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# Distinguishing Source of Autonomy Support in Relation to Workers' Motivation and Self-Efficacy

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**ABSTRACT.** The purpose was to investigate the relationship between autonomy support by managers and co-workers and employees' work motivation and self-efficacy in two studies. In Study 1, a sample of 343 Swedish workers completed surveys, and in Study 2, we followed up with a subsample of 98 workers one year later. As in previous studies, managers' support of autonomy was significantly positively related to workers' outcomes. However, the results of Study 1 also showed that co-worker autonomy support was related to these outcomes over and above the effects of manager support. Study 2 showed that changes in autonomy support from co-workers during one year significantly predicted motivation and self-efficacy one year later, while change in support from managers was unrelated to outcomes later. These findings provide evidence for the importance of both vertical and horizontal sources of support.

**Keywords:** co-worker support, manager support, self-efficacy, team, work motivation

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AN IMPORTANT FEATURE OF 21<sup>ST</sup> CENTURY organizations is that workers typically function as part of a team. Teamwork is related to important organizational outcomes such as increases in clients' satisfaction and care, organizational innovation, and reduction of turnover (Rafferty, Ball, & Aiken, 2001; Ross, Rink, & Furne, 2000; West & Anderson, 1996). Job satisfaction, motivation and psychological health are individual benefits that are also related to teamwork (Xyrichis & Ream, 2008). Another effect of such collaborative work structures is that it highlights the importance of co-workers in reaching personal and organizational goals while at the same time, perhaps, reducing the importance of the traditional hierarchical relationship with a manager or supervisor.

Team may be defined as a set of two or more persons who interact adaptively and dynamically toward a common goal (Salas, Dickinson, Converse, & Tannenbaum, 1992). The team-members work interdependently with each other, communicate, and coordinate their actions in order to reach their goals. The present investigation considers whether co-workers in such teams may exert a motivational influence on one another that is independent of the influence exerted by managers. Specifically, from a self-determination theory framework (Ryan & Deci, 2000), we examined whether horizontal support for autonomy, which in this case means that the support comes from the workers' co-workers, would be associated with important work outcomes. Furthermore, we examined whether this effect is comparable with associations of vertical support, which means that the support comes from above and, in this case, from workers' managers. Two important work outcomes were examined: work motivation and occupational self-efficacy.

Autonomy support describes an interpersonal style in which a manager takes the perspective of a subordinate into account, presents rationales for the decisions taken and the behaviors requested, and provides opportunities for choice and self-initiation (Baard, Deci, & Ryan, 2004). Autonomy support from managers has been related to increased trust in the organization, satisfaction, engagement, decreased stress, and acceptance of organizational change (Baard et al., 2004; Deci, Connell & Ryan, 1989; Deci et al., 2001; Gagné, Koestner, & Zuckerman, 2000). Self-determination theory (Deci & Ryan, 1985, 2000) suggests that contexts that support autonomy foster autonomous motivation and internalization of the value of doing a task (Ryan, 1995). Indeed, autonomy support from managers has been related to workers' motivation (Richer & Vallerand, 1995; Stone, Deci, & Ryan, 2009).

In self-determination theory there are distinctions made between different types of motivation (Deci & Ryan, 1985; Ryan & Deci, 2000). The most basic distinction is between intrinsic motivation (taking an action because of inherent interest or pleasure it generates) and extrinsic motivation (taking an action because of foreseeable separable consequences). Extrinsic motivation is further divided into distinct subtypes. The first subtype, external regulation, reflects motivation as a response to either extrinsic rewards or threats of punishment. Introjected

regulation, another subtype, involves the person's ego and the potential approval of others. Finally, identified regulation involves a conscious valuing of the activity and a self-endorsement of goals. Self-determination theorists suggest that underlying these types of extrinsic motivation is a continuum of degree of autonomy. While external regulation is also a completely controlled regulation, the degree of autonomy grows from introjected to identified regulation, while intrinsic motivation is completely autonomous.

Autonomous motivation at work is related to important organizational and individual outcomes. For instance, employees' with an autonomous motivation report greater work satisfaction, are more creative, have lower turnover intentions and emotional exhaustion (Grant & Berry, 2011; Otis & Pelletier, 2005; Richer, Blanchard, & Vallerand, 2002). Autonomous motivation is also associated with greater persistence in the face of difficulty, better learning, superior task performance, and more effective coping (Ryan & Deci, 2000). Thus, having autonomously motivated workers is a significant advantage for organizations or work teams and facilitating such a motivation should be of some importance.

Managers' role in the emergence and maintenance of an autonomous motivational style is well documented. According to self-determination theory, however, autonomy support from any significant relationships should, however, lead to positive outcomes (Deci & Ryan 1985, 2000). Thus, besides managers, co-workers in a team may also play an important role in fostering positive outcomes such as motivation and self-efficacy. Considering that workers usually interact more with co-workers than managers, especially in team-based organizations, and that interpersonal interactions are critical to organizational activities and achieving organizational objectives (Simon, 1976), it is surprising that no research has focused directly on the autonomy support from co-workers in a team. Some studies have found positive relations between *social* support from co-workers in a work team and objective team performance (e.g., Osca, Urien, Gonzalez-Camino, Martinez-Perez, & Martinez-Perez, 2005; Podsakoff, Ahearne, & Mackenzie, 1997). However, in these studies support was not defined in terms of autonomy but rather in terms of the extent to which co-workers showed appreciation for one's contributions to the organization and offered nonverbal approval and verbal praise. Self-determination theory would characterize this as support of competence rather than support of autonomy. Competence support involves giving a subordinate a clear and useful structure for how to carry out a job. It also involves giving relevant feedback and information, assisting in the development of appropriate work goals, and giving support that increases confidence in learning and reaching goals.

A recent study confirmed that autonomy support from colleagues predicted health professionals' work satisfaction and psychological health (Moreau & Mageau, 2012). However, it is important to note that that study did not investigate autonomy support from co-workers in a team and it was only cross-sectional, while the present article includes a longitudinal study. We propose that the support

for autonomy from co-workers in a team will be positively related to work motivation, even after controlling for the effects of managerial autonomy support and that change in autonomy support from co-workers over time will be related to work motivation. Besides assessing work motivation, we also examine workers' self-efficacy.

Occupational self-efficacy is the judgment people make regarding their capability to successfully carry out work activities, overcome obstacles, and to pursue an occupational career (Abele & Spurk, 2009; Higgins, Dobrow, & Chandler, 2008). Occupational self-efficacy has been negatively related to job stress and emotional exhaustion (Schwarzer & Hallum, 2008) and positively associated with health, job performance, salary, status and career satisfaction (Abele & Spurk, 2009; Lubbers, Loughlin, & Zweig, 2005). The main reason for this is that if individuals believe that they have the capabilities necessary to perform job duties, they are likely to exert more effort and to succeed. Those who believe that they do not have the capabilities to perform job duties will have less aspiration to do the job and not be as successful and satisfied.

Although most studies treat self-efficacy as a predictor variable, it would seem important to examine how this motivational factor changes over time based on feedback received from others. Indeed, initial self-efficacy fluctuates as a function of ability and earlier experience, and positive feedback can increase the self-efficacy beliefs (Bandura, 1997). This has been shown in numerous studies. For example, Bandura and Jourden (1991) found that giving feedback that indicates progressive mastery can improve self-efficacy beliefs, and job designs that give workers an increased control over their tasks is also positive for self-efficacy (Parker, 1998). In addition, Wang and Netemeyer (2002) showed that perceived job autonomy may positively affect self-efficacy. Individuals who perceive the job as highly autonomous feel that they can carry out tasks by themselves without much guidance, which creates an autonomy-efficacy linkage (Wang & Netemeyer, 2002). It would thus be important to investigate the links between self-efficacy and autonomy support from role-models such as managers and co-workers who are important sources of explicit efficacy information (vicarious experience) (Bandura, 1997).

### *Present Investigation*

In two studies, we sought to distinguish between autonomy support from a manager and from co-workers in a team. We assumed that those different sources may contribute separately and distinctively to the work motivation and self-efficacy of employees. Self-determination theory highlights the particular importance of autonomy support for promoting adaptive outcomes in diverse settings (Deci & Ryan, 2000). For example, autonomy support from teachers or doctors has been associated with greater motivation and higher levels of perceived competence (Deci et al., 1981; Williams et al., 2005). We expected to replicate

previous findings showing that managerial support of autonomy is associated with positive work outcomes. More originally, we hypothesized that co-workers' autonomy support would account for additional unique variance in work outcomes. This prediction was based on the fact that team-oriented structures will naturally highlight the important role of one's colleagues.

We conducted two studies: (a) 343 Swedish employees who were working full time on a permanent basis in two organizations completed questionnaires; and (b) a subsample of 98 caregivers who had participated in Study 1 was followed approximately one year later.

### Study 1

This study was designed to include both low-skilled, high-school-educated workers and high-skilled, college-graduate professionals working in Sweden. Our first goal was to validate the autonomy support scale in a confirmatory factor analysis. Our second goal was to explore if autonomy support from co-workers in a team and from managers would contribute separately and distinctively to important work outcomes. We were also interested in determining whether the relations of manager and co-worker autonomy support to work outcomes would be moderated by factors such as time spent in the team and type of work.

### Method

#### *Participants*

In this study, 343 workers (261 females and 82 males) participated. Of these, 296 (257 females and 39 males; mean age 44.73,  $SD = 10.74$ ) were Swedish healthcare workers who were working full-time on a permanent basis in a health-care providing organizations skilled jobs in the public healthcare field in a municipality (high school educated care givers), and 47 participants were engineers working full-time in a small research based firm (4 females and 39 males; mean age = 34.66;  $SD = 8.03$ ). All of them worked in teams. The health workers worked in small health teams with three to five caregivers in each team. The teams usually worked closely together and had a specified number of patients to take care of and they had worked in their teams during 5.77 ( $SD = 5.75$ ) years on average. The engineers worked in research teams that included 8 to 12 workers and they had worked in their teams during 3.74 ( $SD = 4.18$ ) years on average. Questionnaires were electronically administered to the participants by e-mails, and LimeSurvey, which is an open source PHP web application, was used to collect responses to the online surveys. Participants' overall mean age was 43.35 ( $SD = 10.97$ ) years and they had worked in their current work teams during 5.47 ( $SD = 5.62$ ) years on average.

**TABLE 1. Confirmatory Factor Loadings of the Autonomy Support Scale**

Item	Co-worker autonomy support	Manager autonomy support
My closest co-workers take my opinions seriously.	.776	
My closest co-workers encourage me to decide things on my own.	.715	
My closest co-workers allow me to make my own decisions whenever this is possible.	.742	
My manager takes my opinions seriously.		.799
My manager encourages me to decide things on my own.		.822
My manager allows me to make my own decisions whenever this is possible.		.816
Correlation between factors: $r = .59, p < .001$ .		

### Measures

*Support for autonomy.* This scale consisted of eight items. Four items referred to support from managers and were developed to measure how the participants perceived that their managers are supportive of their autonomy in their daily work situations. In order to measure how support from co-workers was perceived, the same four items were used, but the word “manager” had been replaced by the words “closest co-workers.” These items were adapted from the Autonomy Support Scale developed by Powers, Koestner, and Gorin (2008) and a survey assessing autonomy support in a study by Ratelle and colleagues (2005). The employees were informed that the questions concerned their perceptions of interactions with their closest colleagues in their team. On a 5-point scale, ranging from 1 (*very true*) to 5 (*not at all true*) the employees indicated whether they agreed with items such as “My manager/closest co-workers encourage(s) me to decide things for myself.” Cronbach alphas for all measures are presented in Table 1.

*The Work Motivation Scale (MAWS; Gagné et al., 2010).* The short version of the MAWS consists of 12 items rated on a 5-point scale, ranging from 1 (*very true*) to 5 (*not at all true*). The scale is composed of four subscales measuring the four types of motivation. Two of the subscales, extrinsic regulation and introjected regulation, refer to externally regulated motivation ( $\alpha = .66$ ) and the other two scales, identified regulation and intrinsic motivation, refer to autonomously

regulated motivation ( $\alpha = .81$ ). See Gagné et al. (2010) for a complete description of this measure. In this study, the two sub scales for intrinsic motivation and identified regulation were used to calculate work motivation. Researchers have questioned the use of an index based on motivation scales that assess perceived locus of causality because the autonomous items and controlled items are not always inversely related (Judge et al., 2005). Indeed, across a series of three studies and a meta-analysis, Koestner and colleagues (2008) argued that researchers should focus on autonomous motivation (intrinsic motivation and identified regulation) exclusively because this measure has proved to be more valid in predicting positive outcomes. Controlled motivation was shown to be unrelated to outcomes.

An example item for intrinsic motivation is “Because I enjoy this work very much” and an example item for identified regulation is “Because this job fits my personal values.”

*The Occupational Self-Efficacy Scale* (BSW; Abele, Stief, & Andra, 2000). The 5-item, 1-factorial BSW scale measures expectations of occupational self-efficacy on a 5-point scale, ranging from 1 (*very true*) to 5 (*not at all true*). This scale was developed in Germany and showed good convergent and discriminant validity, and the validation with regard to external criteria was satisfactory. It has been used with satisfactory reliability in later studies (e.g., Abele & Spurk, 2009). An example item is “I feel prepared for most of the demands in my job.”

All scales were translated from English into Swedish. The translation was independently carried out by two Swedish-speakers. Discrepancies were arbitrated by two consultants, one who has a Master degree in English, and one who is an English speaking professor in Psychology from Canada, and solutions were reached by consensus.

## Results

Items were reverse scored when necessary. Missing values were replaced with the EM algorithm. Among participants who received any single item, missing data did not exceed 2.6% and overall missing values in the whole sample were 1.6%.

### *Confirmatory Factor Analysis*

The eight autonomy support items were subjected to a confirmatory factor analysis using EQS (Bentler, 1995). Investigation of Mardia's (1970) coefficient suggested a significant deviation from multivariate normality, normalized estimate 26.08. We therefore relied on robust statistical methods. The first analysis that included all eight items had two items with low loadings; “My closest co-workers insist that I do things their way” ( $r$ ) and “My manager insists that I do things their



**TABLE 2. Cronbach Alphas, Means, Standard Deviations, and Correlations Among the Measures Autonomy Support, Occupational Self-Efficacy, and Work Motivation**

	$\alpha$	$M (SD)$	1	2	3	4
1. Manager autonomy support	.85	3.73 (0.94)	–			
2. Co-worker autonomy support	.78	3.86 (0.83)	.59**	–		
3. Occupational self-efficacy	.85	4.06 (0.60)	.36**	.30**	–	
4. Work motivation	.81	3.65 (0.71)	.34**	.46**	.30**	–

way" ( $r$ ). Thus, these two items were removed from further analyses. The second analysis included the remaining six items. Although the chi-square goodness-of-fit test (Yuan & Bentler, 1998) was significant, Satorra-Bentler scaled  $\chi^2(8, N = 343) = 28.3, p < .001$ , other goodness-of-fit indices revealed good to acceptable model fit,  $\chi^2/df = 3.5$ , CFI = .97, RMSEA = .08. In addition, the two subscales loaded significantly. Table 1 shows the factor loadings for all items. It can be seen that the co-worker autonomy support items loaded on the first factor, whereas the manager autonomy support items loaded on the second factor. The two factors correlated significantly ( $r = .59$ ).

Descriptive results are presented in Table 2. It can be seen that workers perceived greater support for autonomy from their co-workers than from their managers; in both cases, the difference is significant ( $p < .01$ ). In addition, it can be seen that workers rated their beliefs in their capabilities (self-efficacy) quite high. Analyses of variance were used to examine differences in variables between the two types of professions. Two significant differences were obtained:  $F(335) = 14.35$  for manager autonomy support and  $F(335) = 17.62$  for co-worker autonomy support. The means were as follows: manager autonomy support, health care workers'  $M = 3.67 (SD = 0.95)$ , engineers'  $M = 4.20 (SD = 0.67)$ ; co-worker autonomy support, health care workers'  $M = 3.78 (SD = 0.84)$ , engineers'  $M = 4.32 (SD = 0.57)$ . Analyses of variance also showed that the males perceived both the manager autonomy support,  $F(335) = 5.43$  (males'  $M = 3.94 (SD = 0.79)$ ; females'  $M = 3.67 (SD = 0.97)$ ) and the co-worker autonomy support as significantly higher than the females,  $F(335) = 5.74$  (males'  $M = 4.05 (SD = 0.73)$ ; females'  $M = 3.80 (SD = 0.85)$ ). No other differences were found.

Pearson's correlations between the main variables in the study are also presented in Table 2. Correlations among the two work outcomes were moderately significant at .30. The correlation between the sources of autonomy support and the two outcomes were moderately high, ranging from .27 to .46 (.30 to .46).

**TABLE 3. Standardized Regression Coefficients and *t*-Tests for Work Motivation and Occupational Self-Efficacy, and Autonomy Support**

	Occupational self-efficacy		Work motivation	
	$\beta$	<i>t</i> -test	$\beta$	<i>t</i> -test
Time in team	.07	1.20	-.01	-0.20
Gender	.01	0.07	-.06	-0.84
Profession	-.08	-1.12	-.07	-0.96
Manager autonomy support	.14*	2.25	.41***	6.47
Co-worker autonomy support	.31***	4.87	.15*	2.40

\*\*\*  $p < .001$ ;\*  $p < .05$ *Regressions With Measures of Autonomy Support (With the 6-Item Factor Model)*

Two separate hierarchical multiple regressions were performed with the dependent variables of work motivation and occupational self-efficacy. The first set of predictors in each regression was the time the co-workers had been working in the team, gender, which was represented by dummy variables, indicating whether the participants were female or male, and type of profession (also represented by dummy variables indicating that participants were either health care or professional). Manager and co-worker autonomy support were entered as a second set. Table 3. presents the results. In the regression of work motivation, the predictors accounted for a multiple  $R$  of .51,  $R^2 = .26$ ,  $F(5, 338) = 22.88$ ,  $p < .001$ . Time in the team, profession and gender were not significantly related to work motivation. As hypothesized, *both* manager ( $\beta = .41$ ) and co-worker ( $\beta = .15$ ) autonomy support were significantly positively associated with work motivation.

The regression for occupational self-efficacy was also significant, multiple  $R = .42$ ,  $R^2 = .17$ ,  $F(5, 338) = 13.59$ ,  $p < .001$ . Self-efficacy was not related to any of the demographic variables. As hypothesized, *both* manager ( $\beta = .31$ ) and co-worker ( $\beta = .14$ ) autonomy support were significantly positively related to self-efficacy.

In summary, Table 3 shows the standardized regression effects for each of the predictor variables at the point they were entered in the regression equation. It can be seen that both sources of autonomy support were significantly positively related to work motivation and occupational self-efficacy.

## Study 2

The results reported in Study 1 provide initial support for the distinction between autonomy support from a manager and from co-workers, as they confirm that co-workers play an important and distinctive role in work settings, apart from manager support for autonomy. Our next study aimed to investigate whether the relation between co-worker autonomy support would have an impact on work motivation and occupational self-efficacy 1 year later. In particular, we wanted to determine whether changing levels of autonomy support over the year would covary significantly with changes in motivation and self-efficacy, and whether the same pattern would hold for both sources of autonomy support.

## Method

### *Participants*

A subsample of caregivers who had participated in the first data collection was followed approximately one year later. In the first study, 154 full-time caregivers indicated that they were interested in participating in a follow-up study and were sent questionnaires electronically by e-mails (Qualtrics was used to collect responses to the online surveys) one year later. Of these, 98 (88 females and 10 males) responded to the questionnaire for a response rate of 64%. Mean age of caregivers at Time 2 was 48.4 and they had been working in their teams for 7.6 years on average. Participants were sent gift certificate to the equivalent of 7 Canadian dollars at a popular bookstore after having completed the questionnaire.

### *Measures*

The same scales that were administered in study 1 were used. *Support for autonomy* consisted of 6 items; 3 items measured perceived support from co-workers and 3 items referred to support from the manager; *Work motivation* (MAWS, 12 items) where the two sub scales for intrinsic motivation and identified motivation were used to calculate work motivation; and *occupational self-efficacy* (5 items).

## Results

The mean values and standard deviations of the variables at Time 1 and Time 2 were examined. There were no significant differences between the Time 1 values and Time 2 values, although a decrease in occupational self-efficacy approached significance,  $p = .052$ . There was no mean difference between autonomy support

from manager and from co-worker at Time 2 compared to Time 1. Although the group mean for autonomy support, motivation and self-efficacy measures were unchanged, it remains to be seen whether changes for particular individuals in the type of autonomy support received were associated with increases or decreases in motivation and self-efficacy.

### *Regression Analyses*

To examine the relation between changes in autonomy support from co-workers and manager and the three important work outcomes over time, a two hierarchical linear regression analyses were conducted with work motivation and occupational self-efficacy as the dependent variables. Participants' time on the team was entered together with the outcome variable at Time 1 as a first set of predictors. Time 1 levels of autonomy support from co-workers and manager were entered second. Time 2 levels of autonomy support from co-workers and manager were entered third. These regressions are designed to test whether changes in autonomy support are associated with changes in levels of motivation and self-efficacy over 1 year.

The regression of work motivation yielded a significant multiple  $R$  of .30,  $F(6, 83) = 5.86, p < .001$ . Work motivation at Time 2, when controlling for work motivation at Time 1, was significantly positively related to manager autonomy support at Time 1,  $\beta = .33, t(85) = 2.94, p < .01$ , while co-worker autonomy support at Time 1 was unrelated to work motivation at Time 2. More interestingly, work motivation at Time 2, when controlling for work motivation at Time 1, was significantly positively related to change in perceived autonomy support for autonomy from co-workers over the year,  $\beta = .27, t(83) = 2.25, p < .05$ . Change in perceived autonomy support from manager was not related to work motivation at Time 2 ( $\beta = -.05$ ). In other words, workers whose level of support from colleagues increased over the year were more likely to report gains in work motivation. Workers whose levels of support from colleagues decreased over the year were more likely to report reductions in their levels of work motivation over the year.

The regression of occupational self-efficacy yielded a significant multiple  $R$  of .30,  $F(6, 82) = 5.93, p < .001$ . Self-efficacy at Time 2, when controlling for self-efficacy at Time 1, was not related to autonomy support at Time 1. Self-efficacy at Time 2 was, however, significantly positively related to change in perceived autonomy support from co-workers over the year,  $\beta = .24, t(82) = 2.13, p < .05$ . Change in perceived autonomy support from manager was not related to self-efficacy at Time 2 ( $\beta = .07$ ). In other words, workers whose level of support from colleagues increased over the year were more likely to report gains in their levels of self-efficacy. Workers whose levels of support from colleagues decreased over the year were more likely to report reductions in their levels of self-efficacy over the year.

## General Discussion

Today, many organizations recognize the benefits of teamwork, such as higher performance, reduced errors, and high-reliability (Baker, Day, & Salas, 2006; Wilson, Burke, Priest & Salas, 2005). Not surprisingly, organizations tend to capitalize on teams to accomplish most of the work tasks (Salas, Burke, & Cannon-Bowers, 2000), anticipating that there will be process gains in teams that will not derive from individual members alone. This highlights how much team members are dependent on one another and the importance of co-workers in reaching goals. However, teams might also facilitate positive outcomes for their members, such as enhanced motivation and self-efficacy. Research has shown that support for autonomy is important for various work outcomes, but little research has focused on co-worker support for autonomy. Thus, this study explored whether co-workers would exert an influence on one another that would be independent of the influence exerted by managers, as reflected in important work outcomes such as work motivation and occupational self-efficacy. In order to do this, we first identified autonomy support items, which were confirmed in a two-factor structure in a sample of engineers and caregivers working in teams. Specifically, confirmatory factor analyses identified a factor for manager autonomy support and distinct factor for co-worker support.

We found that employees perceived greater support for autonomy from co-workers in than from managers. In Study 1, regression results showed that *both* horizontal and vertical sources of autonomy support were significantly positively related to motivation and self-efficacy, but the strength of these relations varied somewhat across the work outcomes. The results confirm that co-workers play an important and distinctive role in work settings, apart from manager support for autonomy. Perceptions of managers' autonomy support were somewhat more strongly related to work motivation than was co-worker autonomy support. This suggests that workers' autonomous motivation and internalization of work-related norms and guidelines may primarily depend on the behaviors and attitudes of their supervisors rather than co-workers. By contrast, perceptions of autonomy support from co-workers were related to self-efficacy somewhat more strongly than was support from managers. This result suggests that the two sources of autonomy support may play smaller or larger roles for different work outcomes. The strength of the relationship between co-worker autonomy support and occupational self-efficacy may reflect that when organizations place a priority on working in teams, feeling that one's colleagues support one's choices and initiative allows workers to develop a sense of mastery and competence. Another way to understand this finding is that being part of a team entails recognizing other members' contribution to the team performance and tasks (Xyrichis & Ream, 2008), thus pointing to the importance of team members and co-workers in receiving performance feedback, one condition necessary for self-efficacy. Working in a team also allows for much vicarious learning (observations of co-workers' task completion), and co-workers

are in a position of social persuasion, all necessary conditions to increase occupational self-efficacy. To receive autonomy support from co-workers may increase perceptions of the job as highly autonomous, which makes them feel that they can carry out tasks by themselves without much guidance, which creates an autonomy-efficacy linkage (Wang & Netemeyer, 2002). Thus, the social environment of a team is favorable to the emergence and maintenance of workers' occupational self-efficacy.

In Study 2, change in autonomy support from co-workers over 1 year was significantly related to changes in both important work outcomes. By contrast, change in autonomy support from managers was not related to change in work outcomes over time. Workers whose level of support from colleagues increased over the year were more likely to report gains in their levels of self-efficacy and motivation. Workers whose levels of support from colleagues decreased over the year were more likely to report reductions in their levels of self-efficacy and intrinsic motivation over the year. This suggests that, over time, co-worker support for autonomy may be more important than manager support for autonomy.

In Study 1 we obtained a fairly strong correlation between reports of manager and co-worker support of autonomy, suggesting that these sources of support overlap about 25%. Although our other results pointed to the fact that these two sources of support are not redundant, it would be interesting to examine the relation of the two kinds of support over time and across diverse types of organizations. It seems likely that a manager's level of autonomy support may set the tone and serve as a model for how co-workers support one another's autonomy. Other studies actually indicate that support style may be transmitted from manager to subordinates. Previous research suggests that subordinates may imitate their managers (Bass, Waldman, Avolio, & Bebb, 1987; Choi & Mai-Dalton, 1999; Mayer et al., 2009). Still, it is possible that causal arrow may sometimes go in the other direction, where a manager will be influenced by the patterning of autonomy support that he or she observes among his subordinates. What would be interesting is to use prospective, quasi-experimental designs to see, for example, how co-workers' level of autonomy support will be influenced by the arrival of a new manager who has a discrepant style.

The present investigation focused on the relation of autonomy support to work outcomes in organizations that emphasize teamwork. It should be acknowledged that Self Determination theory also highlights the importance of competence support (providing guidelines about how best to approach tasks and feedback regarding one's efforts). We decided to focus on autonomy support because the vast majority of research has examined this concept, but in the future it would be important to distinguish support of autonomy from support of competence, and to do this for both managers and co-workers. Future research should also examine the importance of horizontal and vertical forms of support in organizations that vary in how much they emphasize teamwork. Finally, future research should adopt experimental methods to confirm the causal relations between the receipt

of co-worker autonomy support and positive outcomes, including more objective performance-based outcomes.

In conclusion, our findings provide evidence for the importance of both vertical and horizontal sources of support. Study 1 showed that both sources are important. Finally, in Study 2, the only significant effect over time was the perception of autonomy support from co-workers, where changes in autonomy support from co-workers were positively related to all of the three measured work outcomes, whereas manager support for autonomy was not.

To distinguish between co-worker and manager support for autonomy may have implications for organizational development, as it implies that organizations should not only train managers how to support the autonomy of their subordinates, but they should also encourage and provide guidance for how workers can support the autonomy of their colleagues. It seems likely that many organizations do not recognize, let alone nurture and promote, horizontal motivational forces such as the level of autonomy support displayed among workers on a team. We hope that our findings may inspire researchers and organizations to develop and optimize successful work teams because increased support for autonomy from co-workers may result in improved group processes and performances in work teams.

#### AUTHOR NOTES

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