.15	.74**	.69**	.62**	.56**	.56**	.52**	.56**	.68**	.68**				
12. Team size	3.45	1.28	.04	-.10	-.18*	-.14	-.11	-.18*	-.14	-.06	-.07	-.13	-.11			
13. Team familiarity	4.32	0.54	.05	.54**	.59**	.57**	.45**	.57**	.49**	.52**	.46**	.62**	.49**	-.37**		
14. Task interdependence	5.80	0.71	.13	.37**	.30**	.27**	.23**	.18*	.32**	.24**	.40**	.36**	.40**	-.07	.22**	
15. Team h-index	5.70	4.08	.21*	.26**	.17*	.13	.11	.17*	.05	.11	.18*	.14	.19*	.11	.20*	.08

Note. Correlations based on N = 142 teams. SAL = shared authentic leadership; SMM = Shared mental models.

\* $p < .05$ . \*\* $p < .01$ .

three mediators, which, in turn, were positively associated with perceived team performance and team satisfaction.

### *Tests of Hypotheses*

The results are presented in Tables 5, 6, 7, and 8. Table 5 presents the multiple mediation analysis findings regarding impact factor. Table 6 includes results regarding team performance, and Table 7 displays results regarding team satisfaction. These tables include our main results assessing SAL at the component level. We also included Table 8 which presents findings for the overall construct of SAL.<sup>5</sup>

Contrary to what we expected in Hypothesis 1a, we found no total effect of SAL on impact factor (see Table 5). However, as expected in Hypotheses 1b and 1c, we found a significant total effect of the SAL dimensions on perceived team performance (see Table 6) and team satisfaction (see Table 7). Note that the nonsignificant direct relationship between SAL and impact factor does not tell us whether or not an indirect effect exists. This is because a total effect is the sum of different (direct and indirect) paths of influence, and these different paths may operate in opposite directions. Thus, the effects of multiple paths working in different directions may cancel each other out, resulting in an overall null effect (Hayes, 2009).

*SMM as mediator.* Hypothesis 2 (a, b, and c) suggested that SMM mediates the relationship between the SAL dimensions and research team effectiveness. Overall, we found only weak support for this hypothesis (see Tables 5, 6, and 7). More specifically, with regard to Hypothesis 2a, we found a negative mediation effect for the pathway toward impact factor, and this relationship held across all four dimensions of SAL. The direction of this relationship was opposite to what we expected. For Hypothesis 2b, SMM mediated the association between three of the four dimensions of SAL (except for balanced processing) and perceived team performance. We found no significant support for Hypothesis 2c when testing for the mediation pathway toward team satisfaction.

*Team trust as mediator.* Hypothesis 3 (a, b, and c) suggested that team trust mediates the association between the SAL dimensions and research team effectiveness. Overall, we found partial support for Hypothesis 3 (see Tables 5, 6, and 7). For Hypothesis 3a, the results on impact factor were largely in the opposite direction of what we had predicted. Specifically, we found an unexpected negative indirect effect through team trust on impact factor for self-awareness, balanced processing, and internalized moral perspective (but

**Table 5.** Multiple Mediation Analysis Using Mplus: Indirect Effects of SAL on Impact Factor.

Distal variable	Mediator	Product of coefficients			Bootstrapping bias-corrected 95% CI	
		Point estimate	SE	<i>p</i>	Lower limit	Upper limit
Self-awareness	SMM	-0.87	0.51	.09	<b>-2.33</b>	<b>-0.10</b>
	Team trust	-1.18	0.64	.06	<b>-3.07</b>	<b>-0.37</b>
	Team coordination	1.16	0.65	.07	<b>0.07</b>	<b>2.66</b>
	Total indirect effect	-0.89	0.96	.36	-3.57	0.58
	Total effect	-0.27	0.63	.67	-1.75	0.77
Relational transparency	SMM	-0.96	0.62	.12	<b>-2.58</b>	<b>-0.05</b>
	Team trust	-2.28	1.53	.14	-5.76	0.12
	Team coordination	1.81	0.96	.06	<b>0.26</b>	<b>4.08</b>
	Total indirect effect	-1.43	1.79	.42	-5.22	1.89
	Total effect	-0.93	1.14	.41	-3.45	1.11
Balanced processing	SMM	-1.80	1.23	.14	<b>-5.50</b>	<b>-0.56</b>
	Team trust	-3.47	2.39	.15	<b>-10.51</b>	<b>-1.23</b>
	Team coordination	0.55	2.02	.79	-3.33	2.49
	Total indirect effect	-4.73	4.31	.27	<b>-16.17</b>	<b>-0.45</b>
	Total effect	0.83	1.53	.59	-1.34	4.19
Internalized moral perspective	SMM	-1.11	0.75	.14	<b>-3.20</b>	<b>-0.19</b>
	Team trust	-3.07	2.07	.14	<b>-8.76</b>	<b>-0.84</b>
	Team coordination	1.19	0.96	.22	-0.27	3.43
	Total indirect effect	-2.99	2.54	.24	-9.39	0.18
	Total effect	0.04	1.00	.97	-2.21	1.87

Note. *N* = 142 teams. Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. SAL = shared authentic leadership; CI = confidence interval; SMM = shared mental models.

not relational transparency). When predicting perceived team performance (Hypothesis 3b), we only found a mediation effect for self-awareness. Interestingly, if we had studied SAL as a unidimensional construct, we would have missed this significant effect (see Table 8). As predicted in Hypothesis 3c, team trust did mediate the positive association between all four dimensions of SAL and team satisfaction.



**Table 6.** Multiple Mediation Analysis Using Mplus: Indirect Effects of SAL on Team Performance.

Distal variable	Mediator	Product of coefficients			Bootstrapping bias-corrected 95% CI	
		Point estimate	SE	p	Lower limit	Upper limit
Self-awareness	SMM	0.23	0.11	.04	<b>0.06</b>	<b>0.51</b>
	Team trust	0.23	0.11	.04	<b>0.03</b>	<b>0.49</b>
	Team coordination	0.37	0.15	.01	<b>0.14</b>	<b>0.74</b>
	Total indirect effect	0.82	0.22	.00	<b>0.51</b>	<b>1.42</b>
Total effect		0.95	0.22	.00	<b>0.58</b>	<b>1.43</b>
Relational transparency	SMM	0.35	0.15	.02	<b>0.12</b>	<b>0.73</b>
	Team trust	0.36	0.26	.17	-0.12	0.86
	Team coordination	0.56	0.23	.02	<b>0.23</b>	<b>1.11</b>
	Total indirect effect	1.28	0.39	.00	<b>0.70</b>	<b>2.21</b>
Total effect		1.45	0.33	.00	<b>0.93</b>	<b>2.22</b>
Balanced processing	SMM	0.25	0.17	.15	-0.05	0.64
	Team trust	0.18	0.31	.56	-0.50	0.68
	Team coordination	0.41	0.27	.13	-0.11	0.88
	Total indirect effect	0.84	0.51	.10	-0.37	1.61
Total effect		1.53	0.57	.01	<b>0.82</b>	<b>3.04</b>
Internalized moral perspective	SMM	0.31	0.14	.03	<b>0.10</b>	<b>0.70</b>
	Team trust	0.31	0.25	.21	-0.17	0.80
	Team coordination	0.50	0.28	.07	<b>0.19</b>	<b>1.24</b>
	Total indirect effect	1.12	0.44	.01	<b>0.54</b>	<b>2.12</b>
Total effect		1.30	0.34	.00	<b>0.80</b>	<b>2.14</b>

Note. N = 142 teams. Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. SAL = shared authentic leadership; CI = confidence interval; SMM = Shared mental models.

*Team coordination as mediator.* Hypothesis 4 (a, b, and c) suggested that team coordination mediates the association between the SAL dimensions and team effectiveness. Overall, results were largely in line with Hypothesis 4 (see Tables 5, 6, and 7). As expected in Hypothesis 4a, we found a significant positive mediation effect for self-awareness and relational transparency via team coordination on impact factor. We found no effects for balanced

**Table 7.** Multiple Mediation Analysis Using Mplus: Indirect Effects of SAL on Team Satisfaction.

Distal variable	Mediator	Product of coefficients			Bootstrapping bias-corrected 95% CI	
		Point estimate	SE	<i>p</i>	Lower limit	Upper limit
Self-awareness	SMM	-0.08	0.10	.41	-0.31	0.08
	Team trust	<b>0.43</b>	0.13	.00	<b>0.24</b>	<b>0.81</b>
	Team coordination	0.31	0.15	.04	<b>0.09</b>	<b>0.68</b>
	Total indirect effect	0.66	0.21	.00	<b>0.37</b>	<b>1.24</b>
Total effect		0.67	0.16	.00	<b>0.43</b>	<b>1.07</b>
Relational transparency	SMM	-0.10	0.13	.44	-0.39	0.10
	Team trust	0.75	0.28	.01	<b>0.35</b>	<b>1.41</b>
	Team coordination	0.45	0.21	.03	<b>0.13</b>	<b>0.92</b>
	Total indirect effect	1.10	0.35	.00	<b>0.57</b>	<b>1.95</b>
Total effect		1.20	0.27	.00	<b>0.80</b>	<b>1.85</b>
Balanced processing	SMM	-0.17	0.19	.37	-0.66	0.09
	Team trust	0.61	0.31	.05	<b>0.20</b>	<b>1.44</b>
	Team coordination	0.39	0.39	.32	<b>0.02</b>	<b>1.06</b>
	Total indirect effect	0.83	0.64	.19	<b>0.06</b>	<b>2.34</b>
Total effect		1.07	0.38	.01	<b>0.64</b>	<b>2.09</b>
Internalized moral perspective	SMM	-0.12	0.16	.43	-0.48	0.08
	Team trust	0.55	0.24	.02	<b>0.19</b>	<b>1.18</b>
	Team coordination	0.36	0.20	.06	<b>0.07</b>	<b>0.78</b>
	Total indirect effect	0.79	0.35	.02	<b>0.21</b>	<b>1.57</b>
Total effect		1.13	0.26	.00	<b>0.74</b>	<b>1.75</b>

Note. *N* = 142 teams. Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. SAL = shared authentic leadership; CI = confidence interval; SMM = shared mental models.

processing and internalized moral perspective. Concerning Hypothesis 4b, we found overall support for the mediation pathway leading toward perceived team performance (except for balanced processing). As expected in Hypothesis 4c, team coordination mediated the association between the four SAL dimensions and team satisfaction. Note that our conclusions concerning team

**Table 8.** Multiple Mediation Analysis Using Mplus: Indirect Effects of SAL on Team Effectiveness.

Outcome variable	Mediator	Product of coefficients			Bootstrapping bias-corrected 95% CI	
		Point estimate	SE	p	Lower limit	Upper limit
Impact factor	SMM	-1.19	0.68	.08	<b>-2.86</b>	<b>-0.17</b>
	Team trust	-2.67	1.08	.01	<b>-5.04</b>	<b>-0.73</b>
	Team coordination	1.64	0.91	.07	<b>0.05</b>	<b>3.61</b>
	Total indirect effect	-2.22	1.33	.10	-4.72	0.44
Total effect		-0.19	1.00	.85	-2.52	1.68
Team performance	SMM	0.37	0.16	.02	<b>0.12</b>	<b>0.78</b>
	Team trust	0.36	0.21	.08	-0.02	0.79
	Team coordination	0.58	0.23	.01	<b>0.23</b>	<b>1.14</b>
	Total indirect effect	1.31	0.34	.00	<b>0.80</b>	<b>2.14</b>
Total effect		1.57	0.33	.00	<b>0.97</b>	<b>2.28</b>
Team satisfaction	SMM	-0.11	0.13	.38	-0.38	0.11
	Team trust	0.73	0.23	.00	<b>0.35</b>	<b>1.21</b>
	Team coordination	0.46	0.20	.02	<b>0.14</b>	<b>0.94</b>
	Total indirect effect	1.07	0.30	.00	<b>0.61</b>	<b>1.81</b>
Total effect		1.26	0.26	.00	<b>0.90</b>	<b>1.86</b>

Note. N = 142 teams. Bootstrap sample size = 1,000. Coefficients in boldface indicate mediation. Input variable for all models is SAL. SAL = shared authentic leadership; CI = confidence interval; SMM = shared mental model.

coordination would have differed if we had studied SAL as a unidimensional construct. Specifically, we would have concluded that there is an overall positive mediation effect of SAL through team coordination on impact factor (see Table 8).

Taken together, our multiple mediation results provide some support for our hypotheses, but appear to be more complex than expected. The effects that we established hold above and beyond the influence that team familiarity, team size, task interdependence, and the team’s past research productivity have on research team effectiveness.<sup>6</sup>

## Discussion

We proposed that SAL would be positively related to the effectiveness of research teams. By sharing authentic leadership influence, teams were

expected to become more effective because of cognitive (i.e., SMM), affective-motivational (i.e., team trust), and behavioral (i.e., team coordination) mechanisms. Our results suggest that SAL operates through different mediating pathways, albeit to varying degrees. The results indicate that team coordination was the primary mediating mechanism accounting for the relationship between SAL and research team effectiveness. SMM and team trust served as secondary pathways between SAL and research team effectiveness, but in less consistent ways. Research teams high on trust and SMM felt more successful (and more satisfied), but were in fact less successful in publishing in high-impact management journals. Our results also revealed that the SAL dimensions were differentially and indirectly related with research team effectiveness and that these differences would have remained masked if we had treated SAL as a unidimensional construct.

Our findings on the link between SAL and research team effectiveness were mixed. As expected, SAL was positively associated with perceived team performance and team satisfaction. Contrary to expectations, we did not find a link between SAL and impact factor. This suggests that SAL scholars may come to different conclusions depending upon whether they focus on objective or subjective indicators of team effectiveness. This is problematic because measurement-dependent differences in findings may be misread as substantive issues. Thus, scholars may need to use more comprehensive sets of indicators to fully ascertain the implications of SAL in research teams.

We obtained tenuous support for the view that SAL transmits its effects via SMM. Although we found the expected indirect relationship for perceived team performance (except for balanced processing), no relationship was revealed for team satisfaction and a negative indirect relationship was found for impact factor. Team cognition research shows that SMM benefit team performance (DeChurch & Mesmer-Magnus, 2010), and our findings for perceived team performance support this view. Yet our results for impact factor (suggesting a negative indirect effect) contradict this beneficial view of SMM. Possibly, members assumed their cognitive processes to be shared when in fact they were not (e.g., false consensus; Ross, Greene, & House, 1977). Specifically, teams might have been affected by low degrees of cross-understanding, that is, "the extent to which group members have accurate understandings of one another's mental models" (Huber & Lewis, 2010, p. 7). Alternatively, *pluralistic ignorance*, a phenomenon in which members do not share their actual beliefs, perceptions, or feelings because they mistakenly assume that their privately held positions differ from other team members (Miller & Prentice, 1994), may have been operative. By not openly sharing opinions and ideas with other team members because of false consensus and/

or pluralistic ignorance, *pluralistic arrogance*—a term coined by Randolph-Seng and Norris (2011) to describe a maladaptive form of SMM that is similar to groupthink (e.g., Goncalo, Polman, & Maslach, 2010)—may have emerged. Thus, we suggest that key parts of designing and conducting high-quality research (e.g., disagreeing with others and discussing those disagreements) may have been missing and may have influenced teams despite members' SMM. Skilton and Dooley (2010) explained why shared cognition may actually restrict creativity in research teams. Specifically, they argued that the more rigid and uniform SMM are, the less varied and novel the ideas are that team members generate and select. The less novel the ideas are that research teams generate, the less likely it is for them to change or challenge existing concepts, models, or theories, which, in turn, reduces the likelihood of publishing in top-tier journals.

We did find partial support for the team trust mediation path. As expected, we found an indirect relationship for team satisfaction, which reinforces findings from Costa (2003). However, we found little evidence for an indirect effect on perceived team performance, which is inconsistent with earlier research (Costa, 2003) and requires further clarification. Most noticeable for SAL theory is our finding of a negative indirect path for impact factor (except for relational transparency). This result is inconsistent with those obtained by Drescher et al. (2014), which might be due to differences in context. Whereas Drescher et al. (2014) focused on teams engaged in strategic decision making, we studied teams working toward scientific discoveries. Performance in research teams, more than in strategy teams, depends upon divergent thinking and creative problem solving, and thus, hinges upon the open exchange of diverse and potentially conflicting ideas. When operating under high levels of trust, team members may favor conformity and avoid constructive debate, which may restrict the chance of getting published in premier scientific journals (e.g., Mok & Morris, 2010). This argument may also help explain why Braun, Peus, Weisweiler, and Frey (2013), studying 30 academic teams working at German universities, found no association between team trust and research output. Overall, our findings suggest that there might be circumstances under which team trust becomes somewhat ineffective (see also Tsai, Chi, Grandey, & Fung, 2012).

Our hypothesis regarding team coordination was largely supported. We found support for the expected indirect path for team satisfaction, perceived team performance (except for balanced processing), and impact factor (except for balanced processing and internalized moral perspective). That we found support across different measures of team effectiveness speaks to the robustness of the team coordination relationships. This makes our study the first to support the hypothesis that SAL benefits teams by enabling them

to better coordinate their activities. We find that it is specifically the team's self-awareness and relational transparency that enhances team coordination—as the two pathways for the other SAL components (balanced processing and internalized moral perspective) were insignificant. By leading each other in an open, nondefensive manner (i.e., relational transparency) and in ways grounded in self-knowledge (i.e., self-awareness), research teams can integrate the scientific input of members more effectively. That these effects hold above and beyond the influence of a team member's past research productivity (measured via the team's H-index) is intriguing and highlights the role of teamwork in scientific research, which too often is misconceived as purely individual work.

### *Theoretical Implications*

First, our findings contribute to authentic leadership theory. Research has focused on studying the effects of an individual authentic leader instead of conceiving authentic leadership as a team quality and as a set of distributed leadership functions. Consider, for example, Banks and colleagues' (2016) study, which meta-analytically reviewed the consequences of authentic leadership, uncovering 100 samples with a total of more than 25,000 individuals. They needed to exclude one study from the review (i.e., Hmieleski et al., 2012) because it stood out in that it focused on "AL [authentic leadership] of entire teams instead of individual leaders" (Banks et al., 2016, p. 637). We do not call into question the merits of studying individual authentic leadership, but suggest that studies into SAL can complement existing findings. By providing evidence of the links between SAL and research team effectiveness, especially through team coordination, our study directs attention to the team-based, shared view of leadership as an important angle from which to investigate authentic leadership.

By borrowing functional leadership theory from the team literature, we developed novel hypotheses on the mediating mechanisms of SAL. That we identify team coordination—a behavioral mechanism—as the most important mediating mechanism challenges some implicit assumptions in SAL research and authentic leadership theory. Some exceptions aside (e.g., Hannah et al., 2011), research on authentic leadership has mainly studied emotional-motivational and cognitive mediators (see Avolio & Walumbwa, 2014). For instance, Hmieleski et al. (2012) found that group affective tone mediates the association of SAL with new venture performance. Similarly, Clapp-Smith et al. (2009) showed that trust in management explained some beneficial effects of authentic leadership on store performance. Our research suggests these findings may be incomplete in

that behavioral mechanisms may work in parallel with these emotional-motivational and cognitive mediators.

That we found multiple mediating mechanisms to act in parallel also contributes to the broader literature on shared leadership. Drescher et al. (2014) found team trust to mediate the association between shared leadership and team performance, but suggested that other mechanisms may work alongside team trust (e.g., team cognition), because “trust is but one facet of the social functioning of the group” (p. 780). Nicolaides et al. (2014), similarly, called for research studying mediators other than team confidence—which was the focus of their meta-analytic investigation. Our study addressed this call, thereby deepening our understanding of shared leadership and the fundamental processes underlying its effects. Such knowledge is essential because it helps develop interventions for practice that specifically target the variables (e.g., team coordination) in the mediating process (MacKinnon & Fairchild, 2009).

Instead of treating SAL as a unidimensional construct (see Hmieleski et al., 2012), we followed recommendations from Banks et al. (2016), Gardner et al. (2011), and Neider and Schriesheim (2011) to examine SAL at the component level. We found that the dimensions of SAL have differential effects on team effectiveness. Although we would not have obtained substantially different results had we studied SAL as a unidimensional construct, our multidimensional findings are more nuanced and provide novel insights that we otherwise would have missed. For instance, only self-awareness and relational transparency—but not balanced processing and internalized moral perspective—were associated with impact factor through coordination. If we had assessed SAL as a unidimensional construct, we would have inferred an overall indirect relationship instead. Thus, our analysis highlights the need to more systematically examine the effects of authentic leadership at the component level.

Finally, our study contributes to the field of the science of team science (Börner et al., 2010; Fiore, 2008; Rupp et al., 2014; Salazar et al., 2012). Over the last decade, our understanding of the challenges of team science has greatly increased (see Börner et al., 2010). Still, there is little research into the kind of leadership and teamwork that may help scientific teams cope with challenges. Rupp et al. (2014) thus called for research into team factors that may explain manuscript success/quality. Our study responds to these calls and addresses the question of how to execute science in teams by explaining how shared leadership stimulates high-quality research output (i.e., through team coordination) and by pointing to the limits of SAL. That is, by increasing shared cognition and team trust, SAL may also limit creativity and innovation in research teams, making it more difficult for them to publish in the most esteemed peer-reviewed management journals.

### *Limitations and Future Research*

One limitation of our study is that we relied upon self-reports (except for impact factor) to measure our model variables, raising common method concerns. Based on the expectations for assessing the potential effects of common method variance proposed by Conway and Lance (2010), we believe that common method concerns are unlikely to be a major issue in our data for the following reasons: (a) Team members held the best insights regarding the focal constructs under study, (b) we used established scales and demonstrated convergent/discriminant validity of the model constructs, and (c) we mitigated threats of method effects proactively and found our results were confirmed when controlling for social desirability bias—using five items from the Balanced Inventory of Desirable Responding (Paulhus, 1991).<sup>7</sup>

Second, we cannot rule out reverse causality completely because we measured most of our model variables simultaneously. As such, hindsight bias on the part of participants may be an alternate explanation for the results found; however, given that participants were asked about their perceptions of the team in multiple ways, hindsight bias may have been somewhat lessened in the current study (Sanna & Schwarz, 2003). Furthermore, one could speculate that performance perceptions influence the degree to which teams share their leadership responsibilities. Although conceivable, it seems unlikely that perceived team performance (or team satisfaction) drives leadership, and extant research supports the direction of influence we tested (e.g., Hmieleski et al., 2012). Still, future cross-lagged analysis is needed to robustly establish the direction of influence.

Third, we purposefully sampled teams who had published their work because we wanted a somewhat objective measure of scholarly team success (i.e., publication quality). By sampling only teams that managed to publish their work, we may have restricted the variance in our variables. Such range restriction has been found to deflate rather than inflate correlations relative to what one would expect to find if no restriction of range occurred (e.g., Berry, Cullen, & Meyer, 2014; Cable & Kay, 2012). Thus, we might have underestimated the correlations, relative to what the associations may be in an unrestricted sample (Berry et al., 2014). Although this does not reduce confidence in the significant effects found in this study, the nonsignificant correlations need to be interpreted with caution. Specifically, we found SMM to not mediate the link between SAL and team satisfaction. Before disqualifying SMM as a mediator, further unrestricted testing seems warranted.

Fourth, consistent with the approach taken by Hmieleski et al. (2012) to operationalize SAL, we used a referent shift approach where the stem for the Authentic Leadership Questionnaire was changed from “my leader” to “members of this



team.” However, Van Mierlo, Vermunt, and Rutte (2009) note, the use of such composition methods to operationalize group-level constructs can be problematic. Here, it is important to recognize that we follow their recommendations to employ aggregation statistics (e.g., ICC(1) and ICC(2)) and factor analysis to assess the reliability and construct validity of the resultant group-level measure. Nevertheless, we advocate for a more complete assessment of the construct validity of the SAL measure following the more extensive procedures for multi-level theory building and scale development by Van Mierlo et al. (2009).

Fifth, the number of mediating mechanisms accounted for in our study was limited, and more complex multiple models are conceivable. Scholars may want to complicate our model by distinguishing different types of SMM (Maynard & Gilson, 2014) and/or between explicit and implicit coordination mechanisms (Rico et al., 2008). Future studies should also explore boundary conditions of SAL (e.g., Hoch & Kozlowski, 2012) and assess whether different team functions are context specific. Possibly, emotional and cognitive team functions are more relevant in nonresearch teams. For instance, in new venture and strategy making teams, SAL may operate primarily through affect rather than coordination (see Drescher et al., 2014; Hmieleski et al., 2012). To test this possibility, future research should build and test more complex conditional indirect effects models within this literature.

### *Practical Implications*

Our findings have several practical implications. First, our finding that SAL associates with team effectiveness while controlling for team size and past research productivity underscores the fact that research team success is not only a matter of composition, but is also dependent upon leadership and teamwork. This finding aligns with that of Woolley, Gerbasi, Chabris, Kosslyn, and Hackman (2008) who found that team analytic work depends both on individual expertise and collaboration. Thus, our results should motivate research teams to invest in leadership and team-building activities.

Second, our results indicate that SAL may have some unintended negative side effects, as indicated by the negative indirect effect of SAL on impact factor mediated via team trust and SMM. Thus, management scholars may need to remind themselves that a healthy amount of skepticism (toward each other’s ideas and contributions) might increase, instead of decrease, their publication prospects (Langfred, 2004). Coauthors may also need to refresh their author team’s cognitive structures by restructuring teams periodically (Skilton & Dooley, 2010).

Finally, coauthors may judge their team to be effective, but may nonetheless fail to publish in top-tier management outlets. Author teams should be

cautious about relying on their own judgment as a leading indicator of future publication success, and instead invite critical feedback from subject matter experts who are not on the author team (Skilton & Dooley, 2010). However, it is important that author teams select reviewers who are indeed critical; otherwise, teams may end up with positively biased feedback that may do more harm than good (see Berka et al., 2014). As the design of a research study cannot be altered once the data have been collected, it seems important to receive such critical feedback early in the research process, instead of when a manuscript summarizing the findings is available.

## **Conclusion**

As workplaces grow increasingly complex and dynamic, organizations are placing a premium on teams, teamwork, and complementary leadership processes. While this is true across a wide array of work contexts, to date, little attention has been devoted to the importance of teamwork in research teams. We begin filling this void by studying SAL—a form of leadership that is particularly well suited for fostering the requisite levels of collaboration and coordination that scientific teamwork requires. Our results suggest team coordination is the primary mediating mechanism, and SMM and team trust serve as secondary mechanisms, whereby SAL is related to perceived team performance and satisfaction. However, while research teams high on trust and SMM expressed greater satisfaction with the team and perceived their performance to be high, they were surprisingly less successful in publishing their work in high-impact journals. Possibly, it is that research teams high in SAL experience pluralistic arrogance—a form of groupthink—that causes them to think they are performing better than objective outcomes suggest. Our results thus hint not only at the benefits of SAL, but also highlight potential adverse consequences that heretofore have not been considered. Moreover, our findings suggest that when it comes to research teams, the importance of team coordination for team effectiveness may be key to helping the team reach their desired outcomes.

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## Notes

1. The journals included (in alphabetical order) were *Academy of Management Journal*, *Academy of Management Review*, *Asia Pacific Business Review*, *Business Horizons*, *Canadian Journal of Administrative Sciences*, *Corporate Governance: An International Review*, *European Journal of International Management*, *European Management Journal*, *International Business Review*, *International Journal of Human Resource Management*, *Journal of Business and Psychology*, *Journal of Management*, *Journal of Management Inquiry*, *Journal of Management Studies*, *Management Learning*, *Organization Science*, and *The Leadership Quarterly*.
2. Note that this shift in perspective (from a single leader to the team) does not alter the nature of the authentic leadership behaviors displayed and that the logic of our approach aligns with Hmieleski, Cole, and Baron (2012), one of the very few studies to explore shared authentic leadership (SAL). Although competing measurement methods exist (e.g., network density measures), meta-analytic findings show that measurement differences are unlikely to have any substantial implications for shared leadership and its effects (Wang, Waldman, & Zhang, 2014).
3. Note that we are not permitted to depict all SAL items because they form part of a copyright-protected measurement scale. Still, we wish to mention that the items on self-awareness primarily reflect a sense of self-evaluation and willingness to learn about oneself and about how one's behavior affects others. As such, this operationalization is congruent with its conceptual definition.
4. We obtained evidence for the validity of the team trust scale using complete data obtained from teams where we had only one respondent per team ( $n = 325$  single-respondent teams). These data were not used in our main analysis. The validity assessment was necessary because the three items were taken from an article (Walumbwa, Luthans, Avey, & Oke, 2011) that was retracted after our data collection was completed (Retraction published 2014, *Journal of Organizational Behavior*, 35, p. 746). Cronbach's alpha was .82.
5. Note that we do not report effect size measures for mediation effects. This is because commonly used effect size measures "have not yet been extended for use in models involving multiple mediators" (Preacher & Kelley, 2011, p. 108). Wen and Fan (2015), more recently, expressed similar concerns.
6. We considered the possibility that research team effectiveness may depend on the mix of scholars in terms of research experience and productivity. Thus, we reran our analyses controlling for team-level diversity in research productivity (approximated via the H-index); we distinguished between diversity as

separation and as disparity (Harrison & Klein, 2007). For 93% of the indirect effects models that we tested, results remained essentially unchanged (i.e., the direction and significance of the relationships was confirmed). As per a reviewer's suggestion, we also assessed whether the length of the publication process and number of rejections at other journals might have had an impact on the perceived effectiveness of the team (i.e., team performance and team satisfaction). To this end, we controlled for the number of journals that had rejected the paper prior to acceptance. We found that both the nature and significance of our results remained unchanged. We thus have confidence that our results do not depend on the length of the publication process. Results of this analysis are available upon request from the first author.

7. Findings are available upon request from the first author.

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