How to empower employees: using training to enhance work units' collective empowerment

Voegtlin, Christian ; Boehm, Stephan A ; Bruch, Heike

Abstract: Purpose - The purpose of this paper is to examine, theoretically and empirically, whether an employee training program can enhance the collective perception of empowerment of work units within an organization. The authors hypothesized that training participation relates to empowerment by enhancing the potency, meaningfulness, impact, and autonomy of the employees. Design/methodology/approach – The authors collected data at two time points, before and after the training intervention. Over the two periods, the sample consisted of an average of 2,383 employees nested in 36 work units of a large multinational company. Findings – The results indicated a positive relationship between training participation and increased levels of collective psychological empowerment, with differential effects on the dimensions of empowerment. Practical implications – This study provides evidence of the positive relationship between training and empowerment, suggesting training effects across levels of analysis. The results indicated dimensions of empowerment that are more and such that are less prone to training. Such knowledge may help to inform organizations in developing training strategies. The authors provide recommendations for a respective training program. Originality/value – This is one of the first studies to investigate the relationship between training participation of individual employees and shared empowerment perceptions within their work units, adding an important antecedent to the research on empowerment. In addition, the authors propose ways of how individual employees can affect shared perceptions among work-unit members. The study offers insights into the development of empowered work units, the vertical transfer of training across levels of analysis and implications for training programs.

How to Empower Employees: Using Training to Enhance Work Units' Collective Empowerment

Christian Voegtlin

Department of Business Administration

University of Zurich, Universitätsstrasse 84, CH-8006 Zürich

E-mail: christian.voegtlin@uzh.ch

Stephan A. Boehm

Center for Disability and Integration

University of St. Gallen, Rosenbergstrasse 51, CH-9000 St. Gallen

E-mail: stephan.boehm@unisg.ch

Heike Bruch

Institute for Leadership and Human Resource Management

University of St. Gallen, Dufourstrasse 40a, CH-9000 St. Gallen

E-mail: heike.bruch@unisg.ch

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Abstract

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Design/methodology/approach – We collected data at two time points, before and after the training intervention. Over the two periods, the sample consisted of an average of 2,383 employees nested in 36 work units of a large multinational company.

Findings – The results indicated a positive relationship between training participation and increased levels of collective psychological empowerment, with differential effects on the dimensions of empowerment.

Practical Implications – This study provides evidence of the positive relationship between training and empowerment, suggesting training effects across levels of analysis. The results indicated dimensions of empowerment that are more and such that are less prone to training. Such knowledge may help to inform organizations in developing training strategies. We provide recommendations for a respective training program.

Originality/value – This is one of the first studies to investigate the relationship between training participation of individual employees and shared empowerment perceptions within their work units, adding an important antecedent to the research on empowerment. In addition, we propose ways of how individual employees can affect shared perceptions among work unit members. The study offers insights into the development of empowered work units, the vertical transfer of training across levels-of-analysis and implications for training programs.

How to Empower Employees: Using Training to Enhance Work Units' Collective

Empowerment

Employees' psychological empowerment is a key aspect for any organization that wants to achieve higher levels of employee involvement, flexibility, and market responsiveness (Mathieu, Gilson and Ruddy, 2006). Not surprisingly, empowerment and its organizational effects have received considerable attention over the last decade from both scholars and practitioners. Psychological empowerment, understood as "increased intrinsic task motivation" (Thomas and Velthouse, 1990, p. 667), has been shown to enhance the effectiveness and performance of individuals and work units (e.g., Aryee, Walumbwa, Seidu and Otaye, 2012; Chen, Kirkman, Kanfer, Allen and Rosen, 2007).

Besides individual empowerment, scholars have increasingly focused on collective perceptions of empowerment, reflected by a growing number of published studies on this topic (e.g., Chen *et al.*, 2007; Kirkman, Rosen, Tesluk and Gibson, 2004; Mathieu *et al.*, 2006). Collective psychological empowerment is similar to individual empowerment, with the difference that it is regarded as a shared perception among work unit members (Kozlowski and Klein, 2000). Like individual empowerment, it was conceptualized as a motivational construct that is manifested through a set of four cognitions reflecting the group members' orientation towards their work (Kirkman and Rosen, 1999; Spreitzer, 1995, p. 1443). These four cognitions are the perceived potency to solve the given tasks, the meaningfulness attached to the work, the perceived impact of what the work unit does, and the perceived autonomy in conducting the work (Kirkman and Rosen, 1997, 1999).

Both researchers and practitioners have become increasingly aware of the positive influence that empowered work units may exert on their organizational environment; however,

effective methods to develop such empowered work units are less well understood and less well tested in company settings. According to Spreitzer (1996), "the effects on empowerment of other contemporary design features such as leadership, skill development through training, rewards, and team structures should also be examined" (p. 500). The theoretical and empirical investigation of potential drivers of empowerment has therefore been identified as one important route for further research to follow (Chen *et al.*, 2007).

The existing studies have repeatedly identified organizational factors as important sources of increasing levels of empowerment (e.g., Mathieu *et al.*, 2006). One such antecedent that is able to enhance the perception of empowerment of work units includes certain sets of human resource policies, such as special training activities (Kirkman and Rosen, 1999; Mathieu *et al.*, 2006). At the collective level, it has been shown that cross-training (i.e., training colleagues for other jobs within their own work unit) (Kirkman and Rosen, 1999) and formal team training (i.e., team members were asked if they think that their teammates are well trained in team skills that are important for their work) (Mathieu *et al.*, 2006) may lead to an increased collective psychological empowerment.

Given these sparse but encouraging results, as well as Spreitzer's (1996) direct call to analyze the role of training in the development of employees' empowerment, it seems surprising that to date, only the studies of Kirkman and Rosen (1999) and Mathieu and colleagues (2006) have explored training as a way to influence collective empowerment perceptions. Thus, we strive to take up this line of research and further investigate the role of empowerment training in the creation of work units' empowerment.

By doing so, we also attempt to link the empowerment literature with the literature on training in work settings (see, e.g., Arthur, Bennett, Edens and Bell, 2003; Cheung and Chang, 2012). In this regard, the design of our study addresses calls for more longitudinal studies on

training effects and studies that assess the vertical transfer of training across levels of analysis (Kozlowski, Brown, Weissbein, Cannon-Bowers and Salas, 2000; Tharenou, Saks and Moore, 2007).

First, longitudinal studies are needed to advance training research in order to address causality (Tharenou *et al.*, 2007). This seems to be especially relevant when considering the potential influence of training on empowerment. In contrast to existing studies on the training-empowerment link (Kirkman and Rosen, 1999; Mathieu *et al.*, 2006), we conceptualize training as a real organizational intervention provided by the HR department and measure work units' collective empowerment perceptions before and after it took place.

Second, an assessment of a vertical transfer of training is needed (Kozlowski *et al.*, 2000; Tharenou *et al.*, 2007), namely the assessment of the effects of individual training across different levels of analysis. In our study, we strive to tackle this question by analyzing whether an empowerment training of individual employees from different parts of the organization and from different hierarchical positions may still influence collective empowerment perceptions of entire work units. To this end, we propose certain mechanisms (including contagion effects and knowledge sharing) that enable a vertical transfer of individual perceptions of empowerment into a collective sense of empowerment among work-unit members.

Finally, the effects of empowerment training have (to our knowledge) always been tested within a set of larger human resource practices, such as autonomy in staffing decisions, payment based on work-unit membership (Kirkman and Rosen, 1999), or feedback mechanisms (Mathieu *et al.*, 2006). In order to evaluate the potential effects of training on empowerment, it would be beneficial to conduct a study in a research setting in which only the training takes places and no other empowerment-related HR practices are introduced. Our sample will benefit from such organizational environment, as we conduct our study in a large organization running an

empowerment training program without changing other relevant HR practices. This approach might be especially relevant to practitioners as it could be difficult to change an entire set of HR practices. Instead, if a single training program would significantly relate to enhanced notions of collective empowerment, organizations might be eager to implement such training programs.

In sum, our study investigates the relationship between an *individual* empowerment training program and the *collective* empowerment of work units as a motivational outcome. Figure 1 shows our study design. Empowerment is displayed as a second-order latent construct reflected by the four empowerment dimensions. The study analyzes the relation between training participation and the different dimensions of empowerment at time 2 (direct lines). We thereby control for perceptions of the different empowerment dimensions at time 1 (dotted lines). By testing our hypothesis using a research design with data collected at two different time points, we hope to make a valuable contribution to the empowerment and training literature as well as deliver information that would be practically relevant to HR professionals in firms.

Insert Figure 1 about here

Collective psychological empowerment and individual training transfer

The construct of work unit psychological empowerment

For the purpose of our analysis, we draw on the psychological construct of perceived empowerment rather than on the structural perspective of managerial practices of delegating responsibility and authority. Thomas and Velthouse (1990) described empowerment as being reflected by four task assessments related to an individual's attitude towards his or her work. These task assessments are self-efficacy, impact, meaningfulness, and choice.

Kirkman and Rosen (1997, 1999) related the individual findings to the collective work group level by aggregating the individual empowerment cognitions tested by Spreitzer (1995, 1996). Collective empowerment can be interpreted as a "shared unit property" originating in an individual unit member's perceptions of empowerment and converging, like other shared properties, "among group members as a function of attraction, selection, attrition, socialization, social interaction, leadership and other psychological processes" (Kozlowski and Klein 2000, p. 30). Kirkman and Rosen's (1997, 1999) four dimensions of this collective empowerment construct are potency, impact, meaningfulness, and autonomy. A high sense of potency, which reflects the collective dimension of individual self-efficacy, is the perceived competence that the work unit can solve its tasks using its own abilities. Impact assesses the perceived importance of the unit's work for the organization. Collective meaningfulness is the extent to which the members of the unit perceive its work as valuable and meaningful. Finally, autonomy is derived from the individual dimension of choice. It reflects the freedom and independence to choose how to design the work of the unit (for definitions of the four dimensions, see Kirkman and Rosen, 1997, 1999; Kirkman *et al.*, 2004).

Individuals within the work unit develop a shared sense of empowerment in that they attach the same meaning to their work and feel a similar sense of potency, autonomy, and impact. Each dimension represents a relevant perception of how "empowered" employees feel when doing their work. The dimensions are established constructs in themselves and when combined, they reflect a comprehensive estimation of a work unit's task motivation, or as Spreitzer *et al.* (1997) claimed, "The four dimensions have been found to contribute to an overall 'gestalt' of empowerment which has been found to be stable over time and reliably measured" (p. 680).

Effects of an employee empowerment training on the psychological empowerment dimensions

We suggest that an empowerment training relates positively to the perceived empowerment of the participants by affecting their psychological perceptions of potency, meaningfulness, impact, and autonomy (see e.g., Spreitzer *et al.*, 1997). We examine each dimension separately, as this allows for a better understanding of the underlying processes of how training participation might foster collective empowerment. Moreover, such an approach can help analyze which dimensions can be properly trained and which dimensions might be more difficult to affect by means of training. In doing so, effective methods for strengthening collective empowerment might be developed based on different HR instruments and practices.

Self-efficacy or *potency* is the belief that given tasks can be solved using individual or collective abilities and skills (Kirkman and Rosen, 1997, 1999; Spreitzer, 1995). Training could strengthen the sense of individual self-efficacy by providing participants with new skills they can apply to the workplace. Training can also influence the belief that they can solve given tasks using their new skills by encouraging them and providing them with positive feedback (Mathieu *et al.*, 2006). In addition to teaching new skills, the training program should incorporate the development of personal mastery (Senge, 1990; Senge, Kleiner, Roberts, Ross and Smith, 1995). Personal mastery is what Senge (1990) circumscribed as the discipline of self-guidance and self-development. Personal mastery is positively linked to self-efficacy (see Spreitzer, 1995; Thomas and Velthouse, 1990). Teaching personal mastery offers the participants the possibility to learn more about themselves. If they reflect more clearly on their personal mental models and receive feedback on how others perceive them, they may be able to better estimate their own competencies (Senge, 1990). Taken together, this could enhance participants' belief in their own abilities and skills and lead to a higher sense of potency.

Meaningfulness is the extent to which an employee regards his or her work as valuable and important (Kirkman and Rosen, 1997, 1999). Generally, the sense of meaningfulness can be addressed through a training program that helps employees see the "big picture" and understand how their individual work contributes to the larger organizational context. Therefore, it seems essential for the training to provide information about the company, its vision and goals, and its overall performance (Aryee *et al.*, 2012). The training program should also enable participants to think systemically about organizational workflows. If participants can link the information about the organization's vision, goals, and performance situation to their personal vision, they may perceive their unit's work to be more influential and meaningful (Spreitzer, 1995, 1996).

Impact is the degree to which individuals perceive that their work or the work of their work unit influences organizational outcomes (Kirkman and Rosen, 1997; Spreitzer, 1995). Analogous to the effect of training on the sense of meaningfulness, it is necessary to provide the employees with information about the organization so that they can link their actual situation to the big picture (Spreitzer, 1995, 1996). If the training program delivers this information, it could facilitate the understanding of their own work in relation to the company's performance. Training participants can link not only their individual contribution to the overall performance, but also the work of the entire unit, which should create an even stronger link, as it is easier to evaluate the contribution of an entire unit (e.g., an HR or marketing department) compared to the performance contribution of a single employee.

The dimension of individual *autonomy* or choice describes the feeling of independence in designing one's own work (Kirkman and Rosen, 1999; Thomas and Velthouse, 1990) as well as in perceiving one's own work behavior as self-determined (Thomas and Velthouse, 1990). Training could affect this feeling of self-determined behavior by enhancing participants' self-confidence. Talking about personal mastery and challenging their individual mental models could

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address participants' feelings of self-determination (Donovan, 2001), thereby strengthening their sense of autonomy. Moreover, by providing employees with new skills and additional knowledge, participants might be able to reconsider their daily routines and current work behaviors, enabling them to question critically whether they are already using the free space and scope for development they have in their jobs. Perceiving that they have a greater scope of behavioral choices and receiving informational (non-threatening) feedback during the training might further enhance their feeling of self-determination (London and Smither, 1999) and subsequently the perceived autonomy.

The four dimensions of *collective empowerment* are related but distinct constructs (Kirkman and Rosen, 1997, 1999) that together constitute a mutually reinforcing effect (Spreitzer, 1995). Therefore, as all four dimensions should be affected by the employee training program, the overall collective empowerment should also be positively enhanced by the training intervention.

How an individual-level employee empowerment training program relates to collective empowerment perceptions

We suggest that individual training participation relates to the perceived empowerment of whole work units, especially through two distinct processes. First, processes subsumed under the topics of shared mental models (Mohammed and Dumville, 2001) or shared cognition (Cannon-Bowers and Salas, 2001) are likely to translate the effects of individual empowerment training into collective empowerment perceptions. As such, work-unit members make use of shared mental representations regarding work unit-related information (including tasks, working relationships, or situations) and transform individual knowledge, perceptions, or cognitions into work unit-wide characteristics. Group members who are initially exposed to new ideas, knowledge, and new

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ways of thinking during the training program can influence the cognitions of the entire work unit in a second step. Employees demonstrating enhanced confidence in solving given tasks (potency) or higher attachment to work goals by more clearly understanding their personal impact and the meaningfulness of their contribution may disseminate this new attitude or mental model and thus affect perceptions of other work unit members.

In addition to these largely cognitive processes, affective and behavioral processes exist that might be responsible for the transmission of individual training effects on group characteristics (Barsade, 2002; Walter and Bruch, 2008). Affective or behavioral contagion occurs through subconscious and conscious influence of emotion states and behavioral attitudes of another person or group (Barsade, 2002). People who work together are exposed to the affective states and work behavior of other group members, including the affective reactions they show through their effort and motivation when working. The mechanisms of contagion can be subconscious, automatic through mimicry and feedback, or more conscious through social comparison with seemingly more appropriate behaviors (Barsade, 2002). For instance, employees who come back from the training with enhanced feelings of potency, meaningfulness, or impact should also develop more positive feelings towards their work, such as an increased level of emotional attachment to and satisfaction with their tasks. Displaying positive feelings associated with empowerment can lead to the arousal of similar emotions in other group members (for a link between empowerment initiatives and emotional contagion, see Bartunek, Rousseau, Rudolph and DePalma, 2006). Moreover, the training participants will demonstrate more empowered behavior, including the use of greater job autonomy. By observing these changed affective states and work behaviors of their trained co-workers, other group members are more likely to also develop increased feelings of empowerment.

It seems decisive that many employees show the new behavior as "high density should increase the likelihood of contagion occurring" (Freedman *et al.*, 1980, p. 156). Thus, taken together, a higher number of trained employees increases the likelihood of the effects of contagion and changes in the shared mental models, transforming new individual insights and perceptions into unit-wide characteristics, leading to the following hypothesis:

> *Hypothesis: An individual training intervention will relate positively to the collective empowerment of work units by enhancing the perceived potency, meaningfulness, impact, and autonomy of employees. The more work unit members participate in the employee training program, the higher the perceived collective empowerment of the entire work unit will be.*

Method

The employee empowerment training program

The empirical research was conducted in a multinational organization running an employee training program that fits the presumptions postulated in the hypothesis. The organization's empowerment training program is a three-day workshop offered several times within a year. The workshop takes place in locations outside the company in an attempt to disassociate itself from the work environment. The three days of workshop count towards work time. The training is designed as a development program for all employees, at all hierarchical levels. Workshop participants come from all business areas and hierarchical levels of the organization. There are on average 30 to 40 participants per training. The training itself is carried out by two to three internal trainers. When the survey was distributed at time 2, the company had run about 40 workshops for its employees.

The program is based mainly on Peter Senge's book *The Fifth Discipline* (Senge, 1990), and it was developed according to *The Fifth Discipline Fieldbook* (Senge *et al.*, 1995). An overview of the program is depicted in Table 1. The program was adjusted to the conditions of the investigated company. Designed as an interactive training, the program includes different learning methods to facilitate sustainable learning among participants (for examples of learning methods, see Table 1). The main objectives of the training program are to enable people to better understand complex situations, build shared meanings, and make decisions. To achieve these objectives, participants were trained throughout the three days for instance in personal mastery, systemic thinking, engaging others, communication skills and building a shared vision (see also the learning dimensions and goals displayed in Table 1).

The elements of personal mastery—trained, for example, through exercises that contrast self- and social perceptions of crucial work attitudes and skills—can enhance participants' feeling of self-efficacy. Teaching a systemic way of thinking shows participants the importance of seeing the "big picture". With the help of practical examples, case studies, and exercises, participants experience the importance of taking a step back and thinking about a problem more holistically, trying to assess the underlying or hidden structure and challenge their accepted mental models. Further, participants learn to "engage others" by applying improved communication skills. Finally, "building a shared vision" included exercises in which employees develop their own vision and connect it to the vision of the company. Such exercises can affect the perceived impact and meaningfulness by showing how to reach a desirable future (i.e., one's vision) by working for the company. Participants' clearer personal vision can also help them to use their free space more effectively, positively contributing to perceptions of autonomy.

Throughout the training, participants learn new skills and experience an enhanced potency, meaningfulness, impact, and autonomy. When they come back to their regular work

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environment, they expose other work-unit members to new stimuli by demonstrating enhanced potency in applying their skills, attaching new meaning and sense of impact to their work, and displaying increased self-confidence, i.e., autonomy in dealing with their work. This exposure may lead to affective and behavioral contagion effects as well as to effects on the shared mental models of the work unit members with regard to their work behavior.

Insert Table 1 about here

Sample and data collection

The study participants were Swedish employees of a multinational company specializing in power and automation technologies. The study was conducted by gathering data at two different time points. Time 2 was 13 months after the first data collection at time 1. Identical data collection procedures were used at time 1 and time 2. At both times, the survey was announced via an e-mail message from the executive board member responsible for human resources. Participation was voluntary, and anonymity was guaranteed to all participants. All data were stored via a third-party administrator; the company never had access to any kind of raw data. The questionnaire was translated into Swedish using a double-blind back-translation strategy and was additionally checked by company employees fluent in Swedish and English.

The questionnaire was distributed to 7,505 employees in the Swedish company location at time 1 and to 7,224 employees at time 2. Of those questionnaires, we received 2,433 questionnaires at time 1 (response rate of 32.4%) and 2,962 at time 2 (response rate of 41.0%). Regarding demographic statistics (e.g., sex, age, tenure, hierarchical position), respondents were equally distributed at both time points (Time 1: 78.8% male employees; ages ranged from under 25 years [0.4%] to over 60 years [8.5%], with the highest percentage of workers between 41 and 45 years of age [15.1%]; the majority of respondents had worked for the organization for 5 to 10

years [19.9%]; and most participants were employees without direct reports [80.6%]. Time 2: 74.7% male employees, with the highest percentage between 41 and 45 years old [15.2 %]; the majority of participants had worked for the organization for 5 to 10 years [19.4%]; and 73.4% of the respondents were employees without direct reports).

Level of analysis

We assessed collective empowerment at the work-unit level of analysis. The work units were formed according to departments identified by the host organization as reflecting key business departments/units. The questionnaire listed the identified departments and asked participants to specify their work-unit membership. The department variable served as an appropriate grouping variable, as each work unit (a) could be perceived as a social entity, (b) consisted of members performing interdependent tasks, (c) was embedded in a larger social system, and (d) performed tasks that affected other departments (Guzzo and Dickson, 1996). We analyzed the same work units at both time points. The work-unit structure did not change during this time period. We identified 47 work units, which we included in our analysis.

Respondents who did not report their work-unit classification as well as work units in which none of the members participated in the training program were omitted from the present study. To allow for aggregation, we considered only responses from work units that yielded more than two completed surveys. After sorting out missing data at the work-unit level, the study sample used for the analysis consisted of 36 out of the 47 existing work units at both times (which resulted in a work unit level response rate of 76.6%), with a mean group size of 59 work-unit members at time 1 and 73 members at time 2. A total number of 2,127 employees at time 1 and 2,638 employees at time 2 were nested within the 36 work units.

In our research design, we applied a referent-shift composition model (Kirkman *et al.*, 2004) to measure the work-unit level construct of empowerment, asking respondents to assess the state of their work unit for each of the four empowerment dimensions. In order to establish the appropriateness of this aggregation, we calculated within-group agreement statistics (r_{wg}; James, Demaree and Wolf, 1984, 1993) as well as intra-class correlation coefficients (ICC_1 and ICC_2). We used the expected random variance assumption to compute the r_{wg} values. For the ICC_1, we also reported the significance test of the analysis of variance (ANOVA) (see, e.g., Bliese, 2000; Chen, Mathieu and Bliese, 2004). This approach is consistent with the collective empowerment literature (e.g., Kirkman and Rosen, 1999; Mathieu *et al.*, 2006). All internal consistency estimates (Cronbach's Alpha, α) were calculated for the work-unit level, as this is the level of analysis.

Measures

To measure employee training participation, respondents were asked at time 2 to indicate whether they participated in the employee training program prior to time 1, between time 1 and time 2, or not at all. For each work unit, we took the percentage of work-unit members that had participated in the employee training program between time 1 and time 2 as the independent variable to test the hypothesis. Using the percentage of training participants per work unit enabled us to treat the nominal variable of training participation as a scale measure at the work-unit level of analysis.

The four dimensions reflecting collective empowerment were assessed via questionnaire items. Unless otherwise noted, participants answered how much they agreed or disagreed with all items on a five-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). The potency dimension was measured using four items from Riggs and Knight's (1994) four-item collective efficacy belief scale (sample item: "In my work group, we are confident in our abilities to

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perform our jobs"). We deleted the scale's reverse-coded item, as it yielded unsatisfactory internal consistency results. The remaining three items showed the following results: time 1: α = .80; median r_{wg} = .78; ICC_1 = .01; $p < .05$; ICC_2 = .32 and time 2: α = .74; median r_{wg} = .76; ICC_1 = .01; $p < .001$; ICC_2 = .52. The four autonomy items were adopted from Kirkman and Rosen (1999), a sample item being: "It is up to my work group to decide how things are done" (time 1: α = .91; median r_{wg} = .70; ICC_1 = .03; $p < .001$; ICC_2 = .64 and time 2: α = .84; median r_{wg} = .67; ICC_1 = .01; $p < .01$; ICC_2 = .45). The three items for meaningfulness were taken from Spreitzer (1995) and re-formulated to assess the unit-level construct. The work-unit members were asked to state how meaningful they estimated the work of their work unit to be; sample item: "The work we do in my work group is very important to us" (time 1: α = .69; median r_{wg} = .73; ICC_1 = .01; $p = .05$; ICC_2 = .30 and time 2: α = .90; median r_{wg} = .76; ICC_1 = .01; $p < .01$; ICC_2 = .48). Finally, impact was measured using a five-item scale, with three out of the five items taken from Kirkman *et al.* (2004) (e.g., "People in my work group are clear how their work relates to the overall objectives the company") while the other two were specially developed for this study ("In my work group, people believe the company's vision is appropriate" and "People in my work group currently believe they are contributing to attain *something bigger*.") (time 1: α = .86; median r_{wg} = .77; ICC_1 = .06; $p < .001$; ICC_2 = .78 and time 2: α = .86; median r_{wg} = .78; ICC_1 = .04; $p < .001$; ICC_2 = .74).

Prior studies have confirmed the validity of the collective empowerment construct reflected by the four dimensions (Chen *et al.*, 2007; Kirkman and Rosen, 1999; Kirkman *et al.*, 2004). Yet, we additionally conducted a confirmatory factor analysis for the empowerment construct at time 1 and time 2 using structural equation modeling. Empowerment was modeled as second order factor reflected by the empowerment dimensions as first order factors. The estimation was done using maximum likelihood. The results indicated significant factor loadings

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for all dimensions and their variables, and showed good overall fit statistics (time 1: χ^2 (df) = 695.019 (86); CFI = .949; SRMR = .044, RMSEA= .058; time 2: χ^2 (df) = 752.422 (86); CFI = .954; SRMR = .041, RMSEA= .055). Thus, apart from analyzing each dimension independently, we additionally aggregated all four dimensions to one overall empowerment score (time 1: α = .89; median r_{wg} = .86; ICC_1 = .02; $p < .001$; ICC_2 = .59 and time 2: α = .89; median r_{wg} = .86; ICC_1 = .02; $p < .001$; ICC_2 = .57). All measures had good reliability estimates. Based on the significant ANOVAs as well as on the high r_{wg} values, we were confident in aggregating all constructs to the unit level of analysis.

Control variables

We controlled for work-unit size, supervisor training participation, and empowerment perceptions at time 1 when testing the relationship between training participation and collective empowerment. Work-unit size may have an effect on the dissemination of empowerment perceptions among work-unit members, as perceptions within larger units may change more slowly compared to smaller units (for the importance of controlling for work-unit size, see e.g., Hausknecht, Hiller and Vance, 2008, p. 1229).

Further, supervisor participation in the training might relate to collective empowerment perceptions within units, as managers have the power and discretion to influence the sense of potency, meaningfulness, impact, and autonomy of employees more directly and comprehensively (for the effect of leadership, see e.g., Barroso Castro, Villegas Perinan and Casillas Bueno, 2008, Hsu, 2011). Therefore, we controlled for supervisor training participation by calculating how many supervisors (per unit) participated in the training between time 1 and time 2 (in percentage compared to overall work-unit size). Values ranged from 0% for some of the smaller units (when none of the participants was a supervisor) to as high as 25%.

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Finally, entering empowerment perceptions at time 1 into the regression analysis enabled us to control for the change in empowerment over time and to eliminate distorting influences of high empowerment at time 1. We did this for all the dimensions of empowerment as well as for the overall empowerment construct.

Analysis

We used hierarchical linear regression analysis to test the relation between employee training participation and the separate dimensions of collective empowerment. We controlled for work-unit size, supervisor training participation and the dimension measures of impact, potency, meaningfulness, and autonomy at time 1. The employee training participation variable was included as the independent variable. The empowerment dimensions at time 2 were treated as the dependent variables. We repeated the same procedure for the overall collective empowerment construct.

Results

Table 2 reports the means, standard deviations, and bivariate correlations for all study variables used in the analysis.

Insert Table 2 about here

Table 3 summarizes the results of the regression analysis. Our results indicated that the percentage of supervisors involved in the training was significantly related to collective empowerment perceptions of work units. We found such significant values for all sub dimensions of empowerment (potency: $\beta = .35$, p < .05; meaningfulness: $\beta = .35$, p < .05; impact: $\beta = .42$, p <

.01; and autonomy: β = .52, p < .01), which indicates that supervisors may play an important role in transferring individual empowerment perceptions into work-unit wide perceptions.

Apart from supervisor training participation and empowerment perceptions at time 1, which related positively to empowerment perceptions at time 2, overall training participation could explain variance in collective empowerment perceptions over and above the control variables. Overall training participation had the highest effect on potency (β = .39, p < .05). Training participation also accounted for a significant amount of variance in the perception of meaningfulness (β = .32, p < .05) and impact (β = .34, p < .05) of the work unit. However, the percentage of trained work-unit members did not relate significantly to the perceived autonomy of the respective work unit (β = -.06, p = .69).

Finally, we tested the effect of the employee training program on the overall construct of collective empowerment. Again, supervisor training participation related significantly to collective empowerment perceptions (β = .54, p < .001). Over and above, the overall percentage of work-unit members who participated in the training program related significantly to collective empowerment at time 2 (β = .34, p < .01). The relation between empowerment, supervisor training and work-unit training participation is depicted in Figure 2. The figure shows the increase in collective empowerment perceptions as a function of overall training participation (continuous line) as well as of supervisor training participation (dotted line).

In sum, our findings partially supported our hypothesis (see also Table 3). While we found a significantly positive relationship of training participation with perceived potency, meaningfulness and impact as well as with collective empowerment, training did not significantly relate to the perceived autonomy of work units.

Insert Table 3 about here

Insert Figure 2 about here

Discussion

Our study contributes to the empowerment and training literature by extending the research on the antecedents of collective psychological empowerment in four ways. First, an empowerment training program was identified as an antecedent of empowerment that is likely to enhance collective empowerment without being (necessarily) embedded in a set of other human resource practices. The greater the number of employees who participated in the empowerment training program, the greater the perceived sense of empowerment in the respective work unit. For this analysis, we collected two waves of data that helped to assess the direction of influence in the relationship between training participation and empowerment. We controlled for empowerment before the training intervention to limit the influence of high motivation before training on training outcomes. Our findings suggest that training participation seems to affect empowerment rather than vice versa. Human resource management might build upon this finding and develop comparable training interventions not only to establish a supportive environment, but also to affect employees' perception of empowerment directly.

The second contribution of this study is the finding that an individual-level training intervention relates to a work unit's motivational state, which suggests training effects across levels of analysis (Kozlowski *et al.*, 2000; Tharenou *et al.*, 2007). Two distinct processes were proposed to play a decisive role in the transformation of newly gained individual empowerment into collective perceptions of empowerment: knowledge transfer through shared mental models (Mohammed and Dumville, 2001) and affective and behavioral contagion effects (Barsade, 2002). Even if we could not examine the effects of knowledge transfer and contagion directly, the

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empirical results indicated that an individual training intervention related significantly to the collective perception of empowerment at the work-unit level of analysis.

Third, training participation does not seem to affect all dimensions of collective psychological empowerment to the same extent. Whereas potency, meaningfulness, and impact were significantly related to the training experience, the relationship between the training participation and the work unit's perceived autonomy was not significant. One explanation for the non-significant relationship may be that external factors might influence the independence of designing one's own work to a great extent (Kirkman and Rosen, 1999; Spreitzer, 1996). Although the training might positively influence participants' sense of autonomy by increasing the perceived sphere of their own influence, participation in the training program cannot change some objective facets about their job (including formal job descriptions, fields of job activity, supervisor-employee relationships, etc.). Such largely centralized aspects of individual jobs correlate negatively with perceptions of autonomy (Nasurdin, Ramayah and Beng, 2006).

This conclusion is linked to our fourth contribution that relates to the role of supervisors in the training-empowerment relationship (see e.g., Barroso Castro *et al.*, 2008). As supervisors might be able to influence the sense of potency, meaningfulness, impact, or autonomy of employees more directly and comprehensively compared to employees without direct reports (e.g., through assigning special projects, providing feedback and rewards, etc.) it might be especially valuable to have them participate in the training (in order to create a certain leverage effect by changing their behavior). We found significant relations between supervisor participation in the training and all subdimensions of perceived empowerment within work units, including autonomy. These findings suggest that supervisor participation in the training might indeed contribute to training effectiveness, especially for facets like autonomy that depend more strongly on supervisors than on the individual employee. However, as overall training

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participation (reflecting all training participants from all hierarchical levels) explained additional variance in units' empowerment scores, one should not draw the misleading conclusion that training only supervisors is the best way to strengthen work units' empowerment perceptions.

Limitations and future research

In spite of several methodological strengths (e.g., data collections at time 1 and time 2), there are several limitations that should be considered when interpreting the study's findings. While collecting the data at two time points helped reduce measurement errors stemming from single source bias (Podsakoff, MacKenzie, Lee and Podsakoff, 2003) and enabled us to better address the direction of influence between the training intervention and the enhanced collective empowerment, we cannot draw a solid conclusion about causality.

First, as in all non-experimental settings, we were not able to rule out all potential influencing factors that might have had an effect on empowerment. That is, we could not control for all unobserved variables that may also affect empowerment perceptions over and above the training intervention. Since the organization in our study introduced the empowerment training simultaneously in all of its locations and to all employees, we were not able to assign employees to control and treatment groups randomly. However, we could revert to a number of important control variables such as empowerment at time 1 as well as supervisor participation in the empowerment training. Together with the comparably stable development of the company between time 1 and time 2 (no major changes in top management, company strategy, organizational structure, or the external market environment), we are rather confident that no other unmeasured factor was driving our results.

Second, although we employed a time 1/time 2-design, we cannot totally rule out a reversed order of causality between training participation and increased empowerment scores. In

other words, it might have been possible that those employees higher in empowerment might have been more willing to participate in the training. However, our data indicate that training participation is more highly correlated with post-training than with pre-training empowerment scores (see Table 2). This rather points towards a potential effect of training on increased empowerment and not vice versa.

Third, as we employed self-report surveys to collect our data, a single source bias between our independent variable (unit training participation) and our dependent variable (collective empowerment perceptions) could influence our findings. However, although being self-reported, training participation is a rather objective variable, comparable to demographic variables such as age or gender, and should therefore not be largely affected by processes leading to artifactual covariance (Podsakoff et al., 2003). Overall, we suggest that future research might strive to employ experimental methods (e.g., using randomized control and treatment groups) to further strengthen the explanatory power of our findings (Shadish, Cook and Campbell, 2002).

A further limitation of the study concerns the generalizability of the results. Although on average, 2,383 employees participated in the study at time 1 and time 2, we acknowledge a relatively small number of work-units (N = 36). Gathering data at the work-unit level rather than individual-level involves more restrictions; thus, attaining large work-unit level sample sizes is a general problem in field research (e.g., Cohen and Bailey, 1997). Moreover, participants and work units in our study came solely from one country (Sweden) and one cultural sphere. Future research could address this issue by confirming the study results using a larger unit level sample across different organizations.

Finally, the aggregation statistics for the group level constructs were in some cases below the recommended values (Bliese, 2000; James *et al.*, 1984). This might be because we examined collective empowerment at the work-unit level. These work units do not resemble the cohesive

work environment of small teams. Despite that, these units are real workgroups since employees share interrelated tasks (e.g., producing a certain product), they are led by one overall business unit manager, and all internal communication and HR activities focus on this level. For future research, we suggest replicating this study at the team level of analysis.

In addition, it would be interesting to investigate empirically the processes that transfer the effects of an individual training program into an enhanced collective empowerment. We proposed contagion processes and knowledge transfer through shared mental models to account for the transfer across levels of analysis. Yet, we did not measure these mediating effects directly. Further studies could empirically confirm these processes as relevant to the transfer of an individual training intervention to collective level outcomes. Further, there may be an additional differentiation between skill-based and motivational contagion effects that might be interesting to investigate more closely. While the skill-based effects of training may not be so easily spread among employees, the motivational effects may be more contagious. On a related point, motivational effects of an empowerment training might not only be caused by the training content, but already by the "symbolic act" of the management to offer such a training, to invest in employees' development, and to believe in the importance of empowerment for the organization. Future studies should address these questions in more detail.

Finally, investigating the role of leadership in such contagion processes would be an interesting alley for future research, as our results indicate that supervisors may occupy a more crucial role in spreading knowledge across work units and in affecting the motivation of their employees. Therefore, longitudinal studies focusing on the question how leadership behavior might add to the effects of such a training over and above the training itself are highly warranted.

Practical implications

The theoretical considerations and empirical results of this study offer several implications for organizations. First, empowerment training seems to be positively related to employees' empowerment perceptions within work units. This suggests that an empowerment-targeted training could be a worthwhile investment if we consider the positive effects of empowerment, as demonstrated by previous research findings (e.g., Chen *et al.*, 2007; Kirkman *et al.*, 2004).

Second, we suggest a training program, as a human resource instrument that systematically enhances employees' empowerment, that would be closely related to the one examined in this study, i.e., the training program should be designed as an intervention that fosters participants' self-assessment and sensitizes their perception of their own abilities and underlying attitudes. The program should also teach group communication skills, provide participants with a better notion of their personal mastery, and offer crucial information about the organization to enable participants to see the contribution of their work in relation to the organization's overall performance.

Such a comprehensive skill and motivational training program might have implications that go beyond fostering empowerment in organizations. In fact, a training such as the one examined in this study (which was based on the work of Peter Senge) might help turning companies into learning organizations in which "people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together" (Senge, 1990, p. 3).

Finally, the empirical results imply that it might not be compulsory to train all employees in order to affect the empowerment perception of the entire workforce within an organization. An effect might occur already when the trained employees return to their work units and show new attitudes toward their work, thereby affecting other, non-trained employees with whom they

work. Thus, the proposed empowerment training offers human resource management an instrument to enhance work units' empowerment in a relatively short time. Such training program is relatively easy to implement and can be handled in a timely and cost-effective manner, if needed.

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Figure 1

The influence of employee training on the dimensions of collective empowerment
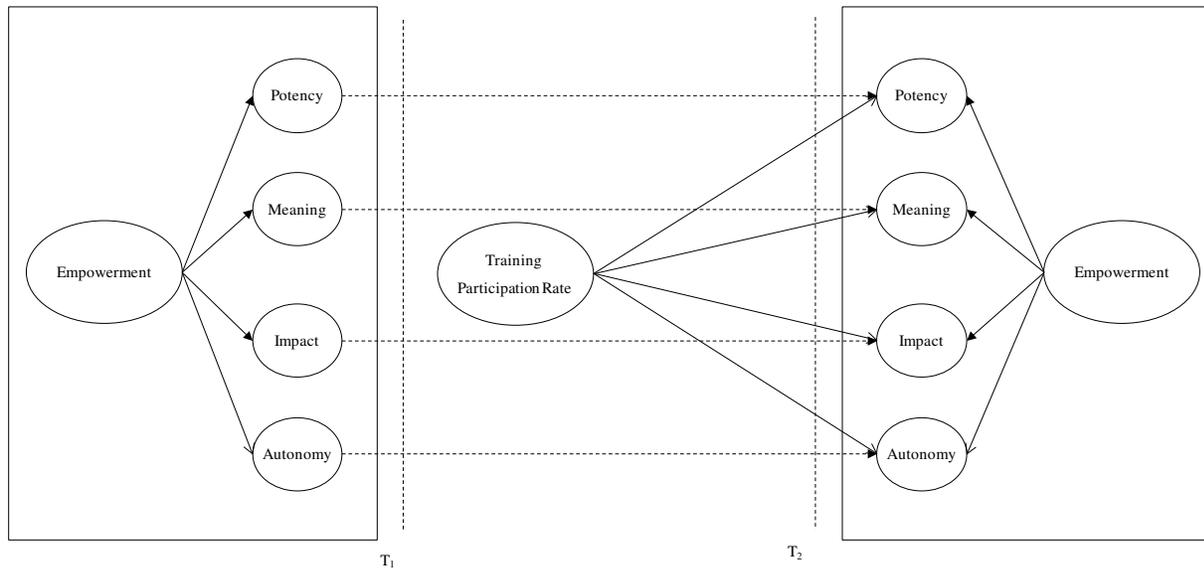
Note. T$_1$ = Time 1; T$_2$ = Time 2

Figure 2

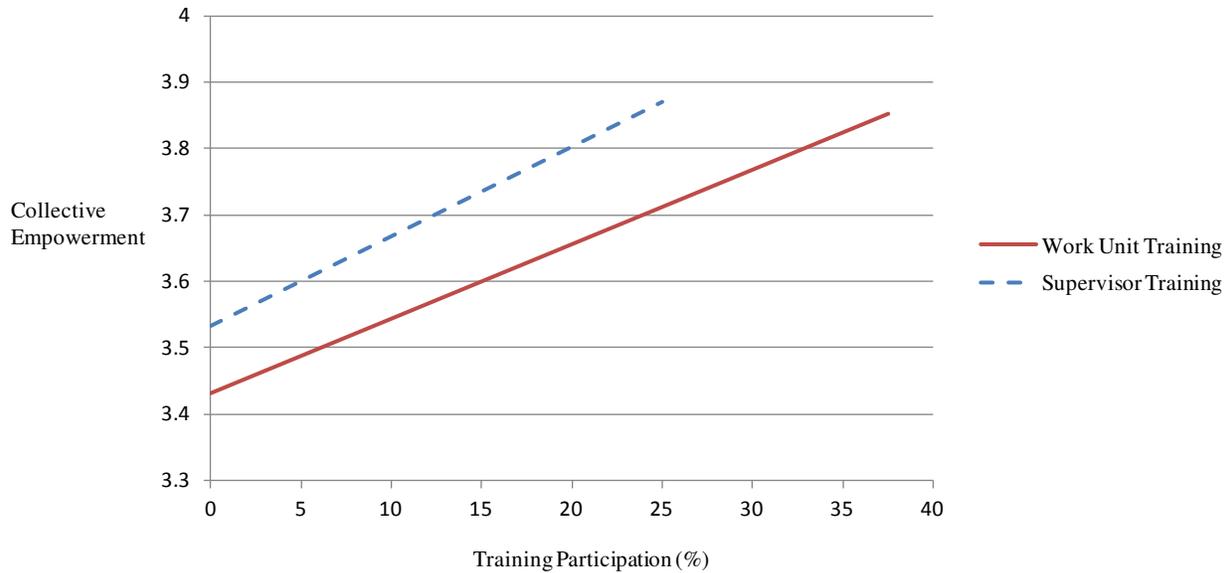**The relation between training participation and collective empowerment**

Table 1

Overview of the training program

	Day 1	**Day 2**	**Day 3**
Learning Dimensions:	Personal Mastery Thinking Systemically	Engaging Others Conversation Skills Challenging Mental Models	Building a Shared Vision Taking Action
Learning Goals:	Improve the quality and speed of key business choices, the commitment of individuals and groups, the effectiveness of collective action, the understanding of complex situations, as well as trust, openness, and productivity.		
Learning Methods:	Presentations and lectures, case studies, group exercises with changing participants, group discussions among all participants, participants' assessment of him- or herself, and participants' self-perception as compared to others' social perception.		

Table 2
Descriptive statistics and correlations

Variable	M	SD						Correlations						
			1	2	3	4	5	6	7	8	9	10	11	12
1. Potency (T$_1$)	3.80	.21												
2. Meaningfulness (T$_1$)	3.67	.22	.75***											
3. Impact (T$_1$)	3.60	.27	.45**	.71***										
4. Autonomy (T$_1$)	3.50	.27	.35*	.21	.31									
5. Empowerment (T$_1$)	3.63	.19	.74***	.81***	.85***	.65***								
6. Potency (T$_2$)	3.80	.22	.37*	.26	.45**	.09	.39*							
7. Meaningfulness (T$_2$)	3.70	.21	.24	.50**	.62***	.28	.57***	.54**						
8. Impact (T$_2$)	3.66	.27	.21	.38*	.60***	.02	.43**	.73***	.71***					
9. Autonomy (T$_2$)	3.48	.21	-.08	-.18	-.07	.43**	.08	.19	.28	.18				
10. Empowerment (T$_2$)	3.65	.19	.23	.31	.53**	.24	.47**	.79***	.82***	.90***	.53**			
11. Training Participation (T$_2$)	19.16	8.82	.04	.21	.39*	-.16	.19	.41*	.57***	.59***	.06	.55**		
12. Work-Unit Size (T$_2$)	73.28	81.29	.08	-.06	.00	-.03	-.01	.03	-.30	-.06	-.18	-.16	-.43*	
13. Supervisor Training Participation (T$_2$)	8.50	6.82	-.27	-.36*	-.11	-.04	-.21	.30	.26	.42*	.51**	.51**	.29	-.21

Note. $N = 36$ work units. *** $p < .001$; ** $p < .01$; * $p < .05$; (two-tailed). T$_1$ = Time 1; T$_2$ = Time 2.

Table 3
Hierarchical regression analysis: Effects of employee training on the dimensions of collective empowerment and the overall empowerment construct

Potency (T$_2$)	β^a	ΔR^{2b}
Work Unit Size	.24	.00
Supervisor Training Participation	.35*	.10
Potency (T$_1$)	.43**	.22**
Overall Training Participation	.39*	.11*
R^2 (adj. R^2)	.43* (.36)	

Meaningfulness (T$_2$)	β^a	ΔR^{2b}
Work Unit Size	-.06	.09
Supervisor Training Participation	.35*	.04
Meaningfulness (T$_1$)	.56***	.37***
Overall Training Participation	.32*	.07*
R^2 (adj. R^2)	.57* (.52)	

Impact (T$_2$)	β^a	ΔR^{2b}
Work Unit Size	.17	.00
Supervisor Training Participation	.42**	.18*
Impact (T$_1$)	.52***	.43***
Overall Training Participation	.34*	.07*
R^2 (adj. R^2)	.68* (.63)	

Autonomy (T$_2$)	β^a	ΔR^{2b}
Work Unit Size	-.08	.03
Supervisor Training Participation	.52**	.23**
Autonomy (T$_1$)	.44**	.20**
Overall Training Participation	-.06	.00
R^2 (adj. R^2)	.47 (.40)	

Empowerment (T$_2$)	β^a	ΔR^{2b}
Work Unit Size	.11	.03
Supervisor Training Participation	.54***	.24**
Empowerment (T$_1$)	.52***	.34***
Overall Training Participation	.34**	.08**
R^2 (adj. R^2)	.68* (.64)	

Note. N = 36 work units. ^{a} Standardized regression weights are shown. ^{b} ΔR^2 indicates the unique variance in each outcome variable beyond that explained by the other independent variables in a hierarchical regression analysis. *** p < .001; ** p < .01; * p < .05 (two-tailed). T$_1$ = Time 1; T$_2$ = Time 2.