Article:
Hasson, H., von Thiele Schwarz, U., Nielsen, K. et al. (2016) Are We All in the Same Boat? The Role of Perceptual Distance in Organizational Health Interventions. Stress and Health, 32 (4). pp. 294-303. ISSN: 1532-3005

https://doi.org/10.1002/smi.2703

Are we all in the same boat? The role of perceptual distance in organizational health interventions

Abstract

The study investigates how agreement between leaders and their team's perceptions influence intervention outcomes in a leadership-training intervention aimed at improving organizational learning. Agreement i.e. perceptual distance was calculated for the organizational learning dimensions at baseline. Changes in the dimensions from pre- to post-intervention were evaluated using polynomial regression analysis with response surface analysis. The general pattern of the results indicated that the organizational learning improved when leaders and their teams agreed on the level of organizational learning prior to the intervention. The improvement was greatest when the leader's and the team's perceptions at baseline were aligned and high rather than aligned and low. The least beneficial scenario was when the leader's perceptions were higher than the team's perceptions. These results give insights into the importance of comparing leader's and their team's perceptions in intervention research. Polynomial regression analyses with response surface methodology allow three -dimensional examination of relationship between two predictor variables and an outcome. This contributes with knowledge on how combination of predictor variables may affect outcome and allows studies of potential non-linearity relating to the outcome. Future studies could use these methods in process evaluation of interventions.

Keywords: shared perceptions, leader-team agreement, organizational learning, leadership training

Introduction

Prior studies have shown that level of shared understanding among leaders and employees has an impact on team well-being and performance (Fleenor, Smither, Atwater, Braddy, & Sturm, 2010; Gibson, Cooper, & Conger, 2009). In a similar manner, leadership-training literature suggest that agreement between leaders' and their subordinates' perceptions of leader behaviors is crucial to development of these behaviors over time (Fleenor et al., 2010). In the present paper, we investigate how agreement i.e. perceptual distance between leaders and their team regarding baseline levels of intervention outcomes impact improvement of these outcomes. The study adds to the intervention evaluation literature in three important ways: First, it introduces the concept of leader-team perceptual distance. Most research has focused on the perceptions of either employees or managers but fail to consider the impact of the agreement between these two stakeholders (Nielsen & Randall, 2009, Nielsen & Randall, 2012). This perspective can improve current intervention evaluation frameworks' coverage of important variables to be considered in outcome and process evaluations. Second, the study investigates the impact of baseline levels on intervention outcomes over time. This extends previous qualitative studies discussing the concept of organizational maturity, e.g., the extent to which organizational members have the necessary prerequisites to engage with the intervention (Nielsen, Fredslund, Christensen, & Albertsen, 2006). Third, the study proposes use of novel statistical methods (polynomial regression analysis with response surface analysis) for intervention evaluation. These methods may uncover relationships that are obscured when relying on mean level comparisons, thus enabling more nuanced evaluation. This is in turn related to improved possibilities of targeting factors that may influence the success of an intervention. The approach is particularly useful when any differences between predictor variables is assumed to be central for the dependent variable (Shanock, Baran, Gentry, Pattison, & Heggestad, 2010). This is

often the case in stakeholders' perceptions of intervention including its implementation and organizational context. In addition, this type of evaluation offers practical information to leaders and teams that may be useful in their improvement work. In this way, measurement of perceptual distance has great potential for use in achieving practical change.

Organizational Learning

Organizations' capacity to learn—to acquire, apply, and spread new insights—has been touted as a fundamental strategic capability (Santos-Vijande, López-Sánchez, & Trespalacios, 2012). The process of organizational learning involves continuous changes in the cognition and behavior of leaders and employees (Argote, 2011). Individual members are the mechanisms through which learning occurs, and individual processes then become embedded in organizational functions. Thus, organizational learning takes place via the social processes through which individuals interact (Crossan, Lane, & White, 1999). Organization needs to be receptive to individuals' efforts and put into place appropriate mechanisms to enable and reward learning (Marsick & Watkins, 2003).

We argue that the leaders' and team members' perception of organizational learning may differ and thus that these differences may influence the outcomes of a leadership training intervention. Team members' perceptions of organizational learning are influenced by the opportunities for learning that are provided. However, these opportunities are often provided or communicated through a leader (Bashshur, Hernández, & González-Romá, 2011). Thus, if learning opportunities are not adequately communicated, the leader's and team members' perceptions of the organizational learning may differ.

Leaders' and Teams' Perceptions

Teams and their leaders are particularly prone to forming different perceptions (Bass & Yammarino, 1991; Beus, Jarrett, Bergman, & Payne, 2012). The separate work contexts of subordinates and leaders and power differentiation may lead to different sense-making

regarding organizational phenomena (Beus et al., 2012; Patterson, Warr, & West, 2004). Sense-making is central because it involves the processes through which people give meaning to an experience (Weick, Sutcliffe, & Obstfeld, 2005). It involves information sharing and discussions about organizations' events, priorities and social information. These interactions are assumed to happen more frequently within organizational sub-groups, which in turn causes different perceptions among these sub-groups.

At least two broad theoretical perspectives have focused on leaders' and employees' perceptions. Studies on shared perceptions (labeled as perceptual congruence, perceptual fit, perceptual similarity) have compared leaders' and their teams' perceptions of the same social stimulus, such as communication, work performance and goal accomplishment (Engle & Lord, 1997; Hatfield & Huseman, 1982; Heald, Contractor, Koehly, & Wasserman, 1998; Hsiung & Tsai, 2009; Li & Thatcher; White, Crino, & Hatfield, 1985). These studies have consistently found that leaders and their teams tend to disagree and that high disagreement is related to lower employee health, work performance and work satisfaction (Fleenor et al., 2010; Hasson, Tafvelin, & von Thiele Schwarz, 2013; Ostroff, Shin, & Kinicki, 2005). However, these studies have often suffered from methodological limitations as cross-sectional designs with simple statistical methods have been applied (Fleenor et al., 2010). Thus, it is unclear how these findings are related to changes over time, for instance in intervention studies.

The self-other agreement (SOA) research compares leaders' and their subordinates' perceptions of leaders' behaviors (Fleenor et al., 2010). The concept is mainly based on a self-awareness construct, as leaders rate themselves rather than a social, organizational phenomena, as is done in the shared perceptions research. The findings have shown common disagreements between leaders and team ratings (Conway & Huffcutt, 1997; Harris & Schaubroeck, 1988), and greater disagreement being related to subordinates' lower ratings on

variables such as job satisfaction and organizational commitment (Atkins & Wood, 2002; Szell & Henderson, 1997). These studies have used more advanced statistical methods, e.g. polynomial regression analysis, in conjunction with interventions and found that agreement levels at baseline had an impact on intervention outcomes over time (Bailey & Fletcher, 2002).

Gibson et al. (2009) combined the concept of shared perceptions with the statistical methods of SOA and introduced the concept of leader-team perceptual distance. They suggested that leader-team differences in perception cause misunderstandings that distract stakeholders and use up resources that could be applied to work performance. Thus, high levels of perceptual distance deter the team from utilizing needed catalysts to collective cognition. Catalysts – such as performance feedback, recognition of conflict among members or clarification of decision-making roles – help groups move forward through the cognitive cycle (Gibson, 2001). Teams progress through the phases of collective cognition by making use of catalysts to break routine and habitual patterns of information use and behavior (Gibson & Earley, 2007). A leader can assist a team in making use of catalysts, but if a leader and a team do not have common perceptions of phenomena, they are unlikely to take advantage of these catalysts. Following Gibson et al.'s (2009) reasoning, we argue that leaders who agree with their teams will be able to make use of the intervention activities to break routines and habits and to develop the organizational learning in the organization. Different parts of the leadership intervention, such as baseline measurements of organizational learning and practical group exercises focusing on learning, may act as a catalyst for this. From this follows our first hypothesis:

Hypothesis 1: Organizational learning will improve more from baseline to the post-intervention when a leader's and his/her team's perceptions of the organizational learning at baseline are aligned.

Several organizational interventions have revealed the most beneficial outcomes in groups with higher baseline values, indicating that work units with a good starting point showed the greatest improvement during the intervention (Augustsson, von Thiele, Stenfors-Hayes, & Hasson, 2014; Brown, Costigan, & Kendziora, 2007; Ulhassan, Westerlund, Thor, Sandahl, & von Thiele Schwarz, 2014). It has been suggested that organizations need to have a certain level of "healthiness" or maturity at baseline if they are to succeed with organizational interventions (Nielsen et al., 2006). In line with this, Bashshur et al. (2011) found that when leaders' and team members' perceptions of organizational support were high and in agreement at the first measurement, the outcomes at the second measurement were maximized. They reasoned that these leaders were able to take actions that were appropriate for the team. In a similar manner, McKay et al. (2009) found the highest levels of performance in units where teams and leaders agreed and perceived that the organizational diversity climate level was high. Based on these results, we test the following hypothesis:

Hypothesis 2: Organizational learning will improve more from baseline to post-intervention when a leader's and his/her team's perceptions of the organizational learning at baseline are high and aligned rather than low and aligned.

If disagreement exists between the leader and the team, the question is whether it is more beneficial for the leader's ratings to be higher or lower than those of his/her subordinates? Gibson et al. (2009) found that best team performance was achieved when the leader's perceptions of goal accomplishment and constructive conflict were slightly higher than the team's perceptions. They argued that if the team perceives greater goal accomplishment than the leader, the team will likely consider its knowledge accumulation sufficient, while the leader may see the need for more knowledge and provide feedback that

threatens the team's sense of efficacy. In contrast, Bashshur et al. (2011) found that team performance was lowest when leaders perceived higher support climate than the team. Similarly, Cole, Carter and Zhang (2013) found that the team performance was poorest when leaders' perceptions of power distance were higher than teams'. The differences between Gibson et al.'s (2009) findings, on the one hand, and those of Bashshur et al. (2011) and Cole et al. (2013), on the other, may be related to their having evaluated different organizational climate variables. Bashshur et al. (2011) suggested when a leader's ratings are higher than his/her team's ratings, this may result in "laissez-faire" leadership simply because the leader has failed to understand that the team needs additional support. This situation may be troublesome for subordinates not only because they experience a poor support climate, but also because their leader is taking no actions to deal with the low levels of support perceived by the group. Based on these findings we hypothesize the following:

Hypothesis 3: Organizational learning will improve more from baseline to the post-intervention when team ratings are more favorably than the leader.

Methods

The study is a longitudinal intervention study in a paper and pulp mill in Sweden with approximately 800 employees, most of them manual workers. Pre- (November 2011) and post-intervention (March 2013) measurements were used. The intervention involved a leadership-training program for all line leaders in the organization. The intervention was company-initiated and carried out by organizational consultants from the organizations occupational health service. The role of the researchers were to evaluate the intervention outcomes. The goal of the intervention was determined in collaboration between senior management in the organization and the consultant and involved improving transformational

leadership behaviors, the organizational learning and the safety climate. Separate evaluations have shown significant improvements in leaders' and employees' ratings of all the three concepts post- as compared to pre-intervention (References will be added after the review).

Participants

All of the company's line leaders (n=101) participated in the intervention. Line leaders were defined as the management level directly above non-managerial workers, which included production managers and section managers with employee supervision responsibilities. A total of 76 of the leaders (response rate 75.2%) completed the pre intervention questionnaire and gave their informed consent for the data to be used in research. The leaders varied in age between 30 and 59 years (M age = 41.2, SD = 8.1), the gender breakdown was 76.3% male and 23.7% female, mean tenure in their current position was 5.5 years (SD 5.6), and mean tenure in the company was 19.8 years (SD 11.2).

The intervention included a 360-degree feedback assessment of the leaders' leadership style. The leaders were asked to invite five of their subordinates to complete the questionnaire. They were instructed to invite those they felt close to and those they perceived as more distant. A total of 290 staff members were invited. In the present study, 121 employees who completed the pre- and post-intervention measures and approved of their responses being used in research were included (response rate 41.7%). The employees ranged in age from 20 to 60 years (M age = 46.4, SD = 9.3), and the gender breakdown was 81.1% male and 18.9% female. Employees' tenure in the company ranged from <1 to 42 years (M 22.8 years, SD 10.5), and mean tenure in current position was 12.0 years (SD 8.0).

Intervention

The intervention consisted of a total of 20 days training including both theoretical and practical parts. It was conducted between December 2011 and March 2013. The leaders

participated in the theoretical part in groups of 20 individuals from different sections of the organization in order to increase exchange of experiences across sections. The theoretical part consisted of lectures and discussions on the following topics: transformational leadership, organizational change and employees' motivation. This part included feedback and an opportunity for participants to reflect on the baseline ratings. The practical part consisted of exercises and skill training in transformational leadership behaviors, behavior change processes, coordination of activities, feedback and information sharing, and alignment of one's own and one's employees' activities to organizational goals. The leaders chose a practical case to work with in their work teams. For example, one case focused on information sharing and reporting systems around safety issues for one of the work stations, including improving collective leadership, efficient collaboration, and feedback and information-sharing across work team members and between leaders and their teams. The practical work indirectly entailed development of organizational learning, as information development, application, and dissemination were central.

Data Collection

Data were collected using a web-based questionnaire. An introductory letter outlining the aim of the study and a personal link to the questionnaire were provided in an email. Voluntary participation was emphasized, and all respondents were asked to provide written informed consent to participate. The response time was three weeks, during which two reminders were sent. The local ethical review board approved the study.

Measures

Organizational learning was measured using the short version of the Dimensions of Organizational Learning Questionnaire (DLOQ-A) (Marsick & Watkins, 2003; Yang, Watkins, & Marsick, 2004). The questionnaire consists of seven dimensions focusing on

organizational learning at individual, group and organizational levels. We used five of the dimensions: *Continuous learning* measures whether learning is designed into the work and opportunities are provided for ongoing growth (example item: "In my organization, people are rewarded for learning"). In line with a Swedish validation study (Augustsson, Törnquist, & Hasson, 2013) we replaced one of the original items in the short scale with an item from the longer version. *Dialogue and inquiry* measures whether staff use productive reasoning skills to express their views and whether the culture supports questioning, feedback, and experimentation (example item: "In my organization, whenever people state their view, they also ask what others think"). *Team learning* measures collective learning and collaboration (example item: "In my organization, teams revise their thinking as a result of group discussions or information collected"). *Embedded systems* indicates efforts to establish systems for capturing and sharing learning (example item: "My organization creates systems to measure gaps between current and expected performance"), and *Empowerment* signifies how well an organization involves staff in owning a joint vision and distributes decision-making (example item: "My organization gives staff control over the resources they need to accomplish their work"). The dimensions Provide leadership and System Connection were excluded for two reasons: 1) leadership was measured with other scales in the evaluation and there was a risk of redundancy and of having too lengthy questionnaire, 2) System connection measures aspects of overall organizational level that were not targeted with the current intervention. The short version consisted of three items per dimension. The response alternatives were on a 6-point Likert scale (from 1 = Almost never true to 6 = Almost always true). To assess the distinctiveness of the subscales, confirmatory factor analyses contrasting a five-factor and a one-factor model was conducted. The five-factor model provided a good fit to the data, χ^2 (80, N = 295) = 201.4, p <.001; TLI = .90; CFI = .92; RMSEA =.07) and a significantly better fit than the one-factor model, χ^2 (90, N = 295) = 459.2, p <.001; TLI = .70;

CFI = .74; RMSEA = .12; χ^2 difference(10, N = 295) = 257.8, p <.001).

Analyses and Results

Descriptive statistics and intercorrelations between the variables are presented in Table 1.

(Table 1 here)

To assess the impact of different perceptions between leaders and their teams, polynomial regression analysis with response surface analysis was used (Edwards, 1994, 1995, 2000, 2001; Shanock et al., 2010). This approach has two main advantages: it enables analyses of a combination of two predictor variables' relation to an outcome, and it considers the differences between predictor variables (Shanock et al., 2010). We followed the procedure outlined by Shanock et al., (2010) and used IBM SPSS Statistics 23 and Excel spreadsheet for calculating response surface analysis (Shanock et al., 2010). First, the extent of agreement between leaders and teams at baseline was analyzed. At least a 10 percent discrepancy is needed to warrant further analysis and as presented in Table 2, the discrepancies on all the dimensions were higher than 10 percent.

(Table 2 here)

Then polynomial regression analysis was employed (Edwards & Parry, 1993). Separate hierarchical ordinary least squares regressions were computed for each dimension of organizational learning, whereby Time 2 levels of the team-rated variable (i.e., the outcome) were regressed on teams' ratings, leaders' ratings, the cross product of teams' ratings and leaders' ratings, the square of teams' ratings, and the square of leaders' ratings of the same dimension measured at Time 1. Measures were included in the regressions in scale-centered form in order to reduce multicollinearity, allow meaningful interpretation of coefficients on first-order terms, and facilitates interpretation of the coefficients on the x-y plane, where the

origin of the x- and y-axis is located (Edwards, 1994). Instead of examining regression coefficients, which is commonly done in regression analysis, if R^2 is significant, it indicates that the predictors explain variance that is different from zero and that further analysis is warranted. All the dimensions measured at Time 1 explained significant variance in their respective Time 2 measure (Table 3). Therefore surface test values were calculated to examine what is called a response surface pattern, which is later graphed to provide a tree-dimensional visual presentation of the data that aids interpretation.

(Table 3 here)

Because agreement hypotheses involve the two quadratic terms, as well as the product term, the most direct way to test the hypotheses is to use these coefficients to test shapes along lines of interest using the response surface method. Four surface test values, a_1-a_4, were calculated using the unstandardized regression coefficients (see Table 4 on how to calculate these and the results). The values present the slope and curvature of two lines. The "line of perfect agreement", extends from the nearest to the farthest corners of the graph (Figures 1 and 2), and is investigated by a_1 and a_2. A_1 is the slope and a_2 is the curvature along the line of perfect agreement. The slope of the line represents how agreement between two predictor variables relates to an outcome. The test for a curvature tells us whether the relationship between ratings that are in agreement and the outcome is linear or nonlinear. The other line is the "line of incongruence," which extends from the left corner to the right corner and is reflected by a_3 (slope) and a_4 (curvature). Significant curvature captures how the degree of discrepancy between the two predictor variables may influence the outcome variable. The slope tells us the extent to which the direction of the discrepancy matters, such that the outcome is potentially affected more when the discrepancy is in one direction or the other.

(Table 4 here)

Starting with *continuous learning*, the a_1 and a_3 values were significant. A significant positive a_1 value suggests that when leaders' and teams' perceptions of *continuous learning* at Time 1 are in agreement, teams' ratings of *continuous learning* Time 2 will increase (follow the dashed line, "line of perfect agreement", in Figure 1). As seen in the figure, the highest levels of team-rated *continuous learning* at Time 2 (z) are at the back corner of the graph (end of the dashed line) where both team- and leader-rated *continuous learning* at Time 1 are high (i.e. agreed and high). Also, the lowest values at Time 2 are in the front of the graph (the other end of the dashed line) where both team- and leader-rated *continuous learning* at Time 1 are low (agreed and low). This gives support to Hypothesis 1 and 2. In other words, there are least improvement at Time 2 when leaders ratings are low and teams ratings are also low. When moving towards the back of the "line of perfect agreement" (the dashed line), i.e. when both ratings are higher, also the team ratings at time 2 are higher (i.e. high and aligned is beneficial). Further, there was as significant negative a_3 value, suggesting that when leaders' ratings of *continuous learning* are higher than their teams' ratings at Time 1, *continuous learning* decreases Time 2. This is in line with Hypothesis 3. In Figure 1, this illustrated by the solid line - "the line of incongruence". The mid point of the solid line is the point of agreement. When moving right from the middle along the solid line, i.e. towards disagreement where leader rated higher than the team, the Time 2 values are as lowest. When moving left along the line, i.e. when team ratings are higher than leaders at Time 1, the time 2 ratings are high. In other words, the team ratings of continuous learning at Time 2 (z) is low when leaders' ratings (x) are high and the teams' ratings are low (y) at Time 1.

(Figure 1 here)

A similar pattern, with a significant positive a_1 and significant negative a_3, was found for *dialogue and inquiry*, *embedded systems* and *empowerment* (see Table 4). This lends further support to our three hypotheses.

For the dimension *team learning*, the response surface pattern was somewhat different. A_3 was significant and negative, indicating that when leaders rated *team learning* higher than their teams at baseline, the *team learning* at post intervention decreased, which is in line with Hypothesis 3 (follow the "line of incongruence", solid line). However, instead of having a significant positive a_1 value, *team learning* had a significant and negative a_2 value, suggesting that the relationship between agreement between leaders and their teams and outcomes is curvilinear. This suggests a non-linear slope along the line of perfect agreement (dashed line), meaning that *team learning* at Time 2 was higher, the higher the baseline leader and team ratings of *team learning* were, but only to a certain point, after which the mean team learning at Time 2 decreased. This could be seen in Figure 2 where low levels of *team learning* at Time 2 (z) are found at the back of the graph, indicating that even though the perceptions are aligned and high, outcomes (z) are low. This contradicts Hypothesis 1 and 2.

(Figure 2 here)

Discussion

We found that the agreement levels between leaders and their teams and the initial team mean levels did influence the intervention outcomes. More specifically, organizational learning improved more when leaders and their teams had a shared understanding of the pre-intervention organizational learning, which is in line with Hypothesis 1. Also, the development of organizational learning over time was greatest when the leader's and his/her team's perceptions at baseline were high and aligned, lending support to Hypothesis 2. Finally, if disagreement existed, the improvement of organizational learning over time was

greater when the team's baseline perceptions were higher than the leader's rather than a leader rating higher than the team, supporting Hypothesis 3.

We also found one exceptions to the above-described general pattern of results. For one of the dimensions, *team learning*, the relationship between agreement at baseline and improvement in the outcomes was curvilinear. *Team learning,* consisting of items on team members' freedom to adapt their goals, revise their thinking and feel confident that the organization will act on their recommendation, improved more the higher leaders' and their teams' ratings were at pre-intervention, but only up to a certain point, after which it decreased. Thus, there was a point after which high and aligned perceptions caused rather decrease than improvement in *team learning,* which contradicts Hypotheses 1 and 2. Curvilinear relationships have previously been reported between leaders' and subordinates' ratings of empowering leadership and leader effectiveness (Amundsen & Martinsen, 2014). However, the authors' interpretation that this was due to how successful leaders were avoiding to outperform others is hardly transferable to organizational learning. Given that *team learning* was the only dimension showing this pattern, it may either suggest that the results are spurious, for example due to measurement issue with the team learning construct, or that the development of team learning during an intervention is a different phenomenon than the development of the other organizational learning dimensions in terms of how perceptual differences affect outcomes. This calls for further studies in the area of leaders' and subordinates' perceptions of team learning to understand the possible impact of disagreement. These curvilinear relationships illustrate the ability of the polynomial regression analyses and the response surface methodology to detect non-linear relationships. This is an important contribution because most of the current methodological approaches used in evaluation of organization level interventions employ linear modeling.

Taken together, these results provide valuable insights into the importance of comparing

leader's and their team's perceptions of factors related to organization level interventions. This is in line with leadership training programs and their use of 360-degree measurements to evaluate leadership (Fleenor et al., 2010). We suggest that this type of systematic approaches, such as 360-degree measurements, for comparing stakeholders' perceptions is taken to the evaluation of organization level interventions. The concept perceptual distance and the statistical analysis related to that, i.e. polynomial regression analyses with response surface methodology, is one way to conduct such comparisons. These allow for a three -dimensional examination of relationship between two predictor variables and an outcome (Shanock et al., 2010). This contributes with knowledge on how the combination of predictor variables may affect the outcome. This gives more nuanced results and an opportunity to study potential non-linearity relating to the outcome, which was the case with the *team learning* dimension. Meanwhile, we also acknowledge that polynomial regression analyses with response surface methodology are advanced statistical methods that require expertise both to conduct and to interpret. This may hinder the application of this method in practice. Thus, development of easier, more straightforward analytic methods is warranted. Also, if the goal is to understand extent of teams and manager agreement or levels of ratings between stakeholder groups, it is also possible to apply only the first steps of the polynomial regression analyses with response surface.

We also suggest that future studies use the methods of perceptual distance in process evaluation of organization level interventions. It is well known in the current literature that context and process might affect improvement of intervention outcomes even more than the content of the intervention does (Nielsen, Randall, & Albertsen, 2007; Randall, Nielsen, & Tvedt, 2009). However, prior studies have not found consistent patterns concerning what specific process and context factors affect intervention outcomes (Murta, Sanderson, &

Oldenburg, 2007). One possible reason for the inconsistent results could be that perceptual distance between leaders and teams on process and context factors has not been taken into consideration, e.g. perceptual distances between a team and a leader in the degree to which an intervention was participatory. Thus, whether previous research has indicated that the levels of participation matters for outcomes, the three-dimensional relationship between leaders and teams views on participation on the one hand and intervention outcome on the other remains to be investigated. From a methodological perspective, this would allow us to go beyond looking at the influence of single factors or simple relationship to the more complex phenomena that better mirrors the complexity of reality in which organizational interventions are set. From a practical perspective, we suggest that these analyses could be performed prior to an intervention, fed back to the organization and used as a basis for an intervention to close the perceptual distance before initiating other intervention activities. By doing so, agreement levels could improve, minimizing the risk of misunderstandings. This would also give workplace leaders the chance to take better advantage of intervention opportunities to break habits and develop team wellbeing and performance.

Limitations

Using data from a single company may be a limitation, and thus there is a need to conduct similar analyses in other organizations representing different branches. The recruitment procedure involved having leaders select subordinates for the survey, i.e., not all subordinates were included. This is a commonly used strategy when conducting 360-degree studies on leadership (Fleenor et al., 2010). However, it is unclear how that selection process affects ratings of organizational learning. However, a great proportion of teams did not agree with their leader, illustrating that leaders did not only choose individuals they agreed with.

Conclusions

The study illustrates both the statistical and conceptual possibilities of using perceptual distance in organizational intervention evaluation. Evaluation of discrepancies on stakeholders' perceptions with polynomial regressions with response surface analysis could give a more nuanced evaluation of interventions in organizational settings and provide valuable insights into the conditions under which an intervention may bring about the intended outcomes. Our results indicate the importance of not only consider organizational maturity but also the extent to which leaders and their teams share perceptions of their environment.

References

Amundsen, S, & Martinsen, Ø L. (2014). Self–other agreement in empowering leadership: Relationships with leader effectiveness and subordinates' job satisfaction and turnover intention. *The Leadership Quarterly, 25*(4), 784-800.

Argote, L. (2011). Organizational learning research: Past, present and future. *Management Learning, 42*(4), 439-446.

Atkins, P.W.B., & Wood, R.E. (2002). Self-versus others' ratings as predictors of assessment center ratings: Validation evidence for 360-degree feedback programs. *Personnel Psychology, 55*(4), 871-904.

Augustsson, H, Törnquist, A, & Hasson, H. (2013). How can effects of a workplace learning intervention be understood? *Journal of Health Organization and Management, 27*(3).

Augustsson, H, von Thiele, Schwarz, U, Stenfors-Hayes, T, & Hasson, H. (2014). Investigating Variations in Implementation Fidelity of an Organizational-Level Occupational Health Intervention. *International journal of behavioral medicine*.

Bailey, Caroline, & Fletcher, Clive. (2002). The impact of multiple source feedback on management development: Findings from a longitudinal study. *Journal of Organizational Behavior, 23*(7), 853-867.

Bashshur, M.R., Hernández, A., & González-Romá, V. (2011). When managers and their teams disagree: A longitudinal look at the consequences of differences in perceptions of organizational support. *Journal of Applied Psychology, 96*(3), 558-573.

Bass, Bernard M, & Yammarino, Francis J. (1991). Congruence of self and others' leadership ratings of naval officers for understanding successful performance. *Applied Psychology, 40*(4), 437-454.

Beus, Jeremy M, Jarrett, Steven M, Bergman, Mindy E, & Payne, Stephanie C. (2012). Perceptual equivalence of psychological climates within groups: When agreement indices do not agree. *Journal of Occupational and Organizational Psychology, 85*(3), 454-471.

Brown, H C, Costigan, T E, & Kendziora, K T. (2007). Data analytic frameworks: Analysis of variance, latent growth and hierarchical models. In A. M. Nezu & C. M. Nezu (Eds.), *Evidence-based outcome research: A practical guide to conducting randomized controlled trials for psychosocial interventions*: Oxford University Press.

Cole, Michael S, Carter, Min Z, & Zhang, Zhen. (2013). Leader–team congruence in power distance values and team effectiveness: The mediating role of procedural justice climate. *Journal of Applied Psychology, 98*(6), 962.

Conway, James M, & Huffcutt, Allen I. (1997). Psychometric properties of multisource performance ratings: A meta-analysis of subordinate, supervisor, peer, and self-ratings. *Human Performance, 10*(4), 331-360.

Crossan, Mary M, Lane, Henry W, & White, Roderick E. (1999). An organizational learning framework: from intuition to institution. *Academy of Management Review, 24*(3), 522-537.

Edwards, Jeffrey R. (1994). The study of congruence in organizational behavior research: Critique and a proposed alternative. *Organizational Behavior and Human Decision processes, 58*(1), 51-100.

Edwards, Jeffrey R, & Parry, Mark E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal, 36*(6), 1577-1613.

Engle, Elaine M, & Lord, Robert G. (1997). Implicit theories, self-schemas, and leader-member exchange. *Academy of Management Journal, 40*(4), 988-1010.

Fleenor, J.W., Smither, J.W., Atwater, L.E., Braddy, P.W., & Sturm, R.E. (2010). Self-other rating agreement in leadership: A review. *The Leadership Quarterly, 21*(6), 1005–1034.

Gibson, C. (2001). From accumulation to accommodation: The chemistry of collective cognition in work groups. *Journal of Organizational Behavior and Social Issues, 22*, 121–134.

Gibson, C, Cooper, C D, & Conger, J A. (2009). Do you see what we see? The complex effects of perceptual distance between leaders and teams. *Journal of Applied Psychology, 94*(1), 62.
Gibson, C, & Earley, P C. (2007). Collective Cognition in Action: Accumulation, Interaction, Examination, and Accommodation in the Development and Operation of Group Efficacy Beliefs in the Workplace. *Academy of Management Review, 32*(2), 438-458.
Harris, Michael M, & Schaubroeck, John. (1988). A meta-analysis of self-supervisor, self-peer, and peer-supervisor ratings. *Personnel Psychology, 41*(1), 43-62.
Hasson, H, Tafvelin, S, & von Thiele Schwarz, U. (2013). Comparing Employees and Managers' Perceptions of Organizational Learning, Health, and Work Performance. *Advances in Developing Human Resources, 15*(2), 163-176.
Hatfield, John D, & Huseman, Richard C. (1982). Perceptual congruence about communication as related to satisfaction: Moderating effects of individual characteristics. *Academy of Management Journal, 25*(2), 349-358.
Heald, M R, Contractor, N S, Koehly, L. M, & Wasserman, S. (1998). Formal and emergent predictors of coworkers' perceptual congruence on an organization's social structure. *Human Communication Research, 24*(4), 536-563.
Hsiung, Hsin-Hua, & Tsai, Wei-Chi. (2009). Job definition discrepancy between supervisors and subordinates: The antecedent role of LMX and outcomes. *Journal of Occupational and Organizational Psychology, 82*(1), 89-112.
Li, Andrew, & Thatcher, Sherry MB. Understanding the Effects of Self and Teammate OCB Congruence and Incongruence. *Journal of Business and Psychology*, 1-15.
Marsick, V J., & Watkins, K E. (2003). Demonstrating the value of an organization's learning culture: The dimensions of the learning organization questionnaire. *Advances in Developing Human Resources, 5*(2), 132-151.
McKay, Patrick F., Avery, Derek R., & Morris, Mark A. (2009). A tale of two climates: diversity climate from subordinates' and managers' perspectives and their role in store unit sales performance. *Personnel Psychology, 62*(4), 767-791.
Murta, S. G., Sanderson, K., & Oldenburg, B. (2007). Process evaluation in occupational stress management programs: a systematic review. *American Journal of Health Promotion, 21*(4), 248-254.
Nielsen, K, Fredslund, H, Christensen, K. B, & Albertsen, K. (2006). Success or failure? Interpreting and understanding the impact of interventions in four similar worksites. *Work & Stress, 20*(3), 272-287.
Nielsen, K, Randall, R, & Albertsen, K. (2007). Participants' appraisals of process issues and the effects of stress management interventions. *Journal of Organizational Behavior, 28*(6), 793-810.
Ostroff, C., Shin, Y., & Kinicki, A.J. (2005). Multiple perspectives of congruence: Relationships between value congruence and employee attitudes. *Journal of Organizational Behavior, 26*(6), 591-623.
Patterson, Malcolm, Warr, Peter, & West, Michael. (2004). *Organizational climate and company productivity: The role of employee affect and employee level*: Centre for Economic Performance, London School of Economics and Political Science.
Randall, R, Nielsen, K, & Tvedt, S. D. (2009). The development of five scales to measure employees' appraisals of organizational-level stress management interventions. *Work & Stress, 23*(1), 1-23.
Santos-Vijande, María Leticia, López-Sánchez, José Ángel, & Trespalacios, Juan Antonio. (2012). How organizational learning affects a firm's flexibility, competitive strategy, and performance. *Journal of Business Research, 65*(8), 1079-1089.
Shanock, Linda Rhoades, Baran, Benjamin E, Gentry, William A, Pattison, Stacy Clever, & Heggestad, Eric D. (2010). Polynomial regression with response surface analysis: A powerful approach for examining moderation and overcoming limitations of difference scores. *Journal of Business and Psychology, 25*(4), 543-554.

Szell, S., & Henderson, R. (1997). The impact of self-supervisor/subordinate performance rating agreement on subordinates' job satisfaction and organisational commitment. *Journal of Applied Social Behaviour, 3*(2), 25-37.

Ulhassan, W, Westerlund, H, Thor, J, Sandahl, C, & von Thiele Schwarz, U. (2014). Does Lean implementation interact with group functioning? . *Journal of Health Organization and Management, 28*(2), 196-213.

Weick, K.E., Sutcliffe, K.M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*, 409-421.

White, Michael C, Crino, Michael D, & Hatfield, John D. (1985). An empirical examination of the parsimony of perceptual congruence scores. *Academy of Management Journal, 28*(3), 732-737.

Yang, B, Watkins, K.E, & Marsick, V.J. (2004). The construct of the learning organization: Dimensions, measurement, and validation. *Human Resource Development Quarterly, 15*(1), 31-55.

Table 1

Means, standard deviations, and correlations among variables

Dimension	M	*SD*	1.	2.	3.	4.	5.	6.	7.	8.
1. CL Time 1, team	3.07	.79								
2. CL Time 1, leader	3.45	.93	.09							
3. DI Time 1, team	3.35	.64	.34**	-.10						
4. DI Time 1, leader	3.21	.83	.17	.40**	.07					
5. TL Time 1, team	3.33	.77	.54**	-.05	.60**	.10				
6. TL Time 1, leader	3.33	.76	.05	.42**	-.18	.65**	-.05			
7. ES Time 1, team	2.96	.72	.47**	.12	.09	.13	.30**	.03		
8. ES Time 1, leader	3.19	.92	-.08	.44**	-.13	.24*	-.10	.21	.12	
9. EMP Time 1, team	3.06	.77	.52**	.20	.17	.16	.46**	.16	.59**	.07
10. EMP Time 1, leader	3.49	.76	.07	.38**	-.19	.23*	.09	.39**	.00	.40**
11. CL Time 2, team	3.23	.92	.51**	.04	.39**	.19	.42**	.01	.35**	-.06
12. D&1 Time 2, team	3.33	.90	.27*	-.14	.53**	-.11	.25*	-.36**	.25**	-.22
13. TL, Time 2, team	3.35	.78	.28*	-.08	.42**	.10	.45**	.00	.22	-.18
14. ES Time 2, team	3.23	.71	.42**	.14	.29**	-.03	.29**	-.21	.46**	.16
15. EMP Time 2, team	3.20	.83	.44**	.01	.02	.15	.21	.04	.37**	.02

Note. CL= continuous learning, DI= dialogue and inquiry, TL= team learning, ES= embedded systems, EMP= empowerment. N= 75 leaders and their teams. Internal consistency reliabilities are on the diagonal in parentheses.

* p < .05 ** p <.01

Table 2

Level of agreement between leaders' and their teams on the organizational learning dimensions at baseline

Agreement groups	CL (%)	DI (%)	TL (%)	IS (%)	EMP (%)
Leaders' ratings significantly higher	38.6	38.7	42.2	36.5	36.5
Leaders in agreement	24.0	22.7	28.2	33.8	29.7
Leaders' ratings significantly lower	37.3	28.0	29.6	29.7	33.8

Table 3

Polynomial regression analyses for the DLOQ-A dimensions

	Team-rated Intervention outcomes at Time 2				
Dimension	CL	DI	TL	IS	EMP
Constant	3.54**	3.49**	3.43**	3.60**	3.27**
Leader-rated, Time 1 (b_2)	-.05	-.17	-.11	-.04	.05
Team-rated, Time 1 (b_1)	.74**	.72**	.28*	.73**	.47**
Leader-rated squared, Time 1 (b_5)	.01	-.02	-.08	-.09	.09
Leader-rated *team-rated, Time 1 (b_4)	-.02	-.06	-.42**	-.09	.12
Team-rated squared, Time 1 (b_3)	-.02	-.07	-.02	.18	.09
R^2	.35**	.32**	.32**	.25**	.16*

Note. Coefficients reported are unstandardized regression coefficients. CL= continuous learning, DI= dialogue and inquiry, TL= team learning, ES= embedded systems, EMP= empowerment.

* p < .05 ** p <.01

Table 4

Shape and Curvature of the Response Surface Along the Lines of Interest for the DLOQ-A Dimensions

	Team-rated Intervention outcomes at Time 2				
Surface tests	CL	DI	TL	IS	EMP
$a_1 = (b_1 + b_2)$	.70**	.55*	.17	.68**	.51*
$a_2 = (b_3 + b_4 + b_5)$	-.06	-.15	-.52**	.00	.30
$a_3 = (b_1 - b_2)$	-.79**	-.89**	-. 38*	-.77**	-.42*
$a_4 = (b_3 - b_4 + b_5)$	.04	-.02	.32	.19	.06

Note. a_1 represent the slope and a_2 the curvature along the line of perfect agreement (dashed line in Figure 1 and 2), while a_3 reflects the slope and a_4 the curvature along the line of incongruence (solid line on floor in Figure 1 and 2). The surface test values are computed from b_1, b_2, b_3, b_4, and b_5 coefficients as obtained in polynomial regression analysis reported in Table 3.

* p < .05 ** p <.01