



Effects of team and organizational commitment – A longitudinal study

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ABSTRACT

Retention management, i.e., keeping qualified employees, is a top priority for contemporary organizations. Commitment, and especially team commitment, can be the key to mastering this challenge. There is a lack of longitudinal research concerning the development and the direction of the effects of team commitment over time. In a longitudinal field-study design with three points of measurement, a total of 360 employees in 52 semi-autonomous industrial teams were surveyed over a period of three years. On the one hand, organizational commitment showed stronger effects on organization-related criteria (job satisfaction and intention to leave). These effects were consistent over the three points of measurement. Team commitment, on the other hand, affected team-related criteria (team performance and altruism). Longitudinal analyses confirmed the effects of organizational commitment on job satisfaction and intention to leave, and of team commitment on team performance and altruism. Moreover, these effects increased over time. Theoretical and practical implications of these findings are discussed.

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1. Theoretical background

Keeping employees committed to the organization is a top priority for many contemporary organizations (Hausknecht, Rodda, & Howard, 2009; Hunziger & Biele, 2002; Reiche, 2008). Especially in times of crises and job cuts, committing top performers to the organization becomes a challenge (Hunziger & Biele, 2002). Organizations which fail to accomplish this will have reduced resources for the capability of competing in the future (Rappaport, Bancroft, & Okum, 2003). Top performers are not limited to higher management, but can be found at all levels of an organization. Organizational commitment is one of the main reasons for these employees to stay (Hausknecht et al., 2009). However, in large organizations or after mergers or acquisitions, employees' commitment to the organization as a whole may be questionable (Riketta & Van Dick, 2005; Van Dick, 2004; Van Dick & Riketta, 2006). In these cases, team commitment can be a key to retention management (cf. Hausknecht et al., 2009).

While organizational commitment has been subject to extensive research, team commitment has rarely been investigated. There is a particular lack of research on longitudinal effects of team commitment (Riketta & Van Dick, 2005).

Individuals identify with social groups that are familiar and similar to them (Van Knippenberg & Van Schie, 2000). Team members spend most of their organizational lives in the context of their team, which leads to higher familiarity and cohesion within rather than between teams (Moreland & Levine, 2001). Moreover, teams have a stronger direct influence on their members than does the organization (Anderson & Thomas, 1996). This makes teams be more salient in employees' everyday lives than the organization as a whole (Riketta & Van Dick, 2005). Research has shown that employees are more committed to their team than to the organization (Riketta & Van Dick, 2005). Organizational commitment affects relevant outcomes, e.g., employees' turnover intentions, organizational citizenship behavior (OCB), and job satisfaction (Mathieu & Zajac,

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1990; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Some studies hint at a link between organizational commitment and performance; however, several meta-analyses have shown that this link is rather weak (Cohen, 1991; Mathieu & Zajac, 1990; Randall, 1990; Riketta, 2002). A recent meta-analysis shows relationships between team commitment and team satisfaction, organizational citizenship behavior toward colleagues, and team climate (Riketta & Van Dick, 2005). However, some questions remain. Does team commitment contribute to explaining changes in relevant organizational variables such as performance? How strong are the effects of team commitment in comparison with organizational commitment?

1.1. Team commitment

Organizational commitment has been conceptualized in terms of the strength of an employee's involvement in and identification with an organization (cf. Mowday, Porter, & Steers, 1982). Following the approach of Mowday et al. (1982), we define team commitment in terms of the strength of team members' involvement and identification with their team (cf. Bishop & Scott, 2000).

Meyer and Allen (1991) proposed a three-component model, which distinguishes affective, continuous, and normative commitment. An employee will remain with an organization because he or she wants to (affective commitment), has to (continuous commitment), or feels compelled to do so (normative commitment). There is substantial empirical support for this distinction (e.g., Bentein, Stinglhamber, & Vandenberghe, 2002; Schmidt, Hollmann, & Sodenkamp, 1998; Vandenberghe, Stinglhamber, Bentein, & Delhaise, 2001). Moreover, affective organizational commitment shows the most pronounced effects on outcomes relevant to this study, such as performance, OCB, and turnover intentions (Felfe & Six, 2005; Meyer et al., 2002; Tett & Meyer, 1993). Therefore, in our study, we focus on the affective component of organizational and team commitment.

According to the attitudinal approach, commitment is a positive feeling toward the organization which depends on what employees experience on the job and how they perceive the organization (Mowday et al., 1982). Affective and continuous organizational commitment can be explained by this notion (Allen & Meyer, 1990). We expect team commitment to develop in a similar manner. Employees who work in a team will gain positive experiences within their team, will identify with goals and values of their team, and will want to remain in the team in order to contribute to team goals (cf. Mowday, Steers, & Porter, 1979). This development is often accompanied by an exchange relationship in the context of which a member receives something from the team (e.g., getting assistance, trading shifts) and in turn commits him- or herself to the group (cf. Mowday et al., 1979).

The present study of semi-autonomous industrial teams is aimed at identifying the effects of organizational and team commitment on performance and other organizational and team outcomes in a longitudinal design.

1.2. Effects of commitment

It could be argued that the connection between commitment and outcomes, such as performance, is weak (Cohen, 1991; Mathieu & Zajac, 1990; Randall, 1990; Riketta, 2002), because the assessment of attitudes such as organizational commitment and behavior (e.g., OCB) is too general and does not refer to specific foci (Riketta & Van Dick, 2005). Organizational commitment is often measured as a predictor at the organizational level, while team performance as a criterion is measured at the team-level. Fishbein and Ajzen (1975) first established the importance of a similar focus level. According to their "theory of reasoned action", a behavior will be predicted best by an attitude when both refer to the same "action" in terms of context, timing, and object. For the present study, it may be inferred that team-related behavior (e.g., altruism toward colleagues) should be predicted better by team-related attitudes (e.g., team commitment) than by organization-related attitudes (e.g., organizational commitment; cf. Lavelle et al., 2009; Riketta & Van Dick, 2005).

To this date, longitudinal studies of different commitment foci are rare however (cf. Ellemers, De Gilder, & Van den Heuvel, 1998; Meyer et al., 2002; Riketta & Van Dick, 2005). Among these very few longitudinal studies, most have examined a maximum period of twelve months (e.g., Bateman & Strasser, 1984; Koch & Steers, 1978; Vandenberg & Lance, 1992; Vandenberghe, Bentein, & Stinglhamber, 2004). The question of whether the effects of commitment persist over several measuring points and longer periods of time remains unanswered. To address the lack of longitudinal research, the present study investigates differences in the outcomes of organizational and team commitment over time. A field-study design with three points of measurement over three years can yield hints at the direction of the effects.

Overall job satisfaction has been described as a correlate (Mathieu & Zajac, 1990), an antecedent (Bluedorn, 1982; Koch & Steers, 1978), or a consequence of affective organizational commitment (Bateman & Strasser, 1984; Tett & Meyer, 1993). Longitudinal studies have found support for both directions (e.g., Farkas & Tetrick, 1989; Vandenberg & Lance, 1992). In accordance with Bateman and Strasser (1984), we assume that overall job satisfaction is a consequence of affective organizational commitment. Employees can feel committed to their organization before they develop attitudes such as job satisfaction. Some studies suggest that commitment develops even before an employee enters a company (O'Reilly & Caldwell, 1981), or at a very early stage in a new job position (Porter, Crampon, & Smith, 1976). In a rationalization process, organizational commitment in turn causes positive attitudes toward the job (Bem, 1967; Salancik & Pfeffer, 1978).

Turnover intentions, in-role behavior, and extra-role behavior are viewed as consequences of commitment in recent research. However, there is a lack of longitudinal studies which could confirm this direction of the established effects (cf. Mathieu & Zajac, 1990; Meyer et al., 2002). Similarly, it is not clear how the relationships between commitment and its possible

outcomes hold up across both shorter and longer time frames. We aim to answer to this lack in our study by means of a longitudinal design. Results from previous (cross-sectional) studies support the theoretical assumption that organizational commitment has a stronger effect on organization-related criteria, whereas team commitment impacts more on team-related criteria.

Concerning organization-related criteria, recent research shows that affective organizational commitment tends to be more closely related to overall job satisfaction (Riketta & Van Dick, 2005) and turnover intentions (Riketta & Van Dick, 2005; Vandenberghe et al., 2004) than does affective team commitment. For our three-year design, we presume:

H1a: Affective organizational commitment at t1 has a stronger positive effect on overall job satisfaction at t2 than affective team commitment at t1.

H1b: Affective organizational commitment at t1 has a stronger negative effect on turnover intentions at t2 than affective team commitment at t1.

Moreover, we aim to examine the effects of team and organizational commitment over both shorter and longer periods of time. Thus, we additionally consider the t1 to t3 time frame to see whether the effects are stable over time.

H2a: Affective organizational commitment at t1 has a stronger effect on overall job satisfaction at t3 than affective team commitment at t1.

H2b: Affective organizational commitment at t1 has a stronger negative effect on turnover intentions at t3 than affective team commitment at t1.

In previous studies, the relationship between affective organizational commitment and performance has been reported to be rather weak (cf. Mathieu & Zajac, 1990; Meyer et al., 2002; Randall, 1990; Riketta, 2002). Furthermore, Vandenberghe et al. (2004) found no link between affective team commitment and team performance in terms of in-role behavior. Yet, affective team commitment influences extra-role behavior (OCB) toward co-workers (Lavelle et al., 2009; Riketta & Van Dick, 2005). Arguably, team performance is especially salient in self-directed work teams due to the team-based salary bonus. We thus assume that:

H3a: Affective team commitment at t1 is a stronger predictor of in-role behavior (team performance) at t2 than is affective organizational commitment.

H3b: Affective team commitment at t1 is a stronger predictor of extra-role behavior (OCB/altruism) at t2 than is affective organizational commitment.

Again, we additionally examine the t1 to t3 time period to investigate the stability of our effects over time. We presume:

H4a: Affective team commitment at t1 is a stronger predictor of in-role behavior (team performance) at t3 than is affective organizational commitment.

H4b: Affective team commitment at t1 is a stronger predictor of extra-role behavior (OCB/altruism) at t3 than is affective organizational commitment.

2. Method

A longitudinal field-study design with three points of measurement (t1, t2, and t3) over a period of three years was used to find hints concerning the direction of the effects. Moreover, the participating employees had to work in teams, so that an investigation of the presumed differences between organizational and team commitment would be possible.

2.1. Sample and design

Two medium-sized companies from the automotive supply and high-voltage technology industries in Southern Germany participated in this study. A total of 360 employees from the production and assembly lines of these companies, working in 52 semi-autonomous teams, were surveyed over a period of three years ($N = 221$ at t1 and t2; $N = 168$ at t3). The number of teams was reduced to 47 at t3 because some of them were disintegrated for reorganizational reasons. Team size varied between 4 and 27 employees. Participation in the survey was voluntary. The participants were informed that they were part of a research project. The anonymity of their data was warranted. The questionnaires were filled out at the production site at t1 through t3 and subsequently collected by a research associate.

Due to the longitudinal approach, the following sample description refers to the intersection of t1 and t2 and the intersection of t2 and t3, respectively. The majority of the participants were male (89.1% for t1/t2; 88.1% for t2/t3), which represents the gender distribution in the production sector. The average age was 35.8 years ($SD = 10.4$) at t1/t2 and 35.9 years ($SD = 10.2$) at t2/t3. Most of the participants stated that they had been working for their company for 5 years or more

Table 1Means, standard deviations, reliability values^a, and intercorrelations^b for organizational commitment and team commitment and the respective outcomes at t1, t2 and t3.

	Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	OC (t1)	4.54	0.82	(.89)																	
2	OC (t2)	4.47	0.92	.52**	(.92)																
3	OC (t3)	4.41	0.88	.59**	.56**	(.93)															
4	TC (t1)	4.24	0.93	.50**	.20**	.22**	(.92)														
5	TC (t2)	4.17	0.95	.29**	.55**	.20**	.56**	(.93)													
6	TC (t3)	4.24	0.80	.34**	.21**	.43**	.60**	.49**	(.92)												
7	JS (t1)	4.39	0.78	.62**	.30**	.23**	.48**	.32**	.23**	(.81)											
8	JS (t2)	4.36	0.80	.49**	.62**	.43**	.29**	.48**	.22**	.53**	(.85)										
9	JS (t3)	4.37	0.68	.46**	.44**	.69**	.33**	.25**	.42**	.34**	.50**	(.78)									
10	Turn (t1)	2.04	0.79	-.45**	-.25**	-.26**	-.23**	-.16*	-.04	-.38**	-.30**	-.27**	(.58)								
11	Turn (t2)	1.95	0.82	-.49**	-.43**	-.31**	-.23**	-.25**	-.11	-.42**	-.52**	-.31**	.57**	(.72)							
12	Turn (t3)	2.01	0.80	-.32**	-.37**	-.49**	-.12	-.06	-.16**	-.16**	-.34**	-.40**	.36**	.62**	(.74)						
13	TP (t1)	5.55	0.89	.35**	.09	.11	.21**	.08	.14	.33**	.20**	.16*	-.22**	-.21**	-.02	(.81)					
14	TP (t2)	5.60	0.87	.10	.33**	.20**	.19**	.45**	.13	.08	.33**	.20**	.04	-.17**	-.17*	.23**	(.82)				
15	TP (t3)	5.57	0.89	.22**	.20**	.28**	.34**	.24**	.37**	.14	.17*	.15**	-.04	-.04	-.12*	.28**	.42**	(.84)			
16	Alt (t1)	5.47	0.87	.40**	.11	.09	.50**	.29**	.35**	.30**	.11	.12	-.10	-.17**	-.01	.29**	.23**	.15	(.81)		
17	Alt (t2)	5.42	0.90	.17**	.43**	.16*	.20**	.48**	.22**	.24**	.34**	.16*	.04	-.17**	-.12	.09	.48**	.22**	.41**	(.86)	
18	Alt (t3)	5.35	0.96	.34**	.31**	.40**	.40**	.29**	.54**	.30**	.28**	.34**	-.07	-.20**	-.25**	.26**	.35**	.51**	.42**	.50**	(.88)

Note. OC, organizational commitment; TC, team commitment; JS, job satisfaction; Turn, turnover intentions; TP, team performance; Alt, altruism.

^a Values for Cronbach's Alpha are presented diagonally in parentheses.

^b Pearson's correlations.

* $p < .05$.

** $p < .01$ (two-sided).

($M = 11.0$; $SD = 8.8$ years at t1/t2; $M = 11.1$, $SD = 8.4$ years at t2/t3). Concerning professional education, 83.7% at t1/t2 and 83.3% at t2/t3 had completed an apprenticeship; 6.8% at t1/t2 and 6.0% at t2/t3 had no professional training; 6.4% at t1/t2 and 6.0% at t2/t3 had a college or university education; and 3.2% at t1/t2 and 2.4% at t2/t3 did not answer this item.

2.2. Measures

All variables used in the analyses were measured with individual-level questionnaires at t1, t2, and t3. To assess affective organizational commitment (OC), we used a short German version of the Organizational Commitment Questionnaire (Porter & Smith, 1970) by Maier and Woschée (2002). A sample item is “I am willing to contribute more than necessary to the success of [company]”. Affective team commitment was measured with these items after the focus had been changed from “organization” to “team” (cf. Bishop & Scott, 2000; Zaccaro & Dobbins, 1989). A respective sample item reads “I am willing to contribute more than necessary to the success of my team”. The answering format for both of these commitment foci ranged from 1 (“completely disagree”) to 6 (“completely agree”). Reliability was tested with Cronbach’s Alpha, yielding an average value of $\alpha = .91$ for affective organizational commitment ($\alpha = .89$ at t1; $\alpha = .92$ at t2; $\alpha = .93$ at t3) and $\alpha = .92$ for affective team commitment ($\alpha = .92$ at t1; $\alpha = .93$ at t2; $\alpha = .92$ at t3; see Table 1). These values correspond to the reliability of the German measure of $\alpha = .90$ as reported by Maier and Woschée (2002).

Team performance, in the sense of in-role behavior, was assessed with 6 items adapted from Kirkman and Rosen (1999), which were kept in the original 7-point answering format. Team members rated the extent to which they met or exceeded their goals, completed their tasks within the time given, continuously improved their performance, and produced high quality products and services, as well as the number of customer complaints. A sample item is “As a team, we meet our objectives”. For t2, performance ratings by the supervisor as well as the average annual productivity of the groups were available. The team performance scale at t2 showed statistically significant correlations with both of these ($r = .39$, $p < .01$ between team performance and performance ratings by the supervisor at t2; $r = .45$, $p < .01$ between team performance and average annual productivity at t2).

Extra-role behavior toward co-workers was measured with the Organizational Citizenship Behavior altruism scale (Organ, 1988; German version by Staufienbiel & Hartz, 2000). The answering format ranges from 1 (completely disagree) to 7 (completely agree). The altruism scale can be seen as equivalent to Organizational Citizenship Behavior toward co-workers (cf. Riketta & Van Dick, 2005; Skarlicki & Latham, 1996). A sample item is: “I help other team members when they fall behind in their work”.

Overall job satisfaction was measured with 7 items from Neuberger and Allerbeck (1978) on a 6-point answering format (1 = “not satisfied at all”; 6 = “completely satisfied”). We measured employees’ satisfaction with their immediate co-workers, supervisor, job content, working conditions, occupational development opportunities, salary, and the company as a whole. This resembles global job satisfaction (cf. Riketta & Van Dick, 2005). A sample item is: “How satisfied are you with the content of your work?”

Turnover intentions were measured with 4 items from Baillod and Semmer (1994). The answering format ranges from 1 (“very rarely”) to 5 (“very often”). A sample item is: “How often do you think about quitting your job?”.

3. Results

3.1. Analysis strategy

All hypotheses were tested by means of regression analysis. To examine the strength of the effects of organizational and team commitment, we entered both types of commitment as predictors. In addition, the control variables age, organizational tenure, and education were entered as predictors. To find hints at the direction of the effects, we applied the “Granger test” (cf. Finkel, 1995; Granger, 1969). This test requires two regression analyses including the preceding value of the independent variable (X_1) and the preceding value of the dependent variable (Y_1). The latter (Y_1) is treated as an additional predictor to control for potential effects of preceding levels of the dependent variable (cf. Finkel, 1995; Granger, 1969). A second regression analysis examines the direction of the effects. In the present study, organizational commitment and team commitment at t1 as well as the respective outcome variable were entered as predictors of both types of commitment at t2. In accordance with Granger (1969), causal inferences may be drawn by means of the following two equations:

$$Y_2 = \beta_1 X_1 + \beta_2 Y_1 + U_1$$

$$X_2 = \beta_3 Y_1 + \beta_4 X_1 + U_2$$

U_1 and U_2 represent error variables with an expected value of zero. The coefficients β_1 and β_2 describe the strength of the effects of X_1 and Y_1 at t1 on the outcome variable Y_2 at t2.

Likewise, the coefficients β_3 and β_4 describe the strength of the effects of Y_1 and X_1 at t1 on the outcome variable X_2 at t2 (cf. Finkel, 1995). An effect of the commitment foci was present when (a) in the first regression analysis, the coefficients concerning the effects of the two commitment foci at t1 on the respective outcome at t2 were significant, and (b) in the second regression analysis, there were no significant effects (or less strong effects than produced by the commitment foci at t1) of

Table 2
Multiple regression analyses with organization-related outcomes between t1 and t2.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R ²	R ²	F _{model} (df)	β	Adj R ²	R ²	F _{model} (df)	β
				<i>JS</i>				<i>OC</i>
OC	.33	.35	15.12***	.21 ⁺	.23	.25	9.56***	.55**
TC			(7,198)	.05			(7,199)	-.04
JS				.28***				-.05
Organization				.21**				.02
Participant age				-.00				-.03
Org. tenure				-.14 ⁺				-.01
Prof. education				-.17**				-.04
				<i>Turn</i>				<i>OC</i>
OC	.36	.38	17.23***	-.30***	.23	.25	9.57***	.53***
TC			(7,198)	.05			(7,199)	-.06 .01
Turn				.41***				.02
Organization				.00				-.02
Participant age				-.02				-.01
Org. tenure				-.07				-.04
Prof. education				.01				

Note. The left-hand side shows the influence of OC, TC, the respective outcome at t1 and the controls on that outcome at t2. The right-hand side shows the influence on OC, respectively, at t2. OC, organizational commitment; TC, team commitment; JS, job satisfaction; Turn, turnover intentions; Org. tenure, organizational tenure; Prof. education, professional education.

⁺ $p < .10$.

^{*} $p < .05$.

^{**} $p < .01$.

^{***} $p < .001$.

Table 3
Multiple regression analyses with team-related outcomes between t1 and t2.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R ²	R ²	F _{model} (df)	β	Adj R ²	R ²	F _{model} (df)	β
				<i>TP</i>				<i>TC</i>
TC	.05	.08	2.47 ⁺	.11	.35	.38	16.91***	.53***
OC			(7,194)	-.01			(7,196)	.12
TP				.22**				-.07
Organization				-.10				-.14 ⁺
Participant age				-.03				-.17 ⁺
Org. tenure				-.03				.01
Prof. education				-.07				-.11 ⁺
				<i>Alt</i>				<i>TC</i>
TC	.17	.20	7.01***	-.04	.35	.37	16.52***	.52***
OC			(7,198)	.04			(7,200)	.12
Alt				.43***				-.02
Organization				.02				-.16 ⁺
Participant age				-.09				-.19**
Org. tenure				-.12				.03
Prof. education				-.07				-.12 ⁺

Note. The left-hand side shows the influence of TC, OC, the respective outcome at t1 and the controls on that outcome at t2. The right-hand side shows the influence on TC, respectively, at t2. OC, organizational commitment; TC, team commitment; TP, team performance; Alt, altruism; Org. tenure, organizational tenure; Prof. education, professional education.

⁺ $p < .10$.

^{*} $p < .05$.

^{**} $p < .01$.

^{***} $p < .001$.

the outcomes at t1 on the commitment foci at t2. According to Granger, “one could then talk of causality existing at this moment of time” (Granger, 1969, p.429). The same procedure was followed for the t1–t3 and t2–t3 periods.

To examine whether the effects of team and organizational commitment are stable over a longer period of time, we tested effects from t1 to t2 and from t1 to t3, respectively.

Table 1 shows the means, standard deviations, intercorrelations, and reliabilities (internal consistency) of the above-named variables. As depicted diagonally in Table 1, the internal consistency values were good (ranging between $\alpha = .81$ and $\alpha = .86$ at t1 through t3 for team performance, altruism, and overall job satisfaction). Only the turnover intentions scale had a lower reliability at t1 ($\alpha = .58$).

Table 4
Multiple regression analyses with organization-related outcomes between t1 and t3.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R^2	R^2	$F_{\text{model}} (df)$	β	Adj R^2	R^2	$F_{\text{model}} (df)$	β
				<i>JS</i>				<i>OC</i>
OC	.20	.24	6.56***	.38***	.35	.38	13.11***	.74***
TC			(7,148)	.14			(7,148)	.01
JS				.03				-.28**
Organization				-.05				.02
Participant age				.04				.06
Org. tenure				.11				-.07
Prof. education				.05				.05
				<i>Turn</i>				<i>OC</i>
OC	.17	.21	5.36***	-.23*	.32	.35	11.33***	.61***
TC			(7,145)	.04			(7,149)	-.08
Turn				.24*				-.03
Organization				.09				-.06
Participant age				-.15				.11
Org. tenure				-.06				-.08
Prof. education				-.07				.04

Note. The left-hand side shows the influence of OC, TC, the respective outcome at t1 and the controls on that outcome at t3. The right-hand side shows the influence on OC, respectively, at t3. OC, organizational commitment; TC, team commitment; JS, job satisfaction; Turn, turnover intentions; Org. tenure, organizational tenure; Prof. education, professional education.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

*** $p < .001$.

Table 5
Multiple regression analyses with team-related outcomes between t1 and t3.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R^2	R^2	$F_{\text{model}} (df)$	β	Adj R^2	R^2	$F_{\text{model}} (df)$	β
				<i>TP</i>				<i>TC</i>
TC	.14	.18	4.37***	.29**	.39	.41	14.58***	.57***
OC			(7,144)	.06			(7,145)	.10
TP				.17*				-.03
Organization				.01				-.11
Participant age				.02				-.02
Org. tenure				-.03				-.07
Prof. education				-.01				-.00
				<i>Alt</i>				<i>TC</i>
TC	.24	.27	7.89***	.28**	.37	.40	14.19***	.53***
OC			(7,148)	.11			(7,149)	.10
Alt				.23**				.04
Organization				-.02				-.14*
Participant age				.10				-.03
Org. tenure				-.09				-.05
Prof. education				.13*				-.02

Note. The left-hand side shows the influence of OC, TC, the respective outcome at t1 and the controls on that outcome at t3. The right-hand side shows the influence on TC, respectively, at t3. OC, organizational commitment; TC, team commitment; TP, team performance; Alt, altruism; Org. tenure, organizational tenure; Prof. education, professional education.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

*** $p < .001$.

An initial look at the intercorrelations over time indicates that organizational commitment showed higher correlations with job satisfaction and turnover intentions, while team commitment showed higher correlations with team performance and altruism. This already suggests stronger relationships between variables at the same level.

Team performance was significantly correlated only with team commitment at t2, but with both commitment foci at t1 and t3. There was no statistically significant relationship between team commitment at t1 and turnover intentions at t3. This corresponds to previous research assuming little contribution of team commitment to the prediction of turnover intentions (cf. Vandenberghe et al., 2004).

The regression analysis reported in Table 2 through 7 compared the power of organizational commitment (t1) and team commitment (t1) to explain the variance in t2 and t3 outcomes. Table 2 shows the effects on organization-related outcomes and Table 3 shows the effects on team-related outcomes between t1 and t2. The control variables company, age, professional education, and organizational tenure had no incremental predictive value over the commitment foci in the context of turnover intentions (see Table 2), team performance, and altruism (see Table 3). However, for the criterion of overall job satisfaction, there were some incremental effects (see Table 2). While organizational tenure was only marginally significant in this context ($\beta = -.14, p < .10$), company ($\beta = .21, p < .01$) and the degree of professional education ($\beta = -.17, p < .01$) increased variance explanation for overall job satisfaction significantly. This indicates that more qualified employees tend to be less satisfied with their jobs. A possible explanation is that more qualified employees might see more opportunities for changing their jobs, comparing their working conditions with those in other organizations, or might have higher expectations due to previous experience in other organizations (cf. Felfe & Six, 2005). The control variables were irrelevant for testing the direction of the effects in the second regression analysis, and were therefore not considered.

Organizational commitment at t1 was a statistically significant predictor of job satisfaction at t2 ($\beta = .21, p < .05$) and of turnover intentions at t2 ($\beta = -.30; p < .001$). By contrast, team commitment showed no significant relationship with these outcomes.

On the other hand, team commitment at t1 did tendentially help predict team performance at t2. Both organizational and team commitment showed no significant relationship with altruism at t2.

The outcomes at t1 (job satisfaction, turnover intentions, team performance, and altruism) had no incremental predictive value for organizational commitment and team commitment at t2. This sustains the influence of organizational commitment on job satisfaction and turnover intentions.

Altogether, these findings support our first hypothesis, since organizational commitment at t1 did show a stronger influence on job satisfaction at t2 (H1a) and on turnover intentions at t2 (H1b) than team commitment. Hypotheses H3a and H3b were rejected.

H2 and H4 hypothesized about the stability of the effects from t1 to t3. Table 4 shows the effects on organization-related outcomes and Table 5 shows the effects on team-related outcomes between t1 and t3. Among the control variables, the only marginally significant influence concerns professional education as an additional predictor of altruism at t3 ($\beta = -.13, p < .10$; see Table 5).

Both organizational and team commitment showed significant effects on the hypothesized outcome variables at t3 (see Tables 4 and 5). These results correspond to or even exceed the effects found at t2. Organizational commitment at t1 was a significant predictor of job satisfaction ($\beta = .38, p < .001$) and turnover intentions ($\beta = -.23, p < .05$) at t3. Contrarily, team commitment had no influence on these outcomes. Job satisfaction at t1 had a significant negative effect on organizational commitment at t3 ($\beta = -.28, p < .01$). Although H2a concerning stronger effects of organizational commitment than team commitment on job satisfaction was supported, causality may not be inferred from these findings. In line with H2b, turnover intentions at t1 showed no significant effect on organizational commitment at t3.

Table 6

Multiple regression analyses with organization-related outcomes between t2 and t3.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R ²	R ²	F _{model} (df)	β	Adj R ²	R ²	F _{model} (df)	β
				JS				OC
OC	.21	.26	5,60***	.15	.30	.34	8,39***	.51***
TC			(7,114)	.01			(7,114)	-.14
JS				.41***				.16
Organization				-.08				.03
Participant age				.06				.16
Org. tenure				.07				-.17*
Prof. education				.03				-.01
				Turn				OC
OC	.35	.39	10,37***	-.20*	.28	.32	7,54***	.57***
TC			(7,114)	.16*			(7,114)	-.09
Turn				.57***				.00
Organization				.16*				.08
Participant age				-.01				.16
Org. tenure				-.08				-.20*
Prof. education				-.06				-.03

Note. The left-hand side shows the influence of OC, TC, the respective outcome at t2 and the controls on that outcome at t3. The right-hand side shows the influence on OC, respectively, at t3. OC, organizational commitment; TC, team commitment; JS, job satisfaction; Turn, turnover intentions; Org. tenure, organizational tenure; Prof. education, professional education.

- * $p < .10$.
- ** $p < .05$.
- *** $p < .01$.
- **** $p < .001$.

Table 7
Multiple regression analyses with team-related outcomes between t2 and t3.

Predictors at t1	Regression 1/criteria at t3				Regression 2/criteria at t3			
	Adj R^2	R^2	F_{model} (df)	β	Adj R^2	R^2	F_{model} (df)	β
				<i>TP</i>				<i>TC</i>
TC	.15	.20	4,08***	.05	.30	.34	8,49***	.63***
OC			(7,114)	.05			(7,114)	-.05
TP				.38***				-.15*
Organization				.04				.06
Participant age				.11				.09
Org. tenure				-.13				-.16
Prof. education				-.01				-.02
				<i>Alt</i>				<i>TC</i>
TC	.24	.28	6,30***	.03	.29	.33	8,16***	.63***
OC			(7,114)	.04			(7,114)	-.05
Alt				.44***				-.12
Organization				.11				.06
Participant age				.16				.09
Org. tenure				-.23*				-.17*
Prof. education				.06				.00

Note. The left-hand side shows the influence of OC, TC, the respective outcome at t2 and the controls on that outcome at t3. The right-hand side shows the influence on TC, respectively, at t3. OC, organizational commitment; TC, team commitment; TP, team performance; Alt, altruism; Org. tenure, organizational tenure; Prof. education, professional education.

* $p < .10$.
 ** $p < .05$.
 *** $p < .01$.
 **** $p < .001$.

Team commitment at t1 turned out to be a significant predictor of team performance ($\beta = .29$, $p < .01$) and altruism ($\beta = .31$, $p < .001$) at t3. By contrast, organizational commitment showed no significant relationship on these outcomes. Additionally, team performance at t1 and altruism at t1 had no effect on team commitment at t3, respectively. These results support H4a and H4b concerning stronger effects of team rather than organizational commitment on team performance and altruism at t3.

An additional look at the t2–t3 period supported the majority of the t1–t2 findings (cf. Tables 6 and 7). Table 6 shows the effects on organization-related outcomes and Table 7 shows the effects on team-related outcomes between t2 and t3. Control variables had no effect on job satisfaction and team performance. The organization had a marginal effect on turnover intentions at t3 ($\beta = .16$, $p < .10$; cf. Table 6). Organizational tenure had a negative effect on altruism at t3 ($\beta = -.23$, $p < .05$; cf. Table 7). A possible explanation could be that employees with more organizational tenure had been working for the organization before team work was implemented, thus feeling responsible for equipment and technology (such as machine maintenance) but not as much for their co-workers.

Contrary to the t1–t2 findings, neither organizational nor team commitment at t2 had an effect on job satisfaction at t3 (cf. Table 6). However, job satisfaction did not affect organizational commitment at t3 either (cf. Table 6). Thus, these additional results do not actually contradict the effects found for the t1–t2 and t1–t3 period. As found for the t1–t2 and t1–t3 period, organizational commitment at t2 showed a negative effect on turnover intentions at t3 ($\beta = -.20$; $p < .05$). Turnover intentions at t2 did not affect organizational commitment at t3 (cf. Table 6). Compared to organizational commitment, team commitment at t2 showed a considerably weaker effect on turnover intentions at t3 ($\beta = .16$; $p < .10$), which lends support to hypothesis H1b.

As was the case for the t1–t2 period, neither organizational nor team commitment at t2 had a significant impact on team performance and altruism at t3 (cf. Table 7). On the other hand, team performance at t2 showed a marginally negative relationship with team commitment at t3 ($\beta = -.15$; $p < .10$). However, this result appears negligible considering the much stronger relationship between team commitment at t2 and team commitment at t3 ($\beta = .63$; $p < .001$). Altruism at t2 did not affect team commitment at t3 (cf. Table 7). Thus, these additional results do not contradict our hypotheses.

4. Discussion

Ricketta and Van Dick (2005) called for longitudinal research to address the question of causality between commitment and team-level or organizational outcomes. Our longitudinal study was aimed at answering this call. Direct effects of organizational commitment and of team commitment on job satisfaction, turnover intentions, team performance, and altruism were established. The present findings show that organizational commitment increases job satisfaction and reduces turnover intentions. This holds true over the three years measured in this study. Team commitment also leads to higher team performance and altruism at t3. Hints at the presumed direction of the effect between team commitment and team performance and altruism were found for the overall three-year period (however, not for the shorter t1–t2 and t2–t3 periods).

In general, team commitment showed significant relationships with team performance and altruism at all of the three points in time. However, the effects between t1 and t2 as well as the effects between t2 and t3 were not as strong as between t1 and t3. When entering the control variables, the criterion variables at t1, and organizational commitment as well as team commitment as predictors, these effects vanished.

Presumably, team commitment – much like organizational commitment – develops slowly over time when employees reflect on their relationship with their team rather than the organization as a whole (cf. Mowday et al., 1979). Farkas and Tetrick (1989) describe the relationship between organizational commitment and job satisfaction as becoming stronger over time. This corresponds to our findings: In comparison with the effects between t1 and t2, we found stronger relationships between organizational commitment at t1 and job satisfaction at t3, and between team commitment at t1 and team performance as well as altruism at t3. We know of no comparable longitudinal results besides Farkas and Tetrick (1989) with at least 3 points of measurement. However, it remains to be seen whether team commitment develops as consistently over time as organizational commitment (cf. Mowday et al., 1979). It could be that due to daily interaction processes with one's colleagues in the team, team commitment depends more on the situation than does organizational commitment. The reciprocal relationship structure between team members might imply that team commitment is a somewhat temporary construct (i.e., less stable and more dependent on situational factors). According to the reciprocity rule (Gouldner, 1960) as well as social exchange theory (Blau, 1964), one will support one's team after having received support from the team and will at the same time feel committed to the team. On the other hand, when support is lacking, one will not feel inclined to help, either, and one's team commitment will suffer. These are possible processes at the team-level which might be subject to dynamic change.

In accordance with previous theoretical approaches (e.g., Fishbein & Ajzen, 1975) as well as empirical results (e.g., Lavelle et al., 2009; Vandenberghe et al., 2004), this study shows that over time, organizational commitment contributes more to the prediction of organizational variables (overall job satisfaction and turnover intentions), while team commitment contributes more to the prediction of team-related criteria (team performance and altruism). This complies with the meta-analysis by Riketta and Van Dick (2005), which emphasizes the central role of the commitment focus. Our results go beyond these meta-analytical findings however because they are based on a longitudinal design which yields hints at the direction of the effects.

Moreover, this study addresses the need for measuring both in-role and extra-role behavior. In-role behavior can be understood in terms of performance rewarded by the organization, e.g., with a group bonus (cf. Bishop & Scott, 2000), whereas extra-role behavior (in this study: altruism) concerns behavior which is not rewarded by the organization (cf. McNeely & Meglino, 1994). In the present study, both organizational and team commitment affected extra-role as well as in-role behavior, with the expected stronger effect of team commitment on the team-related criterion of performance and altruism. These findings exceed previous research results. Arguably, the team-level was more salient for the semi-autonomous teams involved in this study than for previous samples. For example, in a sample of hospital nurses, Vandenberghe et al. (2004) found no link between team commitment and job performance. In their sample, the head nurse may have played a more important role than the hospital teams for daily work, performance appraisals, and salary issues.

Furthermore, we found substantial support for the assumption that job satisfaction, turnover intentions, performance and altruism are consequences of commitment. Concerning job satisfaction, these findings correspond to those of Bateman and Strasser (1984) and Tett and Meyer (1993).

Although more recent research has found turnover intentions, performance, and OCB to be consequences of commitment (cf. Mathieu & Zajac, 1990; Meyer et al., 2002), the predominant lack of longitudinal research has limited causal inferences. Due to its rather extensive longitudinal design, the present study can support the presumed dominant effect of organizational commitment on turnover intentions as well as the presumed effect of team commitment on team performance and altruism (cf. Mathieu & Zajac, 1990; Meyer et al., 2002).

In terms of practical implications, the results show that organizations can enhance employees' extra-role as well as in-role behavior and job satisfaction and diminish turnover intentions via both commitment foci. A lack of organizational commitment can be compensated by team commitment. This is important for retention management, especially in large organizations or subsequent to mergers or acquisitions (cf. Hausknecht et al., 2009).

Team- or organization-related criteria can be targeted with the respective commitment focus. Job satisfaction can be increased and turnover intentions diminished by fostering employees' organizational commitment. On the other hand, team commitment can be promoted in order to boost team performance and co-worker altruism. Presumably, the second case can be achieved more easily. Team commitment can be improved by measures such as team-building, whereas organizational commitment may be somewhat more difficult to enhance (cf. Van Knippenberg & Van Schie, 2000). As another approach to increased team commitment and subsequent higher team performance, supervisors can involve their teams in decision processes and invest in team-building interventions when new teams are formed (cf. also Riketta & Van Dick, 2005).

When higher employee commitment is striven for, it should be considered that employees' attitude toward Human resource practices may play an important role (cf. Conway & Monks, 2009). Human resource practices which have been found to be beneficial for employee commitment tend to be employee-centered, e.g., communication practices, rewards, and work-life balance practices (Conway & Monks, 2009; Kinnie, Hutchinson, Purcell, Rayton, & Swart, 2005).

Organizational commitment is affected by the corporate attitude towards work-family climate as well as perceived supervisor support concerning work-family balance (O'Neill et al., 2009). To enhance employees' organizational commitment, management trainings should address the issue of work-family balance (O'Neill et al., 2009).

Empirically supported employee-centered approaches which can be aimed at enhancing affective commitment include team reflexivity interventions (e.g., Carter & West, 1998; Gurtner, Tschan, Semmer, & Nägele, 2007; Tjosvold, Tang, & West, 2004) as well as more recently developed team coaching measures (e.g., Kauffeld, Lorenzo, Montasem, & Lehmann-Willenbrock, 2009; Lehmann-Willenbrock & Kauffeld, 2010, chap. 3).

4.1. Limitations

This study has some limitations. First, the generalizability of the results is limited. The sample contains production teams from two medium-sized companies. While these represent two rather different branches, the results are limited to the production sector. Moreover, the majority of the participants in this study are male. However, this is representative of the production sector.

Second, all variables in the study were assessed via questionnaires. This poses the question of common method bias. However, only psychometrically valid instruments were used, and the respective predictor and criterion variables were measured over a time interval (cf. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Moreover, psychological constructs such as employees' commitment, job satisfaction, and turnover intentions can hardly be assessed by a second party such as the supervisor (cf. Podsakoff et al., 2003).

Third, this study focused on affective commitment and did not investigate normative or continuous commitment. However, this focus appears feasible in the light of previous research, which showed that affective commitment is considerably stronger in predicting organizational criteria relevant to this study than other forms of commitment (cf. Meyer et al., 2002).

Fourth, hypotheses concerning the direction of the effects were tested with statistical methods. An experimental manipulation was not included in this study. However, an experimental manipulation of commitment in a longitudinal study would be neither ethically appropriate nor justifiable for the involved organizations and their employees (cf. Avey, Luthans, & Mhatre, 2008). The strength of this study is the longitudinal design of three years in which organizational and team commitment and their respective outcomes were tested for causality. It should be noted that "Granger Causality" may not imply true causality, as both the independent and the dependent variable might be influenced by a common third variable (cf. Granger, 1969). However, we included potentially relevant third variables such as participant age and organizational tenure as control variables and found no such influences.

4.2. Future research

The present study focuses on industrial workers from two medium-sized companies. Future research should investigate various target groups such as middle and top management as well as different kinds of organizations in more detail. Which focus of commitment is stronger at various levels of the company hierarchy, e.g., when comparing staff and top-management? To what extent does the type of organization (e.g., medium-sized or corporate companies) influence employees' commitment? Presumably, employees of larger organizations will more likely feel committed to their team, supervisor, or company section, as these are more salient than the organization as a whole (Riketta & Van Dick, 2005).

The relationship between commitment and extra-role as well as intra-role behavior may vary in different cultural contexts. For example, Felfe, Yan, and Six (2008) found that commitment had a stronger influence on organizational citizenship (extra-role) behavior in a collectivistic context. Future research should examine possible cultural differences between effects of organizational and team commitment on both extra- and in-role behavior.

Following the rationale that commitment results from individual experiences and attitudes, we examined all variables at the individual level. However, it would be quite interesting to learn how team commitment relates to team-related outcomes at the group-level over time. This could be investigated by means of Multilevel Structural Equation Modeling with a larger sample (especially when ICC values are below .25, as was the case in this study; cf. Hox & Maas, 2001).

To pursue the idea that due to everyday interactions between team members, team commitment is more situational than organizational commitment, more than three points of measurement would be required. In addition, different time periods should be investigated to examine the effects of team commitment on team-related outcomes over a longer period of time. Future research in this area might include diary studies, for example. Finally, the results of this study hint at the possibility that the influence of team commitment on job satisfaction and turnover intentions could be mediated by organizational commitment, while team commitment might mediate the influence of organizational commitment on altruism. Future research should explore this idea in more detail.

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