European Journal of Work and Organizational Psychology

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/pewo20

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Version of record first published: 15 Apr 2010

To cite this article: Ana Cristina Costa & Neil Anderson (2011): Measuring trust in teams: Development and validation of a multifaceted measure of formative and reflective indicators of team trust, European Journal of Work and Organizational Psychology, 20:1, 119-154

To link to this article: http://dx.doi.org/10.1080/13594320903272083

EUROPEAN JOURNAL OF WORK AND
ORGANIZATIONAL PSYCHOLOGY
2011, 20 (1), 119–154

Psychology Press
Taylor & Francis Group

Measuring trust in teams: Development and validation of a multifaceted measure of formative and reflective indicators of team trust

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This article describes the development and validation of a multidimensional instrument designed to measure trust within teams. Trust is conceptualized as a latent variable resulting from distinct but related (formative) indicators, i.e., propensity to trust and perceived trustworthiness, which lead to (reflective) indicators, i.e., behaviours cooperation and monitoring between team members. The instrument was tested in two different samples. The first sample included 98 hospital professionals (14 teams) and provided data for the exploratory factor analysis of this instrument (Study 1). The second sample included responses from 112 teams (395 individuals) from three social-care institutions and was used to apply confirmatory factor analysis (Study 2). Data attesting to the underlying factor structure, internal homogeneity, construct validity, and consensual power of agreement within teams and discriminant power across teams of the instrument are presented. The final 21-item, four-factor version of this measure demonstrates good psychometric properties, with acceptable levels of reliability and validity. We conclude that the scales form a parsimonious, valid, and efficient instrument to assess trust in teams. Potential applications of this measure in research and practice are described and the implications of these findings for future research are discussed.

Keywords: Measures; Perceived trustworthiness; Propensity to trust; Teams; Trust.

The concept of trust has received considerable attention in organizational and applied psychology research over the past few decades. Trust is both an interpersonal and collective phenomenon and

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http://www.psypress.com/ejwop DOI: 10.1080/13594320903272083

is expressed at three levels within organizations: individual, teams, and organizational (Kramer, 1999; Puusa & Tolvanen, 2006). Particularly at the level of the work group or team, interest in studying trust has grown considerably, as organizations have moved towards flatter and more team-based structures (e.g., Mathieu, Marks, & Zaccaro, 2001). The increasing importance of interpersonal and group dynamics in achieving effective collaboration has contributed to raise trust in the research agenda. More than ever organizations look to invest in conditions that facilitate trust among members in order to survive (Shaw, 1997), foster adaptability and innovation (Anderson & West, 1996, 1998; Mathieu et al., 2001), enhance their competitive advantage (Rousseau, Sitkin, Burt, & Camerer, 1998), and facilitate positive team working conditions within organizational structures that are becoming increasingly reliant upon ad hoc and ongoing project teams and collaborative working practices (Kozlowski & Bell, 2003).

Numerous studies indicate unequivocally that increases in trust result in more positive workplace behaviours and attitudes such has more open communication and information sharing (e.g., Smith & Barclay, 1997), high job satisfaction (e.g., Smith & Barclay, 1997), organizational citizenship behaviour (Aryee, Budhwar & Chen, 2002), and greater commitment to the organization (e.g., Brockner, Siegel, Daly, Tyler, & Martin, 1997). Within teams trust has been associated with improvements in communication, teamwork, and superior levels of team performance (e.g., Costa, Roe, & Taillieu, 2001; Davis, Schoorman, Mayer, & Tan, 2000; Klimoski & Karol, 1976; McAllister, 1995; Smith & Barclay, 1997). Given the importance of these outcomes for the functioning of teams, it is important to have reliable and valid instruments to measure trust at this level. An overview of the existing measures of trust within organization sciences (Table 1) suggests that most trust instruments are either at an individual level, in relation to peers or organizations (e.g., Cook & Wall, 1980; Rotter, 1967), or at an dyadic level either in specific peers (Butler, 1991; Cummings & Bromiley, 2006), between leader subordinate (Mayer & Davis, 1999; McAllister, 1995), or between organizations (Currall & Judge, 1995; Smith & Barclay, 1997). It is clear that existing measures of trust concentrate upon the individual and dyadic (within team pairs) levels-of-analysis and that there is a notable lack of validated measures of trust in organizational settings at the team or work group level of analysis.

Another related but more controversial issue has been the meaning of the trust concept and its operationalization in applied research. Although definitional consensus has proved to be an elusive goal for trust researchers (Kramer, 1999), much ground has been made recently through attempts to deconstruct the notion of trust into its constituent components or indicators.

TABLE 1
Overview of trust instruments developed in organizational contexts

Instruments/authors	*Level of analysis*	*Components/indicators of trust measured*	*Factors identified*
ITS—Rotter (1967)	Individual	Propensity to trust	Trust in peers Trust in institutions
RPHNS—Wrightsman (1964)	Individual	Propensity to trust	Trust Cynicism (*)
Cook and Wall (1980)	Individual	Trustworthiness	Faith in intentions Confidence in actions (peers and management)
Mayer and Davis (1999)	Individual	Propensity to trust Trustworthiness	Propensity to trust Ability, Benevolence, Honesty
CTI—Butler (1991)	Interpersonal Dyad-level	Trustworthiness	Integrity, Honesty, Fairness, Competence, Consistency, Loyalty, Discreetness, Openness, Receptivity, Availability, Fulfilment
McAllister (1995)	Interpersonal Dyad-level	Trustworthiness	Cognition-based Affect-based
Smith and Barclay (1997)	Interpersonal Dyad-level	Trustworthiness Trust behaviours	Character, Competence,, Judgment, Motives, Intentions Relationship investment, Acceptance of Influence, Communication Openness, Forbearance from, Opportunism (*)
Currall and Judge (1995)	Individual and dyad-level	Trust behaviours	Communication openness, Informality, Agreement, Task Coordination, Surveillance (*)
OTI—Cummings and Bromiley (1996)	Interpersonal Dyadic between teams	Trustworthiness Behaviour intentions	Keeping commitments Honest in negotiations, Does not take advantage

ITS = Interpersonal Trust Inventory; RPHNS = Revised Philosophies of Human Nature Scale; CTI = Conditions of Trust Inventory; OTI = Organizational Trust Inventory; (*) = reverse scale.

Most researchers agree that trust is as a highly complex, multidimensional, and abstract phenomenon containing distinct but related components (Lewis & Weigert, 1985; Mayer, Davis, & Schoorman, 1995; McAllister, 1995; Rousseau et al., 1998). Most definitions and models of trust include both individual and relational components, respectively regarding the trustor and his/her relationship with the trustee(s) (e.g., Mayer et al., 1995; Rousseau et al., 1998; Smith & Barclay, 1997). Propensity to trust and trustworthiness have been the two most mentioned and measured components of trust (Table 1). According to Mackensie, Podsakoff, and Jarvis (2005), these components constitute formative indicators of a higher order construct (in this case trust) since they reflect dispositions and perceptions underlying the construct. The behaviours of trust, identified in several conceptualizations and measures of trust (e.g., Cummings & Bromiley, 1996; Currall & Judge, 1995) are viewed as reflective indicators, and are the result of the action to trust or not (MacKenzie et al., 2005).

The main aim of this study is to develop and test the construct validity of a multifaceted instrument including both formative and reflective indicators of trust at team level. For this purpose, two studies were conducted using separated samples. The second study was used to cross-validate the instrument developed in the first study. The analyses presented here include assessments of factor structure, reliability, and construct validity. Before elaborating on the studies, a conceptualization of trust at team level is presented and the component indicators of trust are described in more detail.

CONCEPTUALIZING TRUST AT THE TEAM LEVEL

Generally speaking, trust reflects the process of one party A (the trustor) trusting another party B (the trustee). In their review, Mayer et al. (1995) define trust as "a willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party" (p. 712). This definition comprises both an individual and a relational component of trust, respectively regarding the trustor and his/her relationship with the trustee(s). The individual component refers to the trustor's propensity to trust others and the relational component to the perceived trustworthiness of the trustee(s) and both constitute the basis upon which one party confers trust into another (Mayer et al., 1995). The "willingness to become vulnerable", on the other hand, is related to the behavioural consequences of trust, which are the actions taken by the trustor based upon his/her own set of beliefs regarding the trustee (Lewis & Weigert, 1985).

At the team level, trust can be studied as a collective phenomenon. Interactional histories provide information useful to assess dispositions, intentions, and motives of others. Team members' judgements about others' trustworthiness are anchored at least in part on their own dispositions and on their prior experiences of others' behaviour (Kramer, 1999). Following this definition, trust between team members can be conceptualized as a latent construct based on the individual's own propensity to trust others and on the perceived trustworthiness of the other team members, which then leads to behaviours of cooperation and monitoring between team members. In this study we focus on trust between team members as opposed to trust in another team, group, or institution.

Within teams trust has been studied both as an individual and intragroup phenomenon based on reciprocity and entailing generalized expectations for all team members (Zand, 1972). Reciprocity is a key issue for establishing and maintaining trust within teams. The realization that one person is taking a considerable risk by trusting may lead others to reciprocate that trust and behave in a trustworthy manner (Das & Teng, 1998). Trusting behaviours constitute an important aspect of trust since they are the basis for reciprocity between individuals (Nooteboom, 2002). By interacting within their work team, individuals are likely to develop shared perceptions, expectations, patterns of understanding, and norms of behaviour with their team colleagues, creating thereby opportunity for a shared climate to evolve (Anderson & West, 1998; Campion, Medsker, & Higgs, 1993; West & Anderson, 1996). Thus, although trust within teams can derive from an individual set of beliefs regarding their team, it is likely that through ongoing interactions and interdependent task demands individuals will develop consensual or shared notions of trust (West, 2001). Shared climates help team members to predict each other's behaviour in the future and reduce uncertainty, and at the same time determine which types of behaviours, situations, or people are desirable or undesirable (Gillespie & Mann, 2004; Jones & George, 1998). In this study we argue that trust within teams reflects a climate that is shared among team members and is likely to influence and be influenced by individual propensities and perceptions of trustworthiness and lead to behaviour patterns that reflect that climate.

Deconstructing trust as a generic term and considering its different facets has been a valuable way of clarifying the confusion over the meaning of the term trust. The existent conceptual diversity has emerged mostly from two distinct approaches and traditions within in trust research (Kramer, 1999). On the one hand, the psychological tradition which has attempted to understand the interrelated processes between trustor and trustee and views trust as a "psychological state" defined in

terms of propensities, expectations, intentions, affects, and orientations towards beliefs or states of confidence in relation to others (e.g., Rousseau et al., 1998). On the other hand, the choice-behavioural tradition focuses on the act of trusting between both parties and defines trust as "risk-taking behaviour" or as the "willingness to engage in such behaviour" (e.g., Cummings & Bromiley, 1996). The conceptualization of trust as a latent construct with "facet-specific" indicators such as in Mayer et al. (1995) view trust as a highly complex phenomenon including both the factors that determine the psychological state (formative indicators) and the behavioural consequences of that state (reflective indicators). Similarly, Costa et al. (2001) have shown that trust can be conceptualized as multifaceted with distinct but related indicators. This is consistent with more recent approaches advocated in both the trust and climate literatures (Cummings & Bromiley, 1996; Kramer, 1999; Langfred, 2004). The present study has the objective of developing a multifaceted measure of intrateam trust for use in future research based on upon a priori deconstructions of team trust. The four indicators are: (1) propensity to trust, (2) perceived trustworthiness, (3) cooperative behaviours, and (4) monitoring behaviours. We now describe each in turn.

Propensity to trust

Propensity to trust is commonly viewed as a dispositional trait referred to as the general willingness to trust others. Rotter (1967, p. 651) addresses this general willingness to trust "as an expectancy held by an individual or group that the word, promise, verbal or written statement of another individual or group can be relied upon". Several authors address propensity to trust as a personality trait that leads to generalized expectations about the trustworthiness of others and that is stable across situations (e.g., Dasgupta, 1988; Farris, Senner, & Butterfield, 1973). Rotter (1980) and Sitkin and Pablo (1992) view propensity to trust as a relatively stable disposition; however, they concur that propensity to trust should be viewed as a more situational specific trait, affected by the team members and situational factors. People differ in their propensity to trust others. Different life experiences, personality types, cultural backgrounds, education, and several other socioeconomic factors determine one's propensity to trust (Mayer et al., 1995). In ongoing relationships such as in work teams, propensity to trust is likely to influence, and be influenced by, perception of trustworthiness and actions towards other members. According to Rotter (1980) the efficiency, adjustment, and even survival of any group depends upon the presence or absence of such a type of trust. In this perspective, propensity to trust is the willingness of one or more individuals in a social unit to trust others.

Perceived trustworthiness

Perceived trustworthiness refers to the extent to which individuals expect others to be and to behave according to their claims. These expectations have cognitive and emotional grounds (McAllister, 1995) and develop from perceptions or information regarding competence, benevolence, integrity, motives, and intentions of others to whom we are willing to become vulnerable (Lewis & Weigert, 1985; McAllister, 1995). Cummings and Bromiley (1996) propose three dimensions upon which trustworthiness of an individual or group can be determined, i.e., the belief that another person(s) or group (1) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (2) is honest in whatever negotiations preceded such commitments, and (3) does not take excessive advantage when the opportunity is available. Within teams, perceived trustworthiness among team members can be accessed through these dimensions.

Cooperative behaviours

Cooperative behaviours correspond to a number of positive actions that reflect the willingness of be vulnerable to others whose actions one does not control (Zand, 1972) and involve "engaging in some form of cooperation" with them (Gambetta, 1988). These behaviours include reliance on others (Clark & Payne, 1997), acceptance of influence (Smith & Barclay, 1997), communication openness (Lewicki & Bunker, 1996; Smith & Barclay, 1997), information sharing (Clark & Payne, 1997; Currall & Judge, 1995), and acting in a spirit of cooperation (Smith & Barclay, 1997). Research has shown that these behaviours are extremely related to one another, i.e., either they occur simultaneously or one behaviour leads to another. Therefore, these behaviours are often considered as complementary (e.g., Currall & Judge, 1995; Gillespie & Mann, 2004; Smith & Barclay, 1997). Within teams, cooperative behaviours refer to the extent team members rely on each other, communicate openly about their work or themselves, accept the influence from each other, and are personally involved with the team.

Monitoring behaviours

Monitoring behaviours refer to the extent team members feel a necessity to exert control on other members' work through monitoring, checking, and surveillance behaviours. Several studies have demonstrated that monitoring is associated with lack of trust. Zand (1972) argues that monitoring comes into play when trust is absent. For example, if a team member trusts his/her colleagues' ability to perform well, or to be honest or benevolent, no monitoring behaviour is needed. Particularly, in manager-led and in

long-termed work teams, monitoring is often experienced as a negative behaviour (Langfred, 2004). This often leads members to direct their efforts towards protecting their personal interests rather than cooperating and directing resources towards accomplishing team goals (McAllister, 1995). Consequently, the more teams trust, the less they will engage in monitoring behaviours, and vice versa (Inkpen & Currall, 1997; Leifer & Mills, 1996).

VALIDATION

There has been a growing interest in how trust or particular facets of trust (e.g., trustworthiness) lead to particular outcomes such as satisfaction, commitment, and performance (see Dirks & Ferrin, 2001, 2002). However, with respect to studying trust in teams this requires that the existence of shared perceptions, expectations, and behaviours of trust can be demonstrated, and that they can be measured with reliability and validity. Despite the recent proliferation of trust measures, usually at interpersonal or organizational level of analysis (Table 1), there is only a small number that have been properly validated, demonstrating both construct validity and consensual and discriminable properties within and across teams in organizations.

Construct validity

Empirical evidence has shown benefits of trust are varied and fairly consistent towards positive attitudes regarding others such as improved communication, less conflict, and higher levels of satisfaction and commitment to the organization (see Dirks & Ferrin, 2001). Commitment has been one of the most studied consequences of trust. Prior research has shown that trust is a major determinant of commitment to a relationship (Anderson & Weitz, 1989; Costa et al., 2001; Ganesan, 1994; Moorman, Zaltman, & Deshpandé, 1992; Morgan & Hunt, 1994). Trust enhances commitment to a relationship by reducing the perception of risk associated with opportunistic behaviour of partners, increasing confidence that inequities can be resolved over time, and by reducing transaction costs, for instance associated with monitoring costs, in a work relationship (Ganesan & Hess, 1997). In this study we explore the relation between the proposed facets of trust and commitment to the team and to the organization. This multilevel validation is intentional. In organizations trust is believed to operate at different levels of analysis since it is simultaneously related to dispositions, expectations, behaviours, social networks, and organizational arrangements (Rousseau et al., 1998). It is therefore to be expected that trust within teams not only will influence outcomes at team level but also at organizational level. Organizations can

promote or constrain trust relations between members through norms and procedures that shape both the behaviours individuals engage in, as well as their beliefs regarding the intentions of others (Fukuyama, 1995; Hagen & Choe, 1998). Conversely, the way individuals relate to the organization can be influenced by microlevel arrangements, in particular, the historical trustworthiness experienced in different contexts (Burt & Knez, 1996) and the reputation of authority figures. Thus, trust is underlined by multilevel processes and scholars across a variety of disciplines have embraced this multilevel view (Rousseau et al., 1998).

COMMITMENT

Commitment can be defined as "a force that binds an individual to a course of action of relevance to one or more targets" (Meyer & Herscovitch, 2001, p. 308). Research indicates that commitment in the workplace is a multidimensional phenomenon with distinct foci and dimensions (Meyer & Allen, 1997; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). The focus of commitment (i.e., to whom or what an employee is committed) is an important dimension in assessing worker attachment (Becker, 1992). Current emphasis on work teams and participative management systems suggests that two important foci of commitment are an employee's work group or team and the employing organization (Becker, 1992; Hackman, 1987).

Team commitment

Team commitment is the relative strength of an individual's identification with and involvement in a particular team. According to Bishop and Scott (2000), team commitment can be characterized by (1) a strong belief in, and acceptance of, the team's goals and values; (2) a willingness to exert considerable effort on behalf of the team; and (3) a strong desire to maintain membership in the team. High trust between team members is likely to contribute to higher commitment to the team (Manz & Sims, 1993), since it reinforces positive actions which then lead to positive expectations towards the group members. Costa et al. (2001) found that trust in teams was positively related to commitment to the relationship. Therefore, we expect that the trust indicators concerning propensity to trust, perceived trustworthiness, and cooperative behaviours will be positively related to team commitment. Monitoring behaviours, on the other hand, is expected to relate negatively with team commitment. Monitoring within teams can often be experienced as a negative behaviour or even be perceived as a violation of trust itself, which will affect negatively the motivation to invest in team and increase the willingness to leave (Enzle & Anderson, 1993).

Hypothesis 1a: Propensity to trust, perceived trustworthiness, and cooperative behaviours will be positively related to team commitment.
Hypothesis 1b: Monitoring behaviours will be negatively related to team commitment.

Commitment to the organization

Organizational commitment is commonly viewed as a multidimensional construct. The initial model proposed by Meyer and Allen (1984) distinguished between affective and continuance commitment. Affective commitment refers to identification with, involvement in, and emotional attachment to the organization. Continuance commitment is described as a more calculative attitude towards the organization and refers to a commitment based on the employee's recognition of the costs associated with leaving the organization. Later on, a third component (normative commitment) was introduced to this model by Allen and Meyer (1990). Normative commitment refers to commitment based on a sense of obligation to the organization.

Currently, and although this three-component conceptualization can be regarded as the dominant way of thinking in organizational commitment research (e.g., Allen & Meyer, 1996; Bentein, Vandenberg,Vandenberghe, & Stinglhamber, 2005; Cohen, 2003; Greenberg & Baron, 2003), several studies have pointed at the unclear distinguishableness between normative and affective commitment, which has lead to the conclusion that there is an inherent psychological overlap between both forms (for reviews of these studies see Allen & Meyer, 1996; Meyer et al., 2002). Affective and continuance commitment, on the other hand, have been more extensively researched and are often recognized as distinct forms of commitment (Meyer et al., 2002). Given this evidence and for the purpose of this study, we decided to focus only on these two forms of commitment initially proposed by Meyer and Allen (1984).

While describing the commitment-trust theory, Morgan and Hunt (1994) found that work relationships characterized by trust (trustworthiness) increase the identification with the organization and consequently the affective commitment to the organization. The positive effect of trust in colleagues on employees' commitment to the organization is also demonstrated in the studies by Brockner et al. (1997) and Cook and Wall (1980). Considering that affective and continuance commitment reflect two distinct basis for commitment, it is expected that the trust scales will correlate differently with both forms. In particular, propensity to trust, perceived trustworthiness, and cooperative behaviours are expected to correlate positively with affective commitment, given the focus on

identification and the emotional attachment to the organization, but negatively with continuance commitment. Monitoring behaviours, on the contrary, is expected to correlate positively with continuance commitment, because of its calculative focus, and negatively with affective commitment.

Hypothesis 2a: Propensity to trust, perceived trustworthiness, and cooperative behaviours will be positively related to affective commitment, and negatively related to continuance commitment.
Hypothesis 2b: Monitoring behaviours will be negatively related to affective commitment and positively related to continuance commitment.

METHOD

Item generation

An extensive review of the literature of the published measures of trust was conducted initially. The existent measures were examined in relation to their sub-dimensions and content identification to the four indicators of trust (Table 1). The measures were further compared against their applicability for measuring aspects of intrateam level trust.

Relatively few scales and items were retained. Some items were adapted to intrateam contexts but most of the items measuring cooperative and monitoring behaviour had to be self-generated (see Costa, 2000). An initial pool of 50 items was created and two independent subject matter experts (SMEs), who were work and organizational psychologists, evaluated these items according to the criteria: *comprehensibility*, whether the item was easy to understand; *length*, whether the item was too long; and *singularity*, the extent to which an item measures one single aspect. Items were accepted by unanimity of the judges in the fulfilment of these criteria and some items were reformulated in order to meet these criteria. In a second stage, two other experts evaluated the accepted and the reformulated items with regard to their *identification* with the posited four facets of trust; their *relevance* in the work team contexts; and *repetition* of the item content. Again items were accepted by unanimity of the judges in the fulfilment of these criteria. At this stage some items were excluded from the initial measure due to repetition of the item content. The initial trust instrument contained 38 items grouped conceptually onto four scales, i.e., 10 items for propensity to trust, 10 items for perceived trustworthiness, 10 items for cooperative behaviour, and 8 items for monitoring behaviour.

Measures

Trust scales

Responses on the trust scales were given on a 7-point scaling ranging from 1 = "completely disagree" to 7 = "completely agree". The composition of these scales is described next.

Propensity to trust. Ten items were taken from the subscale "trust" of Wrightsman's (1991) Revised Philosophies of Human Nature Scale (RPHNS) and adapted to intrateam contexts. The original subscale includes 12 positive statements about the way people generally behave. Two of these items were excluded from the measure due to unclear meaning. Examples of items included in this scale are "In this team most people stand behind their convictions" and "Most people in this team do not hesitate to help a person in need". In Table 2 is presented a complete list of all items.

Perceived trustworthiness. The scale perceived trustworthiness included seven items from the Organizational Trust Inventory (OTI)–Short Version from Cummings and Bromiley (1996) eliciting information about team members' perceptions of trustworthiness within the team were adapted to intrateam contexts. The other items of the original 12-scale item were found unclear by the SMEs and therefore excluded from the measure. Three additional items from Smith and Barclay (1997) were adapted to intrateam contexts and included in this scale. Examples of items included are "In this team people can rely on each other" and "There are some hidden agendas in this team" (reverse scored).

Cooperative behaviours. The scale cooperative behaviours was measured with 10 items: two items adapted from the subscale communication openness (Smith & Barclay, 1997) measuring openness in work meetings, social interaction, and personal disclosure; two items from the scale influence of acceptance (Smith & Barclay, 1997); and six extra items were developed to measure compromising within the team and cooperative actions within the team. For example "In this team we work in a climate of cooperation" and "In this team people learn a lot from working together".

Monitoring behaviours. The scale monitoring behaviours included two items taken from the subscale "surveillance" from Currall and Judge (1995) and both were adapted to intrateam contexts. In addition, five items were developed to look at checking and surveillance actions between team members. Examples of items are "In this team people check if everyone meets their commitments" and "In this team people check whether everyone lives up to their commitments".

TABLE 2
Factor analysis loadings on the EFA four-factor solution ($n=98$)

	M	*SD*	*I Perceived trustworthiness*	*II Cooperative behaviours*	*III Propensity to trust*	*IV Monitoring behaviours*
1. **In this team people can rely on each other.**	5.73	1.28	**.57**	.19	.17	.15
2. **We have complete confidence in each other's ability to perform tasks.**	5.89	1.39	**.84**	.11	.07	−.12
3. **In this team people will keep their word.**	5.57	1.43	**.76**	.15	.00	−.14
4. **There are some hidden agendas in this team. (r)**	5.87	1.45	**.62**	.19	.00	.00
5. **Some people in this team often try to get out of previous commitments. (r)**	5.38	1.70	**.64**	.04	.03	.00
6. **In this team people look for each other's interests honestly.**	5.80	1.09	**.62**	.03	.04	.06
7. In this team people are truthful to each other. (**)	5.57	1.38	**.57**	.23	.00	.00
8. In this team some people take advantage of others who are in a vulnerable position. (r) (**)	5.69	1.61	.51	.24	.16	.00
9. In this team people have success by stepping on other people. (*)	5.60	1.28	.45	.34	.31	.00
10. Some people in this team try to get the upper hand. (r) (*)	5.05	1.76	.40	.25	.00	−.14
11. **In this team we work in a climate of cooperation.**	5.59	1.09	.14	**.67**	.17	.00
12. **In this team we discuss and deal with issues or problems openly.**	5.60	1.23	.23	**.52**	.00	.00
13. **While taking a decision we take each other's opinion into consideration.**	5.62	1.09	.30	**.63**	.15	.14
14. **Some people hold back relevant information in this team. (r)**	5.22	1.27	.22	**.69**	.00	.00
15. **In this team people minimize what they tell about themselves. (r)**	4.85	1.50	.31	**.56**	.15	.18

(*continued overleaf*)

TABLE 2
(*continued*)

	M	*SD*	*I Perceived trustworthiness*	*II Cooperative behaviours*	*III Propensity to trust*	*IV Monitoring behaviours*
16. **Most people in this team are open to advice and help from others.**	5.75	1.21	.10	**.60**	.16	.15
17. In this team people learn a lot from working together. (**)	5.57	1.16	.27	.52	.00	.00
18. In this team we provide each other with timely information. (**)	5.28	1.41	.34	.58	.11	.15
19. Everyone tries to adapt to the way the team functions.	5.25	1.32	.10	.23	.12	.00
20. In team meetings people hold back their opinion. (r) (*)	5.28	1.48	.35	.39	.17	.20
21. **Most people in this team do not hesitate to help a person in need.**	4.10	1.64	.04	.30	**.60**	−.27
22. **In this team most people speak out for what they believe in.**	4.69	1.32	.01	.20	**.66**	.00
23. **In this team most people stand behind their convictions.**	4.08	1.50	.04	.05	**.72**	.00
24. **The typical person in this team is sincerely concerned about the problems of others.**	4.66	1.53	.06	.03	**.78**	.00
25. **Most people will act as "Good Samaritans" if given the opportunity.**	4.35	1.42	.05	−.15	**.68**	.11
26. **People usually tell the truth, even when they know they will be better off by lying.**	4.41	1.33	.12	.13	**.62**	.10
27. In this team people will stick to their opinion if they think it is right, even if others disagree. (**)	4.49	1.30	.23	.27	**.50**	−.00
28. "Do unto others as you would have them do unto you" is a motto that most people follow in this team. (*)	4.44	1.40	.31	.00	.47	.24
29. Most people try to apply the Golden rule, even in today's complex society. (*)	3.25	1.24	−.23	−.34	−.10	.00

(*continued overleaf*)

TABLE 2
(*continued*)

	M	*SD*	*I Perceived trustworthiness*	*II Cooperative behaviours*	*III Propensity to trust*	*IV Monitoring behaviours*
30. Most people would stop and help a person whose car was broken down. (*)	3.72	1.53	−.34	−.14	−.30	.10
31. **In this team people watch each other very closely.**	4.68	1.53	−.02	−.04	−.12	**.81**
32. **In this team people check whether others keep their promises.**	4.25	1.58	−.12	−.14	.21	**.76**
33. **In this team most people tend to keep each other's work under surveillance.**	4.67	1.53	−.10	−.16	.00	**.57**
34. In this team people check whether everybody meets their obligations. (*)	4.23	1.67	.00	.00	.00	.30
35. In this team we do not feel the need to control each other's work. (r) (*)	4.26	1.01	.10	.09	.13	.21
36. Cheating does not occur in this team. (r) (*)	4.67	0.98	−.32	−.32	.12	.16
37. We do not have to worry about opportunistic behaviour in this team. (r) (*)	4.56	1.04	−.41	−.45	.00	.14
38. In this team we watch each other attentively so that nobody gets away with something. (*)	4.48	1.07	−.00	.31	.48	.22

(r) = item reversed; (*) = excluded in EFA; (**) = excluded in CFA. Total variance accounted for 55.01%.

Commitment scales

Responses were given on a 7-point scale ranging from 1 = "completely disagree" to 7 = "completely agree". The composition of these scales and reliability estimates are described next.

Team commitment. Team commitment was measured with eight items adapted from Freese and Schalk (1996). It measured the extent to which members were committed to the work and are willing to stay in their own team. An example of an item is "I feel at home in this team" ($\alpha = .80$).

Affective commitment. Affective commitment was measured with five items adapted from Allen and Mayer (1990). An example of an item used is "It matters to me what happens in this organization" ($\alpha = .72$).

Continuance commitment. Continuance commitment was measured with a scale of five items adapted from Allen and Mayer (1990). An example of an item used is "I have too little alternatives to leave this organization" ($\alpha = .74$).

Procedure

The initial instrument was piloted with employees of a hospital in The Netherlands. No additional data was collected as a part of this pilot (Study 1). The teams that agreed to participate came from three hospital sectors, i.e., policlinic, surgery, and cardiology. The original version of the measure was sent to the three sectors with a covering letter requesting that they distribute the questionnaire to all teams. Individual respondents were instructed to send their completed questionnaires direct to the researchers. All questionnaires were completed anonymously and subjects were assured of the strict confidentiality of their responses.

The second study (Study 2) was conducted in three Social-Care organizations in The Netherlands. These Social-Care organizations are semipublic organizations and work under the government framework of the law on social provision of employment. Also in this study the management teams of these organizations were approached and invited to participate in this research. The teams were selected with help from the personnel departments on the basis of the work content and number of individuals working interdependently. The teams fulfilled two criteria, they had a minimum of three members each, and their work activity was related to either "people" and/or "information". These teams fulfilled the criteria proposed by Kozlowski and Bell (2003) including: composition of two or more members; existed to perform relevant tasks to the organization; shared

common goals; interacted socially; exhibited task interdependency; maintained boundaries; and were embedded in the organizational context. The teams included management teams, supervision teams, supporting teams, and facilitating teams and staff teams; no production teams were involved in this study. The respondents were asked to answer a structured questionnaire concerning their teams at work. The questionnaires were sent to the teams by the respective departments and team supervisors. A cover letter described the purpose of the study and assured the respondents of data confidentiality.

Samples

Study 1. In total 98 (14 teams) hospital employees returned questionnaires, providing a response rate of 47.6%. Of this sample, all teams provided multiple respondents ranging from four members in the smallest team (i.e., 40% of response rate) to nine members in the largest team (i.e., 64% of the response rate), with an average of 4.9 individuals per team. Of the 98 respondents, 16 were male (15%) and 82 were female (83%). The mean age was 33.1 years with a standard deviation of 7.5 years. The average organizational tenure was 7.2 ($SD = 7$) and 55% of the respondents worked part-time. All teams included members from both genders.

Study 2. A total of 112 teams (395 individuals) from three social-care organizations provided data via a questionnaire. The participation rate was 71.5%. The age average was 40.5 ($SD = 10.3$ years). The size of the teams ranged from three to six members, with an average of 4.25 individuals per team. The sample included 44 teams (143 individuals) from Social-Care A (i.e., 69% of the response rate), 41 teams (159 individuals) from Social-Care B (i.e., 82% of the response rate), and 27 teams (93 individuals) from Social-Care C (i.e., 67% of the response rate). The average tenure of the teams was 2.8 years ($SD = 3.4$). Of these teams, 55 (48%) included only male respondents, 8 (7%) included only female respondents, and 47 (45%) included respondents from both genders.

Analyses

Internal structure and scale reliability

The internal structure of the measure was first tested with exploratory factor analysis (EFA) using factor analysis procedures in SPSS and in accordance with Pedhazur and Pedhazur Schmelkin (1991). The first EFA was run without any rotation or limitation of factors; however, in the following EFA the solution was restrained to the number of factors

obtained by application of the Scree test (Cattell, 1966) and by extraction of Eigenvalues greater than 1, and oblique (oblimin) rotation was computed.

For this procedure the initial 38-item measure was piloted with the sample of Study 1 (total N individuals = 98). These analyses were conducted at individual level of analysis, in accordance with traditional approaches to item analysis and scale development (e.g., Bliese, 2000; James, Demaree, & Wolf, 1993; Kozlowski & Klein, 2000). This strategy was intentional. Although other techniques such as ecological factor analyses may be seen as more appropriate for aggregated levels of analysis such as organizations, cultures, and social systems, they often rely on a large number of individual scores, which makes the group means more stable (see Hofstede, Bond, & Chung-Leung, 1993). In the present study the teams had a response average of 4.9 individuals per team, with the smallest team only with a 40% response rate; consequently the group means were less stable. In addition, running item statistics with individual responses not only avoids additional problems of dealing with combined data at the team level, such as the decrease of variance, but also maximizes the sample size (Klein, 1986; Nunnally, 1978). Particularly in this sample maximization of the size was important since the number of respondents was 98. The exploratory factor analysis was thus undertaken at the individual level of analysis, rather than at the group level in order to retain the maximum number of cases.

Confirmatory factor analysis (CFA) was conducted with the sample from Study 2. The confirmatory sample from Study 2 comprised a total of 112 teams (total N individuals = 395). The team scores were obtained by aggregating the individual scores on each item within the teams. This aggregation was obtained by computation of means to allow comparisons across teams without variances in the sample size. The confirmatory analyses were conducted with LISREL 8 (Jöreskog & Sörbom, 1993) based on a covariance matrix generated from the correlation matrix with additional means and standard deviations of all items derived from EFA. The estimation procedure was maximum likelihood (ML), which is appropriate for samples sizes of over 100 and presumes normal distribution. To test the adequacy of the models we followed Byrne (1998) and used a combination of absolute, relative, and parsimonious fit indexes. The chi-square measure was used to see how well the model fits the population. Nonsignificance of the chi-square reflects a good model fit. Because of the sensitivity of the χ^2 to the sample size, which can lead to problems of fit (Byrne, 1998), it is important to look into other additional fit indices. In addition we used the comparative fit index (CFI; Bentler, 1990), the goodness-of-fit index (GFI), and the adjusted goodness-of-fit index (AGFI; Bentler & Bonnet, 1980), which have the advantage of remaining relatively stable in small samples. These indices indicate a good model fit for values $>.90$. The parsimonious fit was assessed with the parsimonious goodness-

of-fit index (PGFI). Values $>.50$ or $>.60$ indicate a good parsimony fit. The analysis of the residuals was made using the root mean square error of approximation (RMSEA; Browne & Cudeck, 1989) and the standardized root mean squared residual (SRMR). Values of RMSEA $<.08$ indicate a good fit and $<.05$ a very good fit. For the SRMR, in general values $>.08$ indicate a poor fit, between .08 and .05 suggest a mediocre fit, and $<.05$ indicate a good fit (Byrne, 1998).

Validation

Two different sets of analyses examined aspects of validity of the measure. In one procedure we examine the power of agreement obtained within teams and discriminant power between teams. In another procedure the trust scales were judged based on their correlation with external criteria (team and organizational commitment). In both procedures, we used the team aggregated data from Study 2.

Consensual and discriminant power. In team research using aggregated measurements of individual responses, it is important to examine if there is sufficient agreement in order to justify the aggregation at team level (Schneider & Bowen, 1985). A measure is considered to have consensual validity when the responses from the members within a team are more similar to each other than it would be expected by chance (Klein, Dansereau, & Hall, 1994). The consensual validity of the scales was tested using the James et al. (1993) interrater agreement test—*r*wg(j)—and the intraclass coefficient indexes (ICC1 and ICC2) for the teams in the three social-care samples and for the total team sample ($N = 112$).

The *r*wg(j) measures the within-group interrater agreement on a particular construct. Average *r*wg(j) values of .70 and above are indicative of sufficient agreement level to suggest shared climates within teams (James et al., 1993). The intraclass coefficient indexes assess the relative consistency of responses among raters, the ICC(1) represents the degree of reliability associated with a single assessment of the group mean, and the ICC(2) provides an estimate of the reliability of the group means (Bartko, 1976; James, 1982). Both coefficients are related to each other as a function of group size (Bliese, 2000). In applied organizational research a criterion value of .12 or above for ICC(1) is indicative of reliability of single assessment of the group mean, whereas for ICC(2) criterion values between .60 and .70 have been used for aggregation (James, 1982).

The discriminant power of the scales was tested with ANOVA procedures. We conducted one-way ANOVAS on the trust scales between the teams in each organization and between the team in the team sample.

The minimum evidence for differences across groups is provided by an F ratio >1.00 (Hays, 1981).

Construct validity. In order to establish construct validity of the measures in this study a hypothesis testing approach was adopted (Nunnally, 1978) to examine whether the four facets of trust behave as hypothesized in relation to other variables. The relation between the four trust facets and the external criteria team commitment, affective commitment and continuance commitment were examined with Pearson correlations (one-tailed), using the aggregated team responses from Study 2 ($n = 112$). Previous to this analysis we performed CFA procedures on the commitment variables using LISREL 8. Also here the input covariance matrix was generated from the correlation matrix with additional means and standard deviations of all the commitment items. The estimation procedure was ML. The measurement model distinguished between team commitment (five items), affective commitment (five items), and continuance commitment (four items). This structure fitted the data well. The chi-square is equal to 96.14 and nonsignificant for $p < .01$ ($df = 73$, $p = .04$). The ratio χ^2/df is 1.3, which is also indicative of a good model fit (Wheaton, Muthén, Alwin, & Summers, 1977). Further analysis of the fit indexes also confirms the good fit of the three-factor model. Both CFI and GFI report values equal or above .90 (CFI = .94 and GFI = .90). Only AGFI reports a value under .90 (AGFI = .88). The residual indexes reflect a moderate to good model fit RMSEA is .05 and SRMR is .07. Finally, the PGFI is .64, which also is indicative of a good model fit. Based on these results, we considered the three-factor model to provide an adequate factor structure for the commitment variables.

RESULTS

The results are presented in order of the analyses undertaken: (1) exploratory factor analysis; (2) internal homogeneity; (3) confirmatory factor analysis; (4) consensual and discriminant power; and (5) construct validity.

Exploratory factor analysis

Series of exploratory factor analysis were conducted with data from the sample from Study 1. Preanalysis tests for suitability of this data set for factor analysis were calculated. The Kaiser-Mayer-Olkin (KMO) was .83, and the Barlett test for sphericity was significant at $p < .01$, indicating the suitability of this data for factor analytic procedures.

The first EFA was run without any rotation or limitation of factors. A four-factor solution was indicated by application of the Scree test (Cattell, 1966) and by extraction of Eigenvalues greater than 1. The four-factor solution explained 55.1% of the total variance. In the following EFA the solution was restrained to four factors and oblique rotation was computed. Based on the theoretical framework described earlier, the extracted factors are expected to correlate to some extent rather than being independent; therefore, use of an oblique factor solution (oblimin rotation) was more adequate than an orthogonal one. This solution extracted 55.1% of the total variance. The factor loadings, cross-loadings, and descriptive statistics are presented in Table 2.

The factor loadings are relatively unambiguous, although some cross-loading occurred in this solution. It was decided to use the highest loadings to determine to which factor an item belonged. A total of 26 items load at .50 or above onto the four-factor structure. Factor I includes 8 items and accounts for 28.62% of the total variance (Eigenvalue = 7.43) and loads exclusively onto items adapted from the OTI-Short version from Cummings and Bromiley (1996). Factor I will be further referred to as perceived trustworthiness. Factor II includes 8 items of the initial 11 of the cooperative behaviours scale. This factor accounts for 13.5% of the total variance and presents an Eigenvalue equal to 3.51. The items loading on this factor measure communication openness, personal involvement, and acceptance of influence within the team. We call this factor cooperative behaviours. Factor III comprises seven items from the adapted scale of Wrightsman (1991), and accounts for 7.8% of the variance, with an Eigenvalue of 2.03. We call this factor propensity to trust. The fourth factor (Factor IV) includes only three items of an initial eight corresponding to monitoring behaviours. This factor explains 5.1% of the variance and has an Eigenvalue equal to 1.5. This factor is called monitoring behaviours.

Internal homogeneity

More detailed analyses were undertaken to analyse the internal homogeneity of the exploratory four-factor solution. Table 3 reports the descriptive statistics, reliability (Cronbach's alphas), and intercorrelations of this solution only for the items loading equal or above .50. The α coefficients are equal or above .70, indicating acceptable levels of internal homogeneity and reliability for the four factors obtained in EFA (Table 3). Correlations between the scales occurred. The highest correlation was between perceived trustworthiness and cooperative behaviours, $r = .42$, $p < .01$. Propensity to trust correlated also with perceived trustworthiness, $r = .38$, $p < .01$, and with cooperative behaviours, $r = .32$, $p < .01$. These correlations are not high enough to raise concerns about multicollinearity; however, they do

TABLE 3
Descriptive statistics, reliability, and intercorrelation matrix for the EFA four-factor solution ($n = 98$)

	Descriptive statistics					*Intercorrelation matrix*			
Factors	*n*	*No.*	*M*	*SD*	α	*I*	*II*	*III*	*IV*
I Perceived trustworthiness	98	8	45.02	8.78	.88	1.0			
II Cooperative behaviours	93	8	43.43	7.35	.87	.41**	1.0		
III Propensity to trust	95	7	29.68	6.18	.78	.38**	.32**	1.0	
IV Monitoring behaviours	92	3	13.06	3.61	.70	−.16	−.14	−.10	1.0

n = Number of respondents; No. = number of items; M = scale mean; SD = standard deviation; α = Cronbach's alpha. **$p < .01$.

imply a possible halo effect in the measurements. Further research with work teams in different environments is needed to examine these findings in other contexts.

Confirmatory factor analysis

The four-factor structure obtained with EFA procedures was subjected to confirmatory factor analysis (CFA) with the samples from Study 2. The four-factor model was estimated through LISREL 8 using ML. The input covariance matrix was generated by LISREL 8 using the correlation matrix with additional means and standard deviations. The specification parameters were the following: (1) the factors are intercorrelated; (2) each observed variable (item) loads only on one factor; and (3) if necessary error measurements associated with each item can be correlated, but only when these variables load on the same factor.

The four-factor model shows a significant χ^2 equal to 377.28 ($df = 266$, $p < .01$). The results obtained by the fit indexes indicate that model fitted the data only moderately well. Only CFI reported a fit above. 90 (CFI = .95); GFI and AGFI were .78 and .74, respectively. The residuals indexes indicate a moderate fit: RMSEA is .06 and SRMR is .08. Only the parsimonious goodness of fit indicates a good fit (PGFI = .65).

The modification index values indicated that we could improve the model by adding several paths and error correlations from five items onto other factors, namely Items 7, 8, 17, 18, and 27. After theoretical examination of the item contents and given the main objective to obtain a multifaceted measure with differentiated item scales, we opted to eliminate these items. After eliminating these items, we reran CFAs in both studies and the same items loaded on the same factors across both studies, so the factor structure of Study 1 was replicated in Study 2 (see items printed in bold in Table 2).

Factor I (perceived trustworthiness) with six items, excluding Items 7 and 8; Factor II (cooperative behaviours) with six items, excluding Items 17 and 18; Factor III (propensity to trust) with six items excluding the Item 27; and Factor IV (monitoring behaviours) with three items. In addition, the modification index suggested adding one error correlation between Items 24 and 25 within the propensity to trust factor. Despite reporting a low standardized estimate (y24 = .26; Table 4), Item 24 was retained given its statistical significance (t-value = 2.01) and the improvement in model fit by adding the error correlation (Table 5). In accordance with Byrne, Shavelson, and Muthén (1989), error correlations within the same factor are justified since they do not alter significantly the measurement and structural parameter estimates. Table 4 reports the standardized solution for the

TABLE 4
Factors estimates on the CFA four-factor solution ($n = 112$)

Items	*Factors estimates standardized solution (SS)*	*Error variance (δ)*	R^2
I Perceived trustworthiness			
y1	.82	.32	.68
y2	.71	.49	.51
y3	.68	.54	.46
y4	.63	.57	.43
y5	.80	.37	.63
y6	.82	.32	.68
II Cooperative behaviours			
y11	.84	.29	.71
y12	.49	.71	.29
y13	.67	.55	.45
y14	.69	.53	.47
y15	.67	.55	.45
y16	.60	.64	.36
III Trust propensity			
y21	.90	.18	.82
y22	.65	.50	.50
y23	.79	.38	.62
y24	.26	.92 (.26)$^{\Theta}$	.08
y25	.41	.81 (.26)$^{\Theta}$	.19
y26	.69	.53	.47
IV Monitoring behaviours			
y31	.63	.44	.56
y32	.66	.57	.43
y33	.79	.58	.42

SS = Standardized solution of statistically significant factor loading estimates; δ = error variance measured; $^{\Theta}$ = error correlation; R^2 = square multiple correlation.

TABLE 5
Comparison of fit indices between CFA models on sample from Study 2

Models	χ^2	*df*	*p* <	χ^2/df	*CFI*	*GFI*	*AGFI*	*PGFI*	*RMSEA*	*SRMR*
Independent model	1084.10	210								
1-factor	578.67	185	.01	3.13	.60	.60	.50	.48	.14	.14
2-factors	469.56	184	.01	2.55	.71	.68	.60	.54	.12	.12
3-factors	300.86	182	.01	1.65	.88	.80	.74	.63	.08	.10
4-factors	237.13	180	.01	1.32	.94	.83	.78	.65	.05	.07

CFA four-factor model with the respective statistically significant factors loadings, error variances, and R^2.

In Table 5 the four-factor model shows a significant χ^2 equal to 237.13 ($df = 180$, $p < .01$). For the four-factor model the CFI is .94, which indicates a good model fit. Both the GFI and AGFI are good, showing fit equal to .83 and .78, respectively. PGFI is equal to .65, which indicates a good parsimonious fit. The residual indexes RMSEA and SRMR are .05 and .07, respectively, which confirm the adequate fit. Therefore, we consider the fit of the four-factor model to be adequate.

Following Bentler and Bonnet (1980) and Byrne (1998), we also ran several CFAs for concurrent model structures, in this case with one-, two-, and three-factor structures. In the model with a one-factor structure, all items loaded into one single latent variable. In the two-factor structure model, the items correspondent to perceived trustworthiness and propensity to trust, i.e., formative indicators, loaded into one latent variable, whereas the items from the cooperative behaviours and monitoring behaviours loaded into the other latent factor, i.e., reflective indicators. In the three-factor model, perceived trustworthiness and cooperative behaviours loaded into one latent construct; the other factors consist of propensity to trust and monitoring behaviours. In all models we maintained the error correlations between the same observed variables. In Table 5 are also present the fit indices for these models. As shown, the decrease in the number of factors is accompanied by a successive decline in model fitting. This is illustrated by the increase of the χ^2, as fewer factors are specified in the models. Likewise, the goodness of fit indices show a decrease in fit. Also the ratio χ^2/df increases as the models include less factors, with ratios below 2.0 indicating a good fit (Wheaton et al., 1977).

The models with the best fit are the three- and four-factor models. For the three- factor model the χ^2/df is 1.65, and for the four-factor model it is 1.32. The absolute indices, GFI and AGFI, fall under a moderate level of acceptance. For the three-factor model GFI is .80 and AGFI is .74, and for

the four-factor model GFI is .83 and AGFI is .78. The parsimonious fit in both models is $>.50$, which indicates a good fit. The PGFI obtained for the three- and four-factor models is .63 and .65, respectively. However, for only the four-factor model is the comparative fit superior to .90, and the residual indices RMSEA and SRMR show reasonable good fit, .05 and .07, respectively. Based on these results, the four-factor model is to be favoured above the three-factor model.

Consensual and discriminant power

We calculated the intrarater agreement—*r*wg(j)—and the intraclass coefficient index—ICC(1) and ICC(2)—for the trust and commitment variables obtained from CFA. The results displayed in Table 6 show that the average *r*wg(j) in each Social-Care organization and in the team sample ($N = 112$) are $>.70$. This indicates that the level of agreement within teams is high both for the trust and commitment variables. The highest intrarater agreement is for cooperative behaviours at Social-Care C (*r*wg = .97), and the lowest is for monitoring behaviours at Social-Care A, and affective commitment and continuance commitment at Social-Care B (*r*wg = .75). In the team sample, the lowest agreement obtained is for monitoring behaviours (*r*wg = .81), and the highest for cooperative behaviours (*r*wg = .93). The ICC(1) values obtained were above .12, indicating that part of the variance is between groups. The lowest ICC(1) is for cooperative behaviours at Social-Care B (ICC(1) = .16) and the highest is for perceived trustworthiness at Social-Care C (ICC(1) = .39). All values of ICC(2) were above .60, which suggests that team's means on the trust scales are reliable. The power of the trust scales to discriminate between teams is confirmed by *F* ratio results greater than the unit. At the team sample the *F* ratios of all variables are significant. The highest discriminant power is for perceived trustworthiness, $F(112, 395) = 2.34$, $p < .01$. Propensity to trust and cooperative behaviours have respectively, $F(112, 395) = 2.13$, $p < .01$, and $F(112, 395) = 2.10$, $p < .05$. Monitoring behaviours has the lowest discriminant power, $F(112, 395) = 1.97$, $p < .05$. Both results on the consensual and discriminate power of trust and commitment variables indicate that the aggregation of scores at team level is justified.

Construct validity

The pattern of correlations between the trust scales and the related constructs presented in Table 7 is in line with the expectations described previously and confirms most of our hypotheses. Propensity to trust, perceived trustworthiness, cooperative behaviours, and monitoring behaviours correlate significantly and in the expected direction with team

TABLE 6
Consensual and divergent scale powers within and between teams

	M	*SD*	*F*	*rwg(j)*	*ICC(1)*	*ICC(2)*
Social-Care A ($N = 41$ teams, $n = 143$ respondents)						
1. Propensity to trust	4.68	1.53	1.40	.91	.31	.82
2. Perceived trustworthiness	5.73	1.18	1.98*	.85	.36	.90
3. Cooperative behaviours	5.63	1.10	1.82	.96	.27	.78
4. Monitoring behaviours	3.95	1.29	1.38	.75	.25	.60
5. Team commitment	5.92	1.06	1.35	.85	.21	.73
6. Affective commitment	5.85	1.07	1.11	.70	.27	.65
7. Continuance commitment	3.67	1.58	1.79	.75	.34	.75
Social-Care B ($N = 44$ teams, $n = 159$ respondents)						
1. Propensity to trust	4.81	1.54	2.23*	.89	.31	.73
2. Perceived trustworthiness	4.77	1.51	1.42	.94	.30	.77
3. Cooperative behaviours	4.50	1.52	1.52*	.92	.16	.63
4. Monitoring behaviours	3.38	1.70	1.16	.91	.37	.61
5. Team commitment	5.31	1.55	1.63	.83	.20	.70
6. Affective commitment	5.40	1.40	1.20	.75	.19	.60
7. Continuance commitment	3.65	1.36	1.10	.75	.34	.72
Social-Care C ($N = 27$ teams, $n = 93$ respondents)						
1. Propensity to trust	4.19	1.09	1.46	.96	.35	.76
2. Perceived trustworthiness	5.82	.92	2.59*	.96	.39	.72
3. Cooperative behaviours	5.43	.97	1.73*	.97	.34	.73
4. Monitoring behaviours	3.48	1.17	1.10	.91	.19	.63
5. Team commitment	5.57	1.03	1.87*	.83	.20	.64
6. Affective commitment	5.99	.98	1.12	.76	.26	.64
7. Continuance commitment	3.23	1.23	1.50	.80	.20	.64

(*continued overleaf*)

TABLE 6
(*continued*)

	M	*SD*	*F*	*rwg(j)*	*ICC(1)*	*ICC(2)*
Team sample ($N = 112$ teams, $n = 395$ respondents)						
1. Propensity to trust	4.04	1.60	2.13**	.82	.32	.83
2. Perceived trustworthiness	5.36	1.35	2.34**	.81	.37	.91
3. Cooperative behaviours	5.33	1.30	2.10**	.81	.31	.73
4. Monitoring behaviours	3.32	1.39	1.97*	.75	.32	.60
5. Team commitment	5.59	1.30	1.70*	.82	.24	.70
6. Affective commitment	5.25	1.41	1.71*	.80	.32	.72
7. Continuance commitment	3.16	1.53	1.86**	.79	.34	.72

M = Mean; *SD* = standard deviation; *F* = ratio ANOVA; *r*wg = intrarater agreement; ICC(1) = single access of group mean; ICC(2) = the reliability of the group mean. *$p < .05$, **$p < .01$.

TABLE 7
Pearson correlations between trust and commitment variables ($n = 112$)

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. Propensity to trust	($\alpha = .84$)						
2. Perceived trustworthiness	.30**	($\alpha = .87$)					
3. Cooperative behaviours	.33**	.68**	($\alpha = .81$)				
4. Monitoring behaviours	−.05	−.19*	−.20*	($\alpha = .71$)			
5. Team commitment	.34**	.38**	.39**	−.26*	($\alpha = .80$)		
6. Affective commitment	.32**	.22*	.32**	−.20*	.39**	($\alpha = .72$)	
7. Continuance commitment	−.21*	−.19*	−.18	.20*	−.19*	−.27**	($\alpha = .74$)

*$p < .05$, **$p < .01$.

commitment, respectively $r = .34$, $p < .01$), $r = .38$, $p < .01$, $r = .39$, $p < .01$, and $r = –.26$, $p < .05$. Hypotheses 1a and 1b are therefore confirmed. With respect to the commitment to the organization, the results confirm Hypothesis 2b and partly confirm Hypothesis 2a. For affective commitment the correlations with the trust scales are significant and in the expected direction (Table 7). For continuance commitment the correlations with the trust scales occur in the expected direction but they are only significant for propensity to trust, $r = –.21$, $p < .05$, perceived trustworthiness, $r = –.19$, $p < .05$, and monitoring behaviours, $r = .20$, $p < .05$.

DISCUSSION

This article has described the development of a multifaceted measure of trust in the workplace and specifically in the context of work teams. The final 21-item version measure is presented in the Appendix. Evidence of the four-factor structure of the measure has been provided, based on both exploratory and confirmatory factor analyses. However, the presence of common method variance in the measurements of the trust facets indicates the need to confirm this structure in further studies using other samples. Evidence is also given for the reliability (internal consistency) of the scales and their consensual and divergent validity. Consensus within teams is demonstrated, both within and across organizations, in relation to the four components of trust measured: propensity to trust, perceived trustworthiness, cooperative behaviours, and monitoring behaviours. The extent to which it is possible to verify the existence of differences between teams was also examined in this study, with largely positive results emerging. Finally,

the relations obtained with external criterions variables provide initial support for the usability of this four-dimensional measure as a self-report measure for trust within teams. All of these psychometric analyses suggest that the final 21-item four-factor measure (see Appendix), is a reliable and valid multifaceted measure of trust at the team levels of analysis.

Consistent with other studies (e.g., Currall & Judge, 1995; Mayer et al., 1995; Smith & Barclay, 1997), our findings suggest that trust is a complex variable with a number of component parts. Our results support the distinction between propensity, perceived trustworthiness, and cooperative and monitoring behaviours often proposed in the literature as direct components of the trust construct. Two distinct formative indicators, i.e., propensity to trust and perceived trustworthiness, and two distinct reflective indicators, i.e., behavioural consequences of trust, correlated at low to moderate levels, with the exception of perceived trustworthiness and cooperative behaviours, which correlated strongly with each other in Study 2. The dimensions in this research can be mostly compared with the dimensions proposed in the work of Mayer et al. (1995) and with Smith and Barclay (1997). However, given the "theory trimming" approach to LISREL followed in this study, which involved the iterative deletion of structural equation relationships based on the modification index until the best fitting model is produced (Hayduk, 1987), the final measurement model defining the structure of this measure was tested in the same sample that suggested the model modifications. Therefore, the final structure of this measure should be cross-validated in a different sample.

The scales correlated in the expected direction with team commitment and affective commitment to the organization, but the correlations with continuance commitment to the organization were less conclusive, particularly for cooperative behaviours. The results support in general the notion that teams where members perceive colleagues as being trustworthy, reveal fewer monitoring behaviours and more cooperative behaviours, are more committed than teams where members perceive their colleagues as being less trustworthy, and reveal more monitoring behaviours and fewer cooperative behaviours. In addition, these teams are also more affectively committed to their organization.

The high level of consensus found for the facets of our 21-item measure can be explained by the proximal team focus of the scales and by the proximal work environment among team members (Kozlowski & Bell, 2003; West, 2001). With regard to other measures of trust that evaluate more general environments such as governance, organizations as a whole, or even dispersed teams, there is less likelihood of social interaction leading to shared meanings. The extent to which it is possible to discriminate variations in trust components between the teams was also confirmed in this study. This justifies the aggregation of data at the team level, and suggests that in

this study, trust within teams can be assessed with a certain degree of accuracy, even though the number of members in each team ranges between three and seven. An interesting finding is that variations in the level of agreement within teams varied across the four facets of trust. The evidence suggests that there was most agreement in relation to the cooperative behaviours scale and least agreement in relation to the monitoring behaviour scale. As suggested by Bigley and Pearce (1998), different components can be more important in some contexts than others, depending on the degree of familiarity between individuals and the degree of dependence. Since we were dealing with teams where members have already been working together for some years, trust between these members may be more related to the level of cooperation within the team than to the lack of monitoring. Future research might examine the question why particular dimensions produce more or less agreement, and whether these variations occur in consistent ways across different types of teams.

Finally, some limitations regarding the present study need to be acknowledged, particularly with regard to its main purpose of developing and validating a usable but multifaceted self-report measure of trust in working teams. First, as previously mentioned, it is appropriate to call for further, independent validation studies of the measure preferably using a range of different samples, across different countries, and involving different types of teams in workplace settings. As with all articles reporting the development of a measure, the samples of teams upon which the present article is based call for replication, extension, and validation in other independent samples. Second, although the teams used in this article originated from various levels of hierarchy across different organizations (including management teams, supervision teams, and staff teams), a limitation of this sample was that all teams were drawn from governmental health-care organizations. Again, further research is warranted to examine the psychometric properties of, and response patterns to, the measure across organizations in different sectors of the private and public sectors of the economy. Third, and finally, future research should extend the range of outcomes included as dependent variables beyond what we were able to do in this initial article, which concentrated upon development of this measure of trust as an independent variable. Possible outcomes could include links to team performance, innovation, climate, turnover of team members (and other individual-level constructs of job satisfaction, psychological well-being, burnout, and so forth), and interteam-level effects in organizations.

CONCLUSIONS AND PRACTICAL IMPLICATIONS

To conclude, the 21-item measure developed in this study provides an accessible and easily administrated measure of team trust based on distinct

but related indicators. It can be used in settings such as organizational or team climate surveys, and team building and development, since trust is viewed as one important mechanism to improve performance and effectiveness of teams. The practical implication is that managers can recognize the presence or absence of trust through these indicators, and intervene if necessary in order to create or maintain that trust. Intervention studies with the objective of improving individual or team perceptions of trust could potentially use this measure on a before, during, and after basis in a longitudinal, repeat measures design. Where trust in teams has become an important precondition for team performance and organizational success, being able to measure the multidimensional concept of trust with validity and reliability is an important first step.

The development of this measure, we hope, will facilitate such measurement in both research and practical intervention settings and provides organizational researchers with an easy-to-administer, comprehensive, and pragmatic measurement tool.

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Original manuscript received October 2007
Revised manuscript received August 2009
First published online April 2010

APPENDIX

Items and subscale composition of the final 21-item measure of trust in teams

Propensity to trust	
1.	Most people in this team do not hesitate to help a person in need.
2.	In this team most people speak out for what they believe in.
3.	In this team most people stand behind their convictions.
4.	The typical person in this team is sincerely concerned about the problems of others.
5.	Most people will act as "Good Samaritans" if given the opportunity.
6.	People usually tell the truth, even when they know they will be better off by lying.
Perceived trustworthiness	
7.	In this team people can rely on each other.
8.	We have complete confidence in each other's ability to perform tasks.
9.	In this team people will keep their word.
10.	There are some hidden agendas in this team. (r)
11.	Some people in this team often try to get out of previous commitments. (r)
12.	In this team people look for each other's interests honestly.
Cooperative behaviours	
13.	In this team we work in a climate of cooperation.
14.	In this team we discuss and deal with issues or problems openly.
15.	While taking a decision we take each other's opinion into consideration.
16.	Some people hold back relevant information in this team. (r)
17.	In this team people minimize what they tell about themselves. (r)
18.	Most people in this team are open to advice and help from others.
Monitoring behaviours	
19.	In this team people watch each other very closely.
20.	In this team people check whether others keep their promises.
21.	In this team most people tend to keep each other's work under surveillance.

All items measured on a 7-point response scale (1 = "completely disagree", 7 = "completely agree"). Reverse scored items denoted by (r). Researchers are encouraged to use the scale in future research with the written permission of the authors.