A Matter of Trust

Fernandes da Costa, A.C.

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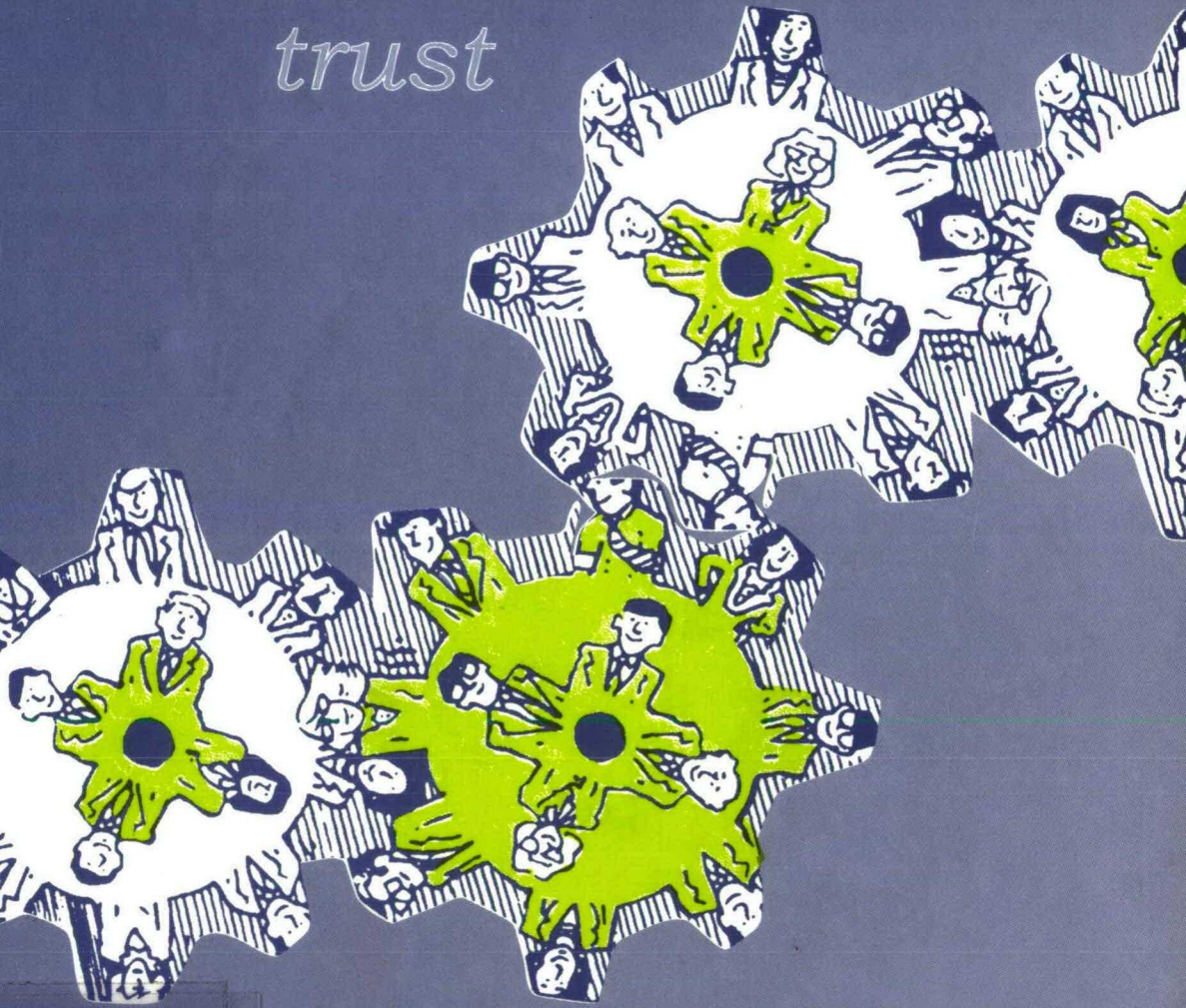
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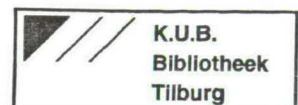
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*To my mother
and the memory of my father*

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Tilburg, 9 October 2000   Ana Cristina Costa

Contents

Chapter 1

Introduction

The concept of trust has entered the literature in many fields of science. Trust has been studied with regard to social relations, political systems, organizations, economical transactions and even human-computer interaction. For decades trust was incorporated in theoretical models without being explicitly questioned or studied. Its silent presence can be detected in many political, sociological and economical writings during the earlier 70's en 80's (Mitzal, 1996). The first assumptions refer to the societal transitions from pre-industrial to industrial/modern society. Lewis & Weigert (1985) and Zucker (1986) argue that societies moved from trust based on interaction, tradition and community values, to trust based on formal and institutional mechanisms, in order to deal with complexity and sustain functional interdependencies. Both political and sociological theories rested on assumptions based on "the more or less rational of pursuit of self interests" (Dunn, 1993: 641). On the one hand, it was argued that trust needed to be confined to institutions, in order to create a common ground to achieve uniformity and deal with the complexity inherent to modern social systems (Zucker, 1986). On the other hand, trust was seen as a valuable and scarce resource that could fight individualism in modern society. Similarly, in economic theories the assumptions underlying economic transactions rested on the perception of individual actors as rational opportunists (e.g. Williamson, 1975).

Over the last decade, the notion trust has been used frequently not only in macro theories but also in micro theories. The focus has not been limited to disputes about whom to trust (persons vs. institutions), but has expanded to issues concerning cooperation and competition, emphasizing the development and maintenance of trust in different contexts. At the macro level, the most recent use of the term appears to be related to the changing conditions of modernity. The importance of trust is reflected in the context of specific societal features, such as reflexivity, globalization and the increased level of risk (Giddens, 1994). Authors such as Beck (1994) argue that rationality in modern societies involves risk taking as far as others are involved, and considerations about the possibility of future damage as a result of our actions. In both processes trust is necessary. Fukuyama (1995), on the other hand, uses this notion as an attempt to explain empirical differences in levels of cooperation in various social, organizational and political systems. Research on the success of economic regions emphasizes the importance of trust between business partners. Here, trust is not only seen as a necessary precondition for the development of local economies but also as a product of this type of development (Sabel, 1993).

Trust can also be addressed at the micro level and focus on forms of personalized trust such as interpersonal or intergroup trust. At this level, trust is essentially based on, and cultivated through, face-to-face relationships between friends, partners, colleagues, etc. Contrary to the rational and the instrumental perspectives, the psychological theories suggest that trust is not only based on rational choices but also on affective bonds (e.g. McAllister, 1995). Such frameworks consider the psychology of the individual as well as the context in which trust occurs.

Within organization studies trust has been addressed at both macro and micro levels, and it has become a central topic of theory and research in the last few years. The theoretical frameworks used, reflect essentially contributions from sociology, economics and psychology. The existing body of knowledge suggest that trust may be a "meso" concept, integrating micro level psychological processes and group dynamics with macro level organizational and institutional contingencies (Rousseau, Stikin, Burt & Carmerer, 1998). In fact, as illustrated by Kramer & Tyler (1996) in their book, the study of trust within and between firms is simultaneously related to dispositions, perceptions, decisions, behaviors, social networks, and institutions. The diversity in conceptualizations and functions, together with a diversified and continuously changing context of work relationships, makes trust one of the most difficult concepts to handle in empirical research. However, efforts have been made to understand the efficiencies of trust in many work relationships and at different organizational levels.

The recent discussions suggest that trust is a central factor in organizational behavior and survival of organizations. Researchers have acknowledged the importance of trust in sustaining effectiveness, and recognized its influence on coordination and control at the institutional (e.g. Zucker, 1986) and the

interpersonal (e.g. McAllister, 1995) levels of the organization. In this book we intend to contribute to this discussion by exploring the nature, conditions and effects of trust within work teams. Understanding the role of trust at this level has become increasingly important, as organizations change and re-structure their activities around small business units, such as work teams, task forces, quality circles, or project teams. In this introduction we provide a general overview about what is known over this concept across disciplines. The discussion will be centered around three main questions which concern the nature, the function and the importance of trust.

1.1   What is trust?

To date no universal agreement exists on the definition of trust. Several authors have expressed their disappointment regarding the lack of effort made to integrate the different conceptualizations proposed (e.g. Shapiro, 1987; Lewicki & Bunker, 1996). Others argue that the nature of trust has been obscure, since different concepts have been used to define it, or to explain its nature, without clear distinctions being made (e.g. Mayer, Davis & Schoorman, 1995). The concepts most often related to trust are cooperation, confidence and predictability.

In many definitions, trust appears as a condition to cooperation. For instance, in Gambetta (1988) trusting someone presupposes that "the probability that he will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider engaging in some form of cooperation with him" (1988:217). Although trust can frequently lead to cooperative behavior, it does not mean that cooperation will not occur without it. Mayer, et al., (1995) argue that in coercive environments cooperation may occur more as a consequence of power than as a consequence of trust. Two employees can cooperate without trusting each other if they expect to be punished when results are not achieved. In such situations cooperation might emerge in the absence of trust because of lack of alternatives available (Mayer, et al., 1995).

The relationship between confidence and trust is more vague. Cook & Wall (1980:39) define trust as "the extent to which one is willing to ascribe good intentions and have confidence in the words and actions of other people.". Luhmann (1979) suggests that the distinction between trust and confidence is a matter of perception and attribution. Accordingly, trust differs from confidence because it requires the recognition that risk exists. If a person does not consider available alternatives, he or she is in a condition of confidence. Whereas, if a person chooses one action in preference of others, even with the possibility of being disappointed, he or she is in a condition of trust (Luhmann, 1979).

Although there is a clear relationship between predictability and trust, the association is again ambiguous (Mayer, et al.,1995). According to Lewis & Weigert (1985) both predictability and trust constitute mechanisms of uncertainty reduction. Trust presupposes prediction based on former

knowledge, but merely predictability is insufficient to make a person trust (Mayer, et al., 1995). For instance, in situations where negative outcomes can be predicted, the probability of trust does not increase. On the contrary, this predictability can reduce the likelihood that a person will trust and therefore engage actions that allow him/her to be vulnerable to the other party. In this sense, predictability is not a sufficient condition to trust. Trust is only possible with a reliable background (Luhmann, 1979).

Another attempt found to define trust is by associating it with distrust. Traditional perspectives tend to view trust and distrust as one bipolar construct in which trust stands for "positive" or "good" and distrust for "negative" or "bad". From a rational choice view point, behavioral decision theorists define trust as a cooperative conduct and distrust as a non-cooperative conduct in game settings (e.g. Arrow, 1974; Axelrod, 1984; Coleman, 1990; etc.). From a personality angle, trust and distrust are two opposite ends of a continuum. This continuum measures expectations of one's ability to trust others, where low expectations are indicative of high distrust (Rotter, 1980). More recently, scholars conceptualize and operationalize trust and distrust as two distinct constructs (e.g. Hosmer, 1995; Lewicki, McAllister & Bies, 1998). This distinction is supported by several findings. For instance, Robinson, Shaver & Wrightsman (1991) show that trust beliefs are different from distrust beliefs (cynicism). Constantinople (1969) demonstrates also that trust and distrust can be measured separately and that they have distinct patterns of variation across, gender, years and time span. Furthermore, it is even possible that trust and distrust coexist. Mancini (1993) argues that ambivalence within relationships involves management of attitudes of trust and distrust. In the organizational context, for instance, this ambivalence is present and can be seen in several collaborative or teamwork relationships. In particular, when individuals tend to minimize distrust in some relationships by enhancing trust in others in order to enhance performance (Lewicki, et al., 1998). Considering that relationships are multifaceted and dynamic, it is possible that partners might trust each other in some aspects, not trust each other in other respects, and even distrust each other at some time. Although trust and distrust are often viewed as two related phenomena, we will confine ourselves to trust only.

Different approaches and treatments to the concept of trust have been proposed across disciplines. The lack of clarity around it together with the multiplexity of levels of analysis, has lead to some confusion about what trust is. However, we believe that the earlier work has not been wasted. Each conceptualization provides new information, adds insight and understanding to the meaning of trust. In fact, many authors appear united with regard to the importance of trust. Lewis & Weigert (1985:968) argue that trust "is indispensable in social relationships". Gambetta (1988) suggest that trust enables cooperative behavior, and Zucker (1986:56) argues that trust "is vital for the maintenance of cooperation". Miles & Snow (1992) emphasize the importance of trust for the development of collaborative organizational forms such as the network. With respect to organizational functioning the importance

of trust has also been stressed. According to Williamsom (1975) and Bromiley & Cummings (1995) trust helps to reduce transaction costs, diminishes opportunistic behavior (Mishra, 1996), promotes effective responses to crisis, and provides harmonious mode of functioning by eliminating frictions among organizational members (Lemerik & Cunnington, 1993).

There may be no agreement with respect to one definition, but as Rousseau et al. (1998) note, regardless of the scientific background of the authors - from micro psychological theories (e.g. McAllister, 1995; Lewicki & Bunker, 1995, 1996; Zand, 1972, etc) to social/economics (e.g. Barber, 1983; Bromiley & Cummings, 1995; etc) - positive expectations and the willingness to become vulnerable are critical aspects in the definition of trust. This suggests that the fundamental elements are comparable across theory and research from different disciplines (Rousseau, et al. 1998). Therefore, rather than the fragmentation of the different conceptualizations, the integration should be encouraged, in order to increase the potential for new insights and critical discussions about this concept. Later in this book we will present a definition of trust that provides the framework for our research.

1.2   Why do people trust?

Several conceptualizations are based on the assumption that trust roots in rationality. In general, they assume that people are motivated to maximize their personal gains and minimize their personal losses in social interactions (e.g. Williamsom, 1975). From this point of view trust is the calculation of likelihood of future cooperation (Gambetta, 1988). This framework has lead to some important findings, but it has also restricted the focus on self-interest and self-defensive mechanisms to explain the problems of social interaction (Kramer & Tyler, 1996).

There has been some questioning about the adequacy of the rational model, specially when considering problems such as the decline in legitimacy of social institutions, economic discontent, the emergence of political problems of social inequity, and public fears of health and public safety (Mitzal, 1996). Several scholars have given greater attention to the context within which individuals behave, considering trust the basis for social interaction (Etzionni, 1988; Selzenik, 1992). Kramer (1994) labels this movement as "social contextualism". This perspective assumes that "it is the expectation of an ongoing relationship that sustains trust in the actions of others" (Kramer, Brewer & Hanna, 1996:3). In other words, people's decisions about whether to trust or not are based on the probability of continuity. This perspective also recognizes that societies are moving away from paradigms such as protection against betrayal, transaction costs, and long term exchanges between individuals or between individuals and organizations. Hence, trust is linked to the social context and changes as the context changes. These approaches are useful because they extend the horizon for the decision makers, when thinking about whether to trust or not. However,

they still reflect an essentially calculative conception of trust, since they assume that the decision to trust is predicted primarily by the computation of risks.

Trust can also be seen as an internalized orientation toward society and individuals that goes beyond rational calculations. The personality literature demonstrates that, in spite of the original motives that might lead to trust, the decision to trust or not, develops a functional autonomy over time, becoming distinct from short term calculations of self-interest. Accordingly, people trust others because they feel that it is morally appropriate or because they are morally committed to it (Kramer et al., 1996). Evidence of this non-instrumental nature is provided by the important role that identification with others plays in facilitating cooperation (e.g. Morgan & Hunt, 1994). Another type of evidence is proposed by Tyler & Degoey (1996) who argue that people not only are more willing to cooperate when they have a social bond with others, but also in situations where they draw identity-relevant information from their interactions with formal systems. This suggests that non-instrumental concerns rather than instrumental motivations frame the basis of trust. However, in order to avoid the exploration of the incompatibilities between the instrumental and the non-instrumental models, it is important to consider that situational factors shape the importance of these concerns. As suggested by Kramer & Tyler (1996) each model explains "why do people trust?" in different contexts.

1.3   Why is trust important?

The importance of trust has been acknowledged in many respects and the interest devoted to this notion has increased across disciplines. Macro-social theories emphasize the importance of trust as a base for social cooperation, solidarity and consensus. The widespread consciousness that the traditional bases for social order have been eroded suggest that there is a need to search for new alternatives (Mitzal, 1996). The awareness of this transition has been widely acknowledged in social sciences and is labeled in many different ways: some authors write about post-industrial society, others about post-modernity and global society. Similarly, macro-economic theories relate the importance of trust to the need to ensure that democracy and capitalism work properly. The re-discussion of alternatives to the traditional bases of cooperation in society revives the notion of trust as a valuable asset.

The organizational literature considers trust as an imperative phenomena for the development and survival of organizations. The constant transformations in the environment either resulting from political, social or economic developments, partly explain the increased importance of trust in this context. In order to remain effective, organizations have come to rely less on structures and formal processes, and more on collaboration and cooperation processes inside and outside the firm (Taillieu, 1990; Roe, 1992). Trust can be seen as one of the fundamental motors of these processes. If trust is absent, no one will risk to move first and all will sacrifice the gains of collaboration and cooperation.

Although laws, contracts, and economic rationality are still necessary conditions for the stability and prosperity of organizations, to prevail these must be based on reciprocity, moral obligation and trust (Fukuyama, 1995).

In micro level approaches, the trust imperative has also been emphasized. Several scholars relate trust to important outcomes such as performance, satisfaction, commitment and organizational effectiveness (e.g. Morgan & Hunt, 1994; Bromiley & Cummings, 1995). Others emphasize the mechanisms that create and develop trust within and between organizations (e.g Zand, 1972; Lewicki & Bunker, 1995; Powell, 1996). Among these some focus on the mechanisms for minimizing the consequences of broken trust such as control mechanisms and contracts, in order to avoid self-serving behaviors as well as potential litigation (e.g. Williamson, 1975). Since trust is central to social life when neither traditional certainties nor modern probabilities hold (Hart, 1988), the renewed significance of the issue of trust in recent studies can be explained by the transitional character of our present condition.

1.4   Aim and structure of the book

Many scholars agree that the role of trust is significant and increasing. The importance of this notion is the result of major structural changes in different segments in modern society. In the organizational context, these changes have had implications for the of way thinking and structuring of organizations. The recent search for new ways of promoting cooperation and collaboration explains the emphasis on interpersonal and intergroup dynamics at the workplace, and places trust at the center of this understanding. As organizations move towards more flexible and participative management forms, the reorganization of activities around work teams becomes more prevalent as the real unit of organizing. Understanding the role of trust at this level, and the effects on team performance and effectiveness, becomes increasingly important.

The aim of this book is to explore the nature and functioning of trust within teams in organizations, and to examine the effects on team performance and other dimensions of effectiveness. Before addressing these issues, in the following chapter (Chapter 2), we discuss in detail various approaches to trust according to three main perspectives: Sociology, Economics and Psychology. Because it is impossible to review all theories and models of trust, we will limit the discussion to those more relevant for the study of trust in organizations. In Chapter 3 we focus on trust in organizations by describing the organizational transformations that lead to the trust imperative, and by discussing how trust has been studied at different levels. The framework for the study of trust in work teams is presented in Chapter 4. Here, the research domain, the definition as well as our conceptual model and hypotheses are presented. The method is specified in Chapter 5. In Chapter 6 we describe the development of the measures of trust. Empirical data to test our model and hypotheses are reported in the Chapters 7 & 8. Finally, the conclusions will be discussed in Chapter 9.

Chapter 2

Approaches to the study of trust

Understanding why people trust and how trust affects human relationships have been central topics of research for psychologists (e.g. Deutsch, 1962), sociologists (e.g. Lewis & Weigert, 1985), political scientists, economists (Axelrod, 1984; Williamson, 1975) and organizational scholars (e.g. Kramer & Tyler, 1996). As pointed out in the introduction, an analysis of trust may refer to trust between people or to trust in abstract systems such as organizations, institutions and societies as a whole. Earlier literature reviews emphasize this distinction and categorize the different approaches according to their theoretical orientation and level of analysis (e.g. Hosmer, 1995; Lewicki & Bunker, 1995; Worchel, 1979). In this chapter we review several of these approaches. In particular we focus on those within the sociological, economic and psychological perspectives that play a major role in organization theory and most contribute to our research purposes. We discuss the differences and communalities between approaches, and describe the relevant functions and dynamics of trust within the different perspectives and contexts of research.

2.1   Sociological approaches

The central assumption underlying the sociological approaches is that trust is a social reality and therefore should be seen as a "collective attribute" (Lewis & Weigert, 1985). This point of view overlooks the psychological aspects of trust and concentrates on its social function. Accordingly, trust exists in a social system as far as "the members of that system act according to and are secure in the expected futures constituted by the presence of each other on their symbolic representations" (Lewis & Weigert, 1985:968). While distinguishing trust between people from trust in abstract systems, sociologists essentially view it as a phenomenon within and between institutions. In particular they emphasize the mechanisms and the importance of institutionalizing trust in society. This is stressed in the work of Parsons (1969) who views trust as being central to social order, and in the theory of the reduction of social complexity by Luhmann (1979). Sociologists recognize, though, that individual differences or past experiences are relevant conditions to trust. For instance, Luhmann (1979) argues that trust implies expectations of reciprocity and an evaluation of the conditions as being more or less encouraging for the trusting attitudes. Yet, such conditions are only perceived as initiators to trust without actually constituting it.

2.1.1   Conceptual analysis

Sociologists were the first to propose that an adequate conceptual analysis of trust begins by recognizing its "multi-faceted" character. To Lewis & Weigert (1985) trust is a highly complex phenomenon containing distinct cognitive, emotional and behavioral dimensions. These dimensions are interdependent and mutually supporting aspects of the one unitary experience called *trust* (Lewis & Weigert, 1985). The cognitive dimension provides the foundation upon which individuals can discriminate persons and institutions as being trustworthy, untrustworthy, or unknown (Luhmann, 1979; Lewis & Weigert, 1985). The affective dimension is complementary to the cognitive dimension and refers to the emotional bond between those who are involved in the situation (Lewis & Weigert, 1985). Finally, the behavioral dimension reflects the significance of the earlier dimensions and enables the individuals to act upon their own judgements. Although present in every instance of trust, the relative importance of each dimension differs according to the type of the relationship, situation, and system under consideration. To Luhmann (1979) and to Lewis & Weigert (1985) variations in strength and importance of the cognitive vs. the emotional dimension provide the grounds for the differentiation between two important subtypes of trust:

> - *personal* or *interpersonal trust*, is based on the emotional bond between individuals and is more characteristic of primary and small group relationships;

- *system* or *institutional trust,* on the contrary, depends more on the cognitive or rational dimension and characterizes abstract relationships where trust is related to the functioning of bureaucratic systems (e.g. legal, political, and economical).

The conceptualization of trust at these two levels suggests that different bases and processes are responsible for its emergence, development and maintenance. Since trust is difficult to measure directly, the signals or indicators of its presence may vary according to the mechanisms used to produce it (Zucker, 1986). Consistent with this point of view, three mechanism for producing trust can be distinguished:

- *process based,* where trust is based on past experiences, or future expectations based on reputation or gift exchange;
- *characteristic based,* where trust is dependent on characteristics such as familiarity, background or ethnicity;
- *institutional based,* where trust is based on institutional guarantees either associated with professional certification or intermediary mechanisms.

Zucker (1986) argues that interpersonal trust develops either through repeated interactions between individuals (process-based) or through mechanisms of social similarity (characteristic-based). In both cases, the maintenance of trust depends on factors such as interdependence, reciprocity and continuity of interaction of the people involved. Institutional trust, on the other hand, can be grounded on two different bases: person or firm specific attributes, and intermediary mechanisms (Zucker, 1986). Trust based on person or firm attributes refers to professional credentials, memberships or functions that have clear and specific expectations within the society (e.g. lawyers, doctors, engineers, etc.). To a certain extent trust based on these attributes constitutes a mechanism to legitimize authority in the system, since it develops and extends these expectations to other professional or social groups. Trust resulting from intermediary mechanisms is related to rules, bureaucratic sanctions and safeguards that provide some system guarantees (Zucker, 1986). Here, the development and maintenance of trust is dependent on factors such as the level of perceived fairness, objectivity in handling affairs, and openness to participation of the system rules.

2.1.2   The social functions of trust

Central to many assumptions around the function of trust in society is the shift in relative importance of the institutional basis over the interpersonal one. Zucker (1986) provides us with a social-economic explanation for this transition. She argues that the informal mechanisms from which interpersonal trust can be developed, have been disrupted by factors such as immigration, the pressure for exchange across group boundaries, and geographical distance. Under these conditions, the impossibility of trust to derive from community values and

practices, made formal and institutional mechanisms necessary in order to produce it (Zucker, 1986). Similar arguments are presented in the sociological literature suggesting that modern societies no longer rest on fixed social settings where mechanisms create and sustain interpersonal trust (e.g. Luhmann, 1979; Lewis & Weigert, 1985; Kasperson Golden & Tuler, 1992). Instead, the widespread anonymity between individuals and the demographically large and complex structures, made modern societies more dependent on the ability of institutions to perform and maintain the conditions for social order (Mitzal, 1996). The following theoretical frameworks reflect on these issues and describe the major social functions of trust.

1 Integrative function in the establishment of social order

Parsons (1969) places trust in the center of the construction of social order. He assumes that normative structures are the only route to social order, since societies could not be stable if based on self-interest and on individualistic accounts. Normative structures rest on a common value system resultant from the institutionalization of norms and values that mediate and stabilize social interactions in that system (Mitzal, 1996). In this perspective, trust is seen as a form of legitimation of order and social community, being "the attitudinal ground for the acceptance of solidarity" (Parsons, 1969:149).

According to Parsons, trust is created through solidarity patterns of both "other orientation" (Gesellschaft), which commits individuals to norms and values of reciprocity, and "common orientation" (Gemeinschaft) which enhance responsibility through a common identity (Parsons, 1969). Although the importance of interpersonal relationships is still emphasized, the idea of normative structures fulfilling an integrative function lead Parsons to focus his attention not so much on the individual actor but more on the social system in which the individual happens to be acting (Mitzal, 1996). Accordingly, solidarity and trust are grounded in pre-existing consensus carried within social structures, and are a product of an effective integration of norms and values (Parsons, 1969).

One of the strong aspects of this theory is that it acknowledges the simultaneous occurrence of interpersonal and system trust in modern society. Trust performs not only an important function in increasing the effectiveness of the system, but secures also the conditions for cooperation between individuals and groups (Mitzal, 1996). However, several criticisms have been raised with respect to some other assumptions underlying this theory. First, the idea of a social reality based on a value-integrated society is considered far too simplistic and unrealistic, since it ignores the fact that social life is also structured by trade and economic systems (Giddens, 1994; Mitzal, 1996). Second, by considering trust as a result of either social or system integration, Parsons' theory is unable to see how the calculative orientation in a situation can raise routinized practices that sustain trust. Finally, this theory considers trust to be

the only explanatory device for social order and, at the same time, uses it to explain familiarity, conformity and symbolic legitimation, which leaves us with a poor instrument to analyze social reality (Mitzal, 1996).

2 Reduction of social complexity

The characterization of modern life as increasingly complex and contingent has led Luhmann (1979) to the observation that there is a need for a generalized mechanism that generates trust without eliminating the reality of choice. Luhmann (1979) views trust as a social mechanism that enables individuals to deal with the complexity and contingency of modern life. One of the most important points made by Luhmann is that trust can be understood and compared with other equivalent mechanisms, such as power, from the point of view of its function. To this author, trust can have different shapes, occur on different levels, be more or less spontaneous, but it always performs the same function; "...it reduces complexity by going beyond the available information and generalizing expectations of behavior in that it replaces missing information with an internally guaranteed security" (Luhmann, 1979:93). Trust serves to increase the potential of a system by reducing social complexity and by increasing the "tolerance of uncertainty" (1979:150).

In Luhmann's perspective trust is a property of the system and is rational because under the conditions of modern life, it builds up more in a tactical perceptive manner than spontaneously. Trust is achieved more through flexibility of self-presentation than through emotion (Luhmann, 1979). This is explainable by the fact that, in the present condition, people more often interact with and depend on others which they do not know very well (Lewis & Weigert, 1985). For instance, people will not hesitate to buy a house or a car from a stranger if they know that this person works for well known and respectable corporation. The increased importance of system or institutional trust rests on the belief that others also trust, which does not necessarily imply emotional bonds between people but reflection and a conscious approach.

Despite the assumption that trust is central to a capacity of a system to reduce complexity, Luhmann, unlike Parsons, does not assume that trust is the basic foundation of society. Moreover, he introduces distrust as an alternative mechanism. However, only in systems that are trusted can distrust be institutionalized (Mitzal, 1996). Otherwise, distrust can become personal and turn into a destructive force. By considering trust as a property of systems, Luhmann focuses only on the rational mechanisms for maintaining systems, rather than on individual or group mechanisms such as the process of decision-making. Also, this perspective neglects the possibility of disappointment (Mitzal, 1996). Furthermore, by assuming that trust is based on knowledge, familiarity or previous experiences, Luhmann (1979) ignores the possibility of developing trust in contexts of change. In such contexts trust may be very difficult to develop from predictable bases, since there is very little knowledge or previous

experience to provide the essential information to create and assure that trust. For example, in organizations any change needs additional inputs of trust in order to be effective (Shaw, 1997).

2.2   Economic approaches

The economic approaches place the concept of trust in the context of economic transactions. Contrary to the sociological approaches which focus on the nature of trust, economics focuses on the transactional relationships between partners, the risks involved, and the implications of trusting in economic contexts. Generally speaking, economic approaches tend to ignore the affective content of trust, considering it essentially a "rational choice" (e.g. Williamson, 1975). The rational choice point of view assumes that "any participation in collective action can be explained by models of rational individual action" (Mitzal 1996:77). This perspective understands human behavior as a fusion between individual and common forces. The individual forces represent actions that individuals pursue in their own interests, and the common forces are the ones that result from the obligations and constrains imposed by the collective (Williamson, 1985). Among other things, this theory forms the potential for a linkage between macro and micro levels models. Empirical studies in this field range along a continuum of options. From cases based on partners' mutual trust, through cases based on conventions or limited trust, to situations based on a lack of trust, scholars study trust in relation to transactions between individuals, groups or firms (Mitzal, 1996). In other studies, trust is explored in relation to, or as a form of, institutional governance (e.g. Bradach & Eccles, 1989; Powell, 1996; Creed & Miles, 1996). Authors also emphasize the importance of trust for the development of large economies by viewing it as a necessary precondition or as product of this development (e.g. Sabel, 1993; Fukuyama, 1995).

2.2.1   Conceptual analysis

In the economic literature trust is defined as a "behavior" or as a "belief". Taken as a behavior, trust is described as an "action that increases one's vulnerability to another whose behavior is not under one's control, and takes place in a situation where the penalty suffered if the trust is abused would lead one to regret the action" (Lorenz, 1988:197). In this definition trust presupposes decision making in a situation of risk. This risk is based on the possibility that the other party will behave opportunistically. Dasgupta (1988) stresses the importance of trust as a behavior, arguing that its presence or absence can have a strong influence on the way people behave towards each other. For instance, when people chose to monitor others, it might be an indicator of lack of trust. Another favorable argument for the behavioral definition, is the association of trust with cooperative relationships and the consequent high performance of

individuals and/or institutions regarding the development of markets and economies (e.g. Casson, 1991).

Defined as a belief, trust is related to the basis upon which people ground their choice to trust or not. Bromiley & Cummings (1995:223) define trust "as an individual's belief or a common belief among a group of individuals that another individual or group: (1) makes good-faith efforts to behave in accordance with any commitments both explicitly or implicitly, (2) is honest in whatever negotiations proceeded such commitments, and (3) does not take excessive advantage of another even if the opportunity is present.". The first two contents relate to the belief that others are reliable and consistent in their actions whereas the third content implies non-opportunistic character. The third content has also been described as "relational contracting" (Williamson, 1985). The particularity of this definition is that it switches the focus to the other party, in particular to their ability to become trustworthy.

Common in both definitions is that trust relates to actions that depend on a belief that others will perform according to certain standards of behavior. The difference between them stands for whether scholars emphasize the act of trusting or the basis upon which a person grounds his/her choice to trust or not.

2.2.2   The economic functions of trust

Recent developments in economic markets have pulled trust from a kind of background environment to a participant and effective mechanism of governing the modern economic exchange. Authors such as Dasgupta (1988) and Lorenz (1988) started to examine the conditions under which the need for trust develops, showing the limitations of rational business interests in uncertain environments. In the present market economy, competitive success has become increasely dependent on the reduction of transaction costs and cooperation, as requirements for quality have escalated internationally and markets have turned more uncertain (Lorenz, 1988). Both situations involve a significant measure of building trust.

1   Transaction costs reduction

The transaction costs theory (TCE) focuses on the transaction characteristics under which alternative contracting modes economize on associated transaction costs. Transactions costs occur when exchanges have to be negotiated, maintained or enforced (Jones, 1983). Economizing on transaction costs results from assigning transactions to efficient governance structures, which includes efficient boundaries between firms and markets, and efficient organization of internal relations (Ouchi, 1980). Williamson (1985) differentiates three important factors to consider in contracting processes: *bounded rationality*, the inability to write contracts that cover all possible contingencies; *opportunism*, the misrepresentation and failure to live up to contracts without monitoring and

enforcement mechanism; *asset specificity*, the need to protect from being exploited after making investments which cannot be effectively shifted.

This vision assumes that in economic transactions the risk for opportunism is high, and therefore economical partners should not be trusted (Williamson, 1975; 1985). Williamson (1975) recognizes the existence of trust and its role in reducing transaction costs; "trust is important and business men rely on it much more extensively than is commonly realized" (1975:109). Yet, he argues that organizations that rely on trust are easily exploited by opportunistic individuals which will turn them debilitated and unfeasible. In essence, Williamson (1975) argues that the difficulty in identifying trustworthy and untrustworthy partners makes it necessary for organizations to structure themselves as if individuals or institutions could not be trusted. Here, trust is viewed as a 'scarce' resource which cannot be accounted for. Therefore, trust is substituted by institutional and formal mechanisms that operate through the negotiation and monitoring of detailed contracts.

The argument that economic actors have an opportunistic nature is contradicted by other approaches. Experience and a relative amount of systematic research show that the extent to which individuals or organizations can be trusted, is assessed with some level of accuracy (Bromiley & Cummings, 1995). Particularly within organizations, this assessment is expected to have some validity, since people interact with the same people repeatedly over time. Bromiley & Cummings (1995) suggests that trust reduces transaction and monitoring performance costs, as well as eliminates the need for installing control systems that are designed to obtain short-term financial results.

Hill (1990) argues that transaction costs could be reduced by introducing "reputation" as a strategy of non-opportunistic behavior. He suggests that in a market system with short-term transactions opportunism might yield some benefits, but in a long term relationship can be very costly because it might inhibit future transactions. Reputation can be seen of great "economic value", since it plays an important role in determining the willingness to enter into a business exchange with a given actor. To a certain extent, reputation is comparable to the "embeddedness" argument proposed by Granovetter (1985), which suggests that the production of trust in economic life is affected by networks of social relations and the obligations inherent to them. When transactions are embedded in personal relationships the hazard of opportunism diminish and formal elaborated governance structures are unnecessary (Granovetter, 1985). However, according to most economic scholars, trust should not be viewed as a replacement mechanism either for market or hierarchic forms of transactions. According to Fukuyama (1995) markets and especially hierarchies are necessary for the establishment of communities, which can be seen as an important starter for trust based on shared ethical norms and values underlying that community.

2 Lubricant of cooperation

The view of trust as a lubricant of cooperation is probably the most discussed one across disciplines. Scholars either from sociology, economics or psychology have tried to establish the importance of trust through cooperation (e.g. Gambetta, 1988; Axelrod, 1984; Lorenz, 1988; Dasgupta, 1988; Deutsch, 1962). Within economics the concept of cooperation is particularly significant because it represents somewhat a paradoxical situation. If economic partners are supposed to pursue their own interests and compete with each other to achieve success, they are also required to restrain this pursuit in order to establish efficient transaction relationships (Das & Teng, 1998).

It is commonly assumed that some level of trust must exist so that cooperation can be achieved freely in any economic transaction. Particularly this trust should be mutual. In situations where trust is unilateral, cooperation might fail, since it constitutes an incentive to deception, and in situations with a complete lack of trust cooperation will not be achieved freely (Gambetta, 1988). However, as a pre-condition to cooperation trust can be subjected to different demands of intensity. According to Lorenz (1988) demands of trust in economic contexts are dependent on the mechanisms that govern the cooperative decisions and the social arrangements in which those decisions are made. Traditional perspectives emphasize particularly these mechanisms and propose strategies that economize on the importance of trust in cooperative action. Bradach & Eccles (1989), for instance, point out the importance of price and authority together with trust as control mechanisms in governing transactions. Others, such as Elster (1989) view trust as a "by-product" of a good economical system where cooperative actions are promoted either by system constraints or interests that are essentially ruled by contracts and agreements. Williamson (1993) stresses the role of calculativeness in the development of cooperative behavior, arguing that economic relationships more than any other type of relationship are calculative by nature, being normally based in calculations of risk than calculations of trust.

Recent approaches consider trust as an element of every transaction that can be accounted for, either by previous experience or lack of contrary evidence (Bromiley & Cummings, 1995). Contrary to Williamson (1975; 1985) who suggests the immediate possibility of opportunism, authors such as Dasgupta (1988) consider that trust in transactions is likely to generate more trust at other levels. This does not necessarily mean that trust is a by-product of a system in all situations. Trust can be develop based on the general inclination that people have to trust others. In game theory, for example, Axelrod (1984) demonstrate that cooperative behavior is almost inconceivable without at least a predisposition to trust. Scholars argue that although promoting trust can be costly, cooperation through self-reinforcing arrangements or self interests can even be more costly and inefficient (Lorenz, 1988).

The recent economic assumptions seem more sighted to trust and its importance for economic activity, by recognizing its presence in every transaction as well as its influence on promoting cooperation and reducing the need for intervention to prevent, or correct, dishonesty of various kinds.

2.3   Psychological approaches

While sociologists and economists devote their attention to impersonal mechanisms of trust production, psychologists focus on trust between people, and explore the conditions that serve to create, maintain, or destroy trust in different contexts. In this perspective, research can be examined according to two major directions. One direction reflects an *intra-personal* point of view, and focuses on individual personality differences, and the specific developmental and social contextual factors that shape one's propensity to trust (e.g. Rotter, 1980). Another direction adopts an *interpersonal* point of view by studying trust among peers or groups relationships. At this level, several researchers focus on the dynamics of trust by trying to establish possible causes and effects of different trust levels within relationships (e.g. Zand, 1972; Lewicki & Bunker, 1995; 1996; McAllister, 1995). Others emphasize the situational conditions and their determinant character in developing trust within groups or dyad relationships (e.g. Boon & Holmes, 1990; Deutsch, 1962).

2.3.1   Conceptual analysis

Within the psychological approaches a conceptual analysis of trust is more difficult to establish. Apart from the different perspectives, also different contexts (e.g. organizations and laboratorial experimentation) and different types of relationships have been studied within this perspective.

Intra-personal approaches usually view trust as a "generalized expectancy that the world, the promise, the verbal or written statement of another individual or group can be relied upon." (Rotter, 1980:35). Here, trust is considered to be deeply rooted in the personality, with its origins in the individual's early psychological development. One of the main arguments in this point of view is that people differ in their propensity to trust others. Rotter (1980) argues that based on past experiences and generalizations from other situations, individuals are able to develop a generalized expectancy in relation to the behavior of other people that extends across situations. Other scholars such as Mayer, et al. (1995) consider the propensity to trust others as one dimension of trust. Within a multidimensional conceptualization, these authors argue that propensity to trust is situation specific, i.e. it also depends on contextual factors that can give some garantees to trust.

The *interpersonal* approaches, on the other hand, view trust as a set of positive expectations about people's intentions in a certain context. Lewicki & Bunker (1995; 1996) argue that these expectations are not only based on the characteristics of the other party, but they also involve considerations about the risks associated with assuming and acting on such expectations. Therefore, trust is also contingent to the context, which might enhance or inhibit the development and maintenance of that trust (Lewicki & Bunker, 1995; 1996).

In the context of game settings, Deutsch (1962) and Giffin (1967) conceptualized trust as an expectation of interpersonal events. Trust is some what related to an individual choice to "place his fate partly in the hands of others" in a situation of cooperation (Deutsch, 1962:302). According to this view, trust is based more on situational characteristics than on personal predispositions, since the individual choice to trust is based on the assumption that "the event that he desires, rather than the event he fears, will occur (Deutsch, 1962: 303).

In connection with problem solving within groups, Zand (1972) considers the personal behavior and the individual expectation to be two related aspects of trust. In this approach, trust goes beyond expectations of an outcome under uncertain conditions. It is the willingness of one person to increase his of her vulnerability, by relying upon the actions of another person whose behavior he or she could not control (Zand, 1972). In this way, trust becomes the "... conscious regulation of one's dependence on another that will vary with the task, the situation, and the other person." (Zand, 1972:230). Similarly, Hosmer (1995) suggests that trust can be seen as an individual decision based upon one's confidence about the outcome of an uncertain event, given personal vulnerability and lack of personal control over the actions of others.

Mayer, et al., (1995) also explore the vulnerability aspect of trust, suggesting that trust "is the 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 other party" (1995:712). Here, like in Rousseau et al. (1998), trust is not seen as a behavior (e.g. cooperation) or a choice (e.g. risk taking), but rather as an underlying psychological condition that can cause or result from those actions.

More than defining trust in different ways, the definitions discussed under this perspective suggest that trust may be influenced by several factors, each of a different nature. Individual predispositions, characteristics of the trustee(s) and situational conditions can determine both the level and the potential form that trust takes. The relative importance of these factors is determined either by the type and course of the relationships (Lewicki & Bunker, 1995; 1996). Rather than discussing the interpersonal functions of trust, psychological scholars have examined the conditions and dynamics across different contexts.

2.3.2   Conditions to trust

Common in many conceptualizations, is the idea that both vulnerability and uncertainty need to be present for trust to occur. Several psychologists have attempted to describe the parameters that describe or define these elements (e.g. Deutsch, 1962; Zand, 1972; Schenkler, Helm & Tedeschi, 1973). They argue that vulnerability and uncertainty result from situations where there is: (1) ambiguity with regard to outcomes to be obtained in the future (Deutsch, 1962; Schenkler, et al., 1973); (2) dependence on the actions of others (Deutsch, 1962); (3) presence of information that provides cues regarding the probability of uncertain environmental states occurring (Schenkler, et al, 1973). Also, because trust involves granting latitude to others over things that we do not control, the decision to trust or not involves more than predictability and expectation: it also involves a certain amount of risk (Deutsch, 1962). According to Rousseau et al. (1998) risk and interdependence are the two main conditions necessary for trust to arise.

Risk and *risk taking* are the conditions most related to trust across disciplines (e.g. Coleman, 1990; Mayer, et al., 1995). Risk is considered to be a prerequisite in the choice to trust. When trust is not fulfilled, the trusting party suffers an unpleasant consequence which is greater than the gain he would have received (Giffin & Patton, 1971). In other words, risk is the probability of loss as perceived by the trusting person(s). Lewis & Weigert (1985) argue that if actions could be undertaken with complete certainty trust would not be needed. Assessing the risk before trusting involves: (a) considerations about the other peoples' motives and intentions, and (b) considerations about the situational factors that weight the likelihood of the possible positive and negative long-term effects of the trust. Sources of risk are various and approaches diverge in the factors emphasized. For instance, economists emphasize the possibility of opportunistic behavior as a risk factor, whereas psychologists emphasize the situational factors as potential risk conditions. In both approaches the vulnerability and uncertainty result from the lack of control or of complete knowledge about future outcomes and about the actions of the exchange partner.

Risk creates the opportunity for trust which leads than to risk taking (Rousseau et al., 1998). Trust and risk taking are believed to form a reciprocal relationship. Risk taking sustains the sense of trust given that the expected behavior materializes (Boon & Holmes, 1991). When a person realizes that another is taking a considerable risk by trusting, he/she will tend to behave in a trustworthy manner (Das & Teng, 1998). This reciprocity has been found to be a key issue in trust building (e.g. Mayer, et al., 1995). Only if some initial risk is taken, it is possible for the other party to demonstrate that he/she is worth that trust. Therefore, for trust to occur someone needs to take the risk first (Das & Teng, 1998).

Interdependence is the second necessary condition for the occurrence of trust. Interdependence refers to the extent to which the interests of one person cannot be achieved without relying upon another. In contexts such as organizations, the degree of interdependence among members is in part determined by the formal structure and by the organization of work between individuals, teams or departments. However, there is still a considerable amount of uncertainty in their actions that cannot be effectively removed by these mechanisms. According to Sheppard & Sherman (1998) interdependent relationships vary according to type and depth, and entail distinctively different risks. For instance, in situations where individuals are only superficially dependent, trust is related to a sense of fairness, and the risks associated are related to unreliability and indiscretion of the trustee. In situations of deep dependence, trust is very much related to a sense of security, and the risks involved are related to the possibility of cheating, abusing, neglecting. According to Sheppard & Sherman (1998) these differences suggest that in different situations people will look for different attributes in order to trust. For example, in superficial dependence relationships it is necessary to look for partners that have a history of reliable behavior, whereas in situations of deep dependence people will look for additional attributes such as honesty, integrity (Sheppard & Sherman, 1998).

2.3.3   Dynamics of trust

Static and stable approaches to trust are common across disciplines. Particularly in earlier laboratory studies, trust was often seen as an all or nothing state, rather than a distribution along an intra- or interpersonal continuum (Rousseau, et al. 1998). Because risk and interdependence are necessary conditions for trust, variations in these factors can alter both the level and the potential form that trust can take in a relationship (Rousseau et al., 1998). In fact, trust cannot be captured by single and static keys and attributes, it develops over time through various phases such as building, declining or renewal (Lewicki & Bunker; 1996). Accordingly, trust should be seen as a dynamic phenomenon that takes on a different character in the early, developing, and "mature" stages of a relationship. Shapiro, Scheppard & Cheraskin (1992) suggests that three types of trust operate in the development of a business relationship: deterrence, knowledge and identification. Based on this work, Lewicki & Bunker (1995; 1996) propose an evolutionary three-stage model for the development of trust relationships in a business context, considering the following stages:

> - *Calculus-based trust* - the first stage, consists on assuring consistency of behavior. Trust is based on the assurance that people will do what they say they will do. At this level, trust can be seen as an ongoing, market-oriented or economic calculation. The base upon which trust is developed reflects the comparison between the outcomes

of creating and sustaining the relationship to the costs of maintaining or serving it (Lewicki & Bunker, 1996). This stage can be compared with the traditional economic views describing the behavior of economic actors in organizations (e.g. Williamson, 1975). Compliance with calculus-based trust may be derived by determining the benefits and costs from staying or breaking the relationship.

- *Knowledge-based trust* - the second stage, refers to trust grounded in predictability and knowledge about the actions and intentions of the other party. Here, trust develops through information about preferences, wishes and behaviors of the other party, which develop over time as a consequence of the parties having a history of interaction. Two key processes are responsible for achieving this stage: regular communication and friendship (Lewicki and Bunker, 1995).

- *Identification-based trust* - the last stage, refers to trust based on identification with the other party's desires and intentions. Here, trust exists because the parties effectively understand and appreciate the each other's wants; this mutual understanding is developed to the point that each can effectively act for the other (Lewicki & Bunker, 1995). Identification-based trust develops as both know and predict the other's needs, choices, and preferences and also share some of those as his/her own. Increased identification enables people to empathize strongly with the other and incorporate parts of the other into their own identity as collective identity. Kramer (1993) compares this stage to a certain form of group membership which develops as individuals identify with the goals espoused by particular groups and/or organizations.

Trust evolves and changes, as relationships develop through different stages (Lewicki & Bunker, 1995; 1996). According to the three stage model, if a relationship goes through its full development into maturation, it will reach the identification-based trust stage. However, not all relationships develop fully and as result trust may not develop past the first or second stage (Lewicki & Bunker, 1996). Furthermore, dynamics within relationships may bring trust to a lower level than the one achieved. The literature often suggests that trust "is typically created rather slowly, but it can be destroyed in an instant by a single mishap or mistake" (Slovic, 1993:677). This reflects not only the dynamic character of trust but emphasizes the importance of its maintenance.

When one party is perceived by the other as acting in a way that violates the trust relationship, this creates instability and suggest a (re)-evaluation at both cognitive and emotional levels (Lewicki & Bunker, 1995). Cognitively, people think about how important the situation is, and where the responsibility for breaking trust lies. Emotionally, individuals often experience strong feelings of anger, hurt, fear and frustration, and these reactions lead them to reassess how they feel about the other. Lewicki & Bunker (1995;1996) suggest that violations of trust occur in many different situations and, depending on their nature and

the stage of trust development, the person who's trust has been violated can pursue three outcomes: terminate the relationship, renegotiate the relationship, or encourage it to develop on a different basis. As Kasperson, et al. (1992: 169) argue "trust is probably never completely or permanently attained, but rather requires continuous maintenance and reinforcement".

2.4   Summary

This chapter has discussed the main approaches to trust according to three perspectives. Our aim was to provide a general overview of the different conceptualizations as well as of the contexts in which trust has been studied. A comparison between approaches is presented in Table 2.4 based on the considerations of Hosmer (1995).

The sociological approaches essentially focus on trust as a collective phenomena and view it as a product of social institutions. Researchers stress the importance of trust in stabilizing social relationships, and emphasize the share of common norms and values as mechanisms to act according to what is

Table 2.1: Comparison between approaches

Sociological approaches	
Focus	Social structures.
Conceptualization	Collective phenomena reflecting an attitude towards others (individuals, groups, organizations) based on relationships that exist in a social system.
Assumption	Complex interaction of cognitive, emotional and behavioral aspects which can reflect different types of trust.
Goal/intent	Increase cooperation between diverse elements of society.
Economic approaches	
Focus	Economic transactions.
Conceptualization	Optimistic expectations that one economic actor will make decisions and take actions that will be beneficial or at least not detrimental to the other.
Assumption	Economically rational behavior, constrained by contracts and control systems.
Goal/intent	Reduce transactional costs and developa reputation to induce the willingness of other actors to enter into an exchange.
Psychological approaches	
Focus	Individual actions/Interpersonal relationships.
Conceptualization	Individual decision based on expectations of achieving a desirable outcome and the willingness to become vulnerable by relying on the actions of others.
Assumption	State based upon characteristics and traits of both parties which can vary according to the situation.
Goal/intent	Improve the relationship between individuals in an group or organization.

"fair" and "right" (Lewis & Weigert, 1985). More calculative oriented, the economic approaches devote their interest to the function of trust in economic contexts. Generally speaking, economic scholars emphasize the advantages of trust in relation to the reduction of transaction costs and opportunism, as well as in enhancing cooperation. Trust between economic partners is viewed as a rational choice, that is based either on past experiences or reputations. More extreme authors (e.g. Williamsom, 1975) do focus on the risks associated with trust in transactions and emphasize the importance of contracts and regulating procedures in order to protect investments. Finally, the psychological approaches focus on trust between people and attempt to explain the causes and effects of trust in different contexts. Here, the accent is on the dynamics of trust relationships between individuals or groups, and assumptions involve considerations about individual, relational and situational contingencies.

Until recently these perspectives appeared largely disconnected. Most of the times ignored one another, or criticized each other's research methods and accomplishments very severely. In each perspective trust has been approached within its own disciplinary lens and filters, and different determinants and functions of trust can be identified within different settings. However, risk and interdependence seem to be to important conditions to trust in every type of relationship considered (Rousseau, et al., 1998). Furthermore, the idea that trust is not only dependent on the parties involved, but also on contextual contingencies seem to be characteristic of all perspectives in more recent approaches.

The acknowledgment that trust reflects a multitude of roles, functions, levels of analysis, and it is applicable to different contexts, has been a recent turning point for theory and research on this topic. Instead of accentuating the differences between conceptualizations and research methodologies, researchers are starting to concentrate on the common elements across perspectives in order to provide coherent knowledge with regard to trust (e.g. Hosmer, 1995; Rousseau, et al., 1998; Costa, 2000). The study of trust in organizations has recently become an example of this trend. Before describing the framework of our research, the following chapter explores the vast domain of trust in organizations and describes the most relevant conditions for its study at different levels.

Chapter 3

Trust
in organizations

In general, organizations are considered to be important settings for the study of trust. Mostly because they abound with important consequences for their members and vary in the extent to which these are dependent on one another to perform their jobs. Organizations generate significant risks into work relationships and different degrees of vulnerability and uncertainty among members (Morris & Moberg, 1994). As organizations embrace new strategies to deal with changing market conditions, new forms of team and organizational structures have emerged, demanding high levels of autonomy and collaboration among members as well as high flexibility of the work process. Trust becomes the necessary requirement in order to function effectively. A lack of trust in each or at both interpersonal and institutional levels brings damaging consequences which may lead to the failure of the entire organization (Powell, 1990; Creed & Miles, 1996). However, trust is seen as one of the most critical challenges to establish and maintain within and between organizations. In this chapter, we bring first into focus the relevant organizational transformations that lead to the "trust imperative", and discuss the problems of creating and maintaining trust in new changing environments. Secondly, we give an overview of the domain of

trust in organizational research and describe the different types of trust at different levels of the organization.

3.1   Organizational   transformations   and   the   trust imperative

Globalization, global competition and the advances in technology such as the expansion of telematics, have been pointed out as major initiators of change in organizations (Roe, 1994). These changes are usually marked by the decline of bureaucratic stuctures in favor of more flexible modes of functioning that support rapid adjustments to new and unpredictable environments (Keen, 1990; Roe, 1994; Creed & Miles, 1996; Powell, 1990; Shaw, 1997). Work relationships have also become more horizontal and team centered, and not so well defined in terms of roles, tasks or procedures as in vertical structures (Gabarro, 1990; Smith & Barclay, 1997). From a trust point of view, the institutional mechanisms that have been responsible for the establishment and expansion of organizations (Zucker, 1986) became insufficient to produce the trust necessary to function effectively. New policies emphasizing interpersonal and intergroup dynamics at the workplace have placed trust in the center of these dynamics (McAllister, 1995; Mayer et al., 1995; Lewicki & Bunker, 1995, 1996). The following sections describe the recent organizational responses to new business challenges and how trust plays a critical role in each one of them.

3.1.1   Interorganizational forms of collaboration

A common response to the present competitive pressures has been the establishment of forms of collaboration among business firms. Interorganizational collaboration is commonly viewed as an association between companies in which organizational boundaries are permeable and joint activities and mutual learning are the sustaining force (Powell, 1996). Organizational scholars and business practicians have documented these associations, ranging from research partnerships to joint ventures, and from strategic alliances to market agreements (e.g. Keen, 1990; Powell, 1990, 1996; Miles & Snow, 1992). These associations vary from full mergers to loose alliances, serve different purposes, and provide different degrees of openness as well as divergent rationales for reciprocity. However, the advantages of interorganizational collaboration can be generalized to all forms.

The most attractive advantage of interorganizational collaboration is the possibility of gains in internal activities (Dogdson, 1993). This means, that partners may obtain mutual benefits that could not be achieved if organizations would operate independently. Examples of these benefits are the possibility to increase their scale or scope of activities, gain access to new technologies and markets, and reduce costs (Dogdson, 1993; Shaw, 1997). Another advantage is the possible increase in flexibility and effectiveness in comparison with

alternative market transactions, since interfirm collaboration facilitates integration and transfer of specific know-how (Dogdson, 1993). Finally, collaboration can be seen as a strategy of dealing with the uncertainties of the environment in terms of risk sharing and organizational learning (Dogdson, 1993).

To many observers, learning is considered to be the most successful strategy to remain effective. Organizations can quickly perceive changes in customer demands and rapidly understand mistakes in meeting those demands, by learning from the experiences and knowledge of their partners (Shaw, 1997). Because trust facilitates information exchange and reciprocity between partners, organizational learning depends on high levels of trust between them (Buckley & Casson, 1988). However, within interfirm collaborations trust has shown to be particularly difficult to develop. Several case studies have reported the disruption of many alliances because of lack of trust among those that should be collaborating (e.g. Shaw, 1997; Sydow, 1998). The difficulties in building trust in such environments result from the fact that, while collaborating, firms have to deal with different histories, cultures, competitive strategies and operating procedures. Firms also have to deal with suspicion, which is often quite evident from the start as individuals worry about the impact of the collaborative alliance on their jobs and careers (Sydow, 1998). The more different firms are, the more the potential for conflict and the more problems the collaborative partnership will experience.

Powell (1996) describes four forms of inter-firm collaboration in which trust is created through different mechanisms (see Table 3.1). Each interfirm collaboration appears with distinct mechanisms to develop trust. However, trust seems to develop more "naturally" when interfirm collaboration is forged from common membership to a professional community, from existing ties of place, or from common share of norms and values (Powell, 1996). In the case of industrial districts, R & D networks and business groups, trust is more likely to build on shared norms of reciprocity and civic engagement, and rely on past experiences and group membership (Sydow, 1998). In interfirm collaborations that are mainly forged from mutual dependencies and/or calculation of resource needs, such as in the case of strategic alliances, trust needs to be created based upon more formal bases, which can be more costly and time consuming (Powell, 1996).

Dodgson (1993), on the other hand, suggests that trust should be a part of the organizations' routines and practices, in order for the collaborations between firms to continue successfully. This means that the major source of trust in interfirm collaboration should be institutional. Dodgson (1993) recognizes, though, the important role of key individuals or groups (i.e. boundary spanners) in interfirm collaboration. However, he refers to the problems of turnover and the possibility of communication breakdown on the part of these individuals, which makes trust at this level a very fragile form of governance.

Table 3.1: Trust based forms of governance in interfirm collaboration

Inter-firm Relationships	Characteristics	Production	Context	Trust-based Mechanisms
Industrial districts	Social integrated, small scale, decentralized production units. Extensive and collaborative sub-contract agreements of satellite firms.	Specialization in one product congregated in a specific area.	Regional	Local social relationships, kinship, re-ligion and politics. Proximity. Reciprocity
Research & Development Networks (R&D)	Common associa-tion with a technological, intellectual or scientific affiliations.	High-technology. Innovative products.	Professional membership.	Individual contacts and reputation of competence and business practices.
Business Groups	Different business that regularly colla-borate over a long time. They combine relatively egalitarian interorganizational ties and more hierarchical vertical linkages.	Diversified products.	Capitalism Alliance.	Mixture of principles, obligation, opportunity and vigilance.
Strategic Alliances	Calculative asso-ciations between autonomous firms to increase compe-tetiveness. Strategy to increase efficiency and flexibility, and reduce costs.	Variety in production design.	Contractual agreements.	Awareness of mutual needs. Opportunity. Calculation of strategy and interests.

Adapted from Powell (1996)

Other examples of interfirm collaboration can be based on multiparty arrangements. Vansina & Taillieu (1997) refer to collaborative task-systems as groups of people who, because of their membership in other groups, institutions or social categories, come to work together on a largely-self-constructed task or problem domain (e.g. the development of a regional area). Here, collaboration starts from an under organized state, where individual stakeholders act independently towards a more solid organized relationship characterized by concerted decision making. In order to move from independent, and some times divergent, points of view to a convergent process, three important conditions seem necessary. First, diversity should be recognized as a valuable asset in order to reach a multifaceted picture of the problem and mobilize resources (Vansina & Taillieu, 1997). Secondly, multiparties need to feel trusted before they are free to expose themselves and to share appreciation (Vansina, Taillieu & Schruijer, 1996). In the process by which reciprocity is developed informally in the absence of rules, trust is one of the most crucial dynamics (Gray, 1989).

Third, some rules of logic are needed to convince members that things will not run out of control (Gray, 1989). Also here, trust at both informal and formal levels of the multiparty system seems crucial for its success.

3.1.2   Organizational redesign and reengineering

Most organizations have made considerable investments in redesigning and reengineering their structures and work processes. The strategies chosen to make these investments may be different, but most organizational changes emphasize the importance of enhancing worker participation, autonomy and flexibility. The aim behind organizational redesign has been to enhance organizational performance through the optimization of organizational processes and human resources. On a structural level, organizations have changed from hierarchical to flat structures, reducing the number of management and supervision levels, and transforming functional departments into business units (Roe, 1992). At the work level, there is an increase in empowerment of individuals and teams, by letting the workers make the decisions and take the responsibility for their own work, beside performing their normal activities (Vansina & Taillieu, 1994).

Two strategies used in organizational change are sociotechnic design and reengineering. *Sociotechnical design* stands for an optimization of both technical (i.e. execution and control functions) and social aspects of an organization, which may lead to commitment, trust, satisfaction, stress and self-realization of that organization. Sociotechnical design is accomplished through the establishment of independent production units, or autonomous work groups as the core of the organization (De Sitter, 1989). These units have the instruments, the skills, and the responsibility to overcome production errors and problems. Autonomous work groups or self-designing teams are examples of such units. Decisions within these groups are made collectively and leadership may be shared or rotated among team members in order to enrich autonomy, flexibility, and enhance motivation (Kiggundu, 1981; De Vries, 1997). *Reengineering*, on the other hand, aims almost exclusively the increase of organizational performance. This strategy has been promoted as a way to handle growing costumer demands, competition between companies and constant change in products and technology, by a fundamental rethinking and radical redesign of business process (Hammer & Champy, 1993). In most cases, reengineering involves use of innovative technology to produce new approaches to core work practices. Information technology plays a major role in this innovation by making several new functions possible while enabling employees to retrieve information from different places to get specialized expert information, and to make decisions with the support tools (De Vries, 1997).

The success of organizational change, either by means of sociotechnical design or reengineering, depends on the willingness to change sources of power and work together in a new and more uncertain environment. In order to move

away from the traditional operating procedures, managers and teams need to trust each other and recognize their co-dependencies. According to Shaw (1997) trust can be seen as a form of "collaborative capital", that increases the probability that people will abandon past experiences in favor of new approaches, and consequently increase the likelihood of successful change. Yet, the majority of organizational change processes fail to meet these conditions.

Organizational changes are often related to strategies of downsizing, elimination or relocation of jobs, which raise serious concerns about the workers' basic needs and the nature of their relationship with their organization (Shapiro, Lewicki & Devine, 1995). Consequently, a considerable lack of trust is usually associated with these changes. Moreover, because in most cases organizational changes are imposed, employees feel left out of the decision process and unfairly treated by the organization. Research on psychological contracts shows how workers view themselves as helpless victims and how their attitude towards the organization changes (Rousseau, 1995; Freese, 1999). The most consistent reactions have been insecurity, intense fear, anger and depression (Shapiro et al., 1995). Also between colleagues, the level of trust tends to decrease, since job content, salary, compensation, etc., tend to be renegotiated during these processes (Pearce, 1993). In some cases this lack of trust has resulted in the inability or the unwillingness to collaborate and to change the traditional approaches of running companies.

3.1.3   Work teams, empowerment and self-management

The reorganization around horizontal business processes has increased the presence of interdependent work units such as task forces, project teams, and quality circles (Keen, 1990). Traditional forms of management control give place to collaborative approaches that emphasize coordination, involving share of responsibilities and participation in the decision processes. Most processes of change stress the importance of empowerment of individuals and teams as well as the provision of tools and skills to enable them to become self-managing (De Vries, 1997). However, this does not necessarily mean elimination of all supervision functions within teams. A total absence of formal authority may lead to conflicts and power struggles, which make groups unstable and unable to perform adequately (Barry, 1991). Also, empowerment is only likely to enhance collaboration and performance if trust between members and managers develops. According to Jones & George (1998), managers need to understand how trust is experienced and how it evolves over time within their team, in order to promote it when necessary.

To a certain extent, effective coordination requires employees to make decisions and commit resources, in order to move forward with a particular strategy or course of action. Team members or individuals that are interdependent and trust each other, operate with more latitude in doing of what is required to achieve effectiveness (Shaw, 1997). On the other hand, trust based on the assumption that individuals are willing to use their power to advance

common good for the organization, often increases the likelihood of acting in a trustworthy manner (Shaw, 1997; Bromiley & Cummings, 1995). This is of considerable importance for the balance between trust and power within organizations. To trust someone is an important reflection when that person is provided with the authority to make important decisions. For example, if employees do not trust their leaders, they tend to actively or passively resist to what he/she is trying to accomplish. On the other hand, managers or teams cannot work effectively unless they are trusted to the degree necessary to fulfill their responsibilities. This suggests once more that not only a culture of trust is necessary but also trust at specific levels is essential to take full advantage of the benefits of teamwork (Shaw, 1997).

3.1.4   Flexible work arrangements and employment contracting

As organizations tend to shift towards more flexible schemes of organized activity the nature of work relationships undergoes some changes as well. On the one hand, the emergence of network forms of organization and the capacity of information technology (IT) to suppress time and place constraints, has reduced the need for co-presence in the central offices and has expanded possibilities for flexible work arrangements (Roe, 1992). On the other hand, organizations have become less able to provide job security in terms of work until the pension, which has increased "labor contracting" in the working force.

Flexible work arrangements, are forms of work that allow employees to perform their jobs to a certain extent "invisibly" for colleagues and management (Perin, 1991). Job options such as teleworking, job-sharing and flextime are examples of those arrangements. From the workers' point of view, working at distance and/or at different hours, is often associated with autonomy and the possibility to control their own engagements, and with the power to manage rather than being managed by others. Workers with such arrangements usually see themselves as been "privileged", "trusted" and "free" (Perin, 1991:254). Yet, when asked about their performance and career evaluation, workers and managers often believe that these are based as much on office presence as on productivity (Perin, 1991).

From an organizational point of view, the invisibility of the work process can make workers susceptible of organizational distrust. For some managers "working" is still a matter of appearances - presence, sitting at the desk, punctuality, number of hours worked are signs often considered as inputs to productivity. By working outside the office, workers exercise a prerogative of putting social distance between themselves and the management, which for some managers rises the concern of not being able to exercise their "right" and "obligation" to supervise the workers out of sight. In such cases, managers tend to delegitimize flexible work arrangements and to display low levels of trust even towards high performance employees (Perin, 1991). Consequently, there is a

considerable resistance to adopt flexible work arrangements on the account of fear of missing promotion, job security and benefits. Need for trust in relation to flexible work arrangements goes beyond the personal domain. It also refers to a structure of delegation of responsibility to those who have shown to be able to deal with responsible autonomy.

The presence of labor-contractors has increased in many organizations and has taken many different forms such as agency workers, technical experts, consultants, etc. Labor-contracting can be seen as a form of employment in which the contract relationship is attached to a fixed project or a period of time (although many contracts are renewed) and does not provide special benefits (Pearce, 1993). Organizations choose to employ labor-contractor for different reasons. First, since labor legislation tends to be more protective of employees than labor-contractors, many firms attempt to reduce costs by limiting the number of employees (Pfeffer & Baron, 1988). Secondly, the growth of IT has to a certain extent changed the nature and duration of some tasks in ways that make subcontractors more appropriate (Eisenhardt, 1989).

The competitive pressures have forced some organizations to decentralize and use specialized small firms to undertake some of their activities in which part of the labor force consists of labor-contractors (Osterman, 1988). However, having labor-contractors working alongside with employees can affect levels of trust within the organization. Research has shown that employees are likely to be more involved than labor-contractors, by engaging in extra-role behaviors as: organizational citizenship (Organ, 1988), learning new procedures, taking the initiative in problem solving (Katz & Khan, 1978; Pearce & Gregersen, 1991). On the other hand, employees tend to evaluate specific facets of their job, such as pay and security, and compare them with other colleagues or comparative referents such as labor contractors (Oldham, Kulik, Stepina & Ambrose, 1986). Consequently, extreme differences in one of these facets might lead them to question the fairness of the organization that they work for.

3.2   The domain of trust in organizational research

The study of trust in organizational research has been conducted in areas such as communication (e.g. Giffin, 1967), leadership (e.g. Cassel, 1993; Cangemie, Rice & Kowalski, 1990), human resources policies (e.g. Creed & Miles, 1996), labor-management relationships (e.g. Herriot, 1998), interfirm collaboration (e.g. Dogdson, 1993). In any of these areas trust has been modeled in different ways. In the following sections we describe the multiple causal roles that trust can take in research models of organizational behavior. Furthermore, we discuss trust at different levels of the organization.

3.2.1   Multiple causal roles of trust

Scholars using the term *trust* have drawn perspectives, developed models and methods to explain and predict organizational phenomena at various levels of the organization. Although it is commonly assumed that disciplines occupy different fields in organization science - psychology the individual and the group, economics the individual and the firm, and sociology the group and society - researchers approach trust in any of these levels despite of their theoretical background. In the literature trust has been presented as an independent (cause), dependent (effect) or as an interaction variable (moderator).

Conceptualized as an *independent variable*, trust has been seen as a potential cause of economic outcomes and of micro organizational behavior. For instance, in transaction costs models trust is viewed as a cause for lower transaction costs and reduced opportunism (Williamson, 1975). In other approaches trust is seen as a potential determinant of increased performance and productivity (Bromiley & Cummings, 1995). Similarly, classical Prisoner Dilemma games (e.g. Axelrod, 1984) trust among partners tends to be the cause of the decision to cooperate, which can lead further to other economic gains. Psychologists, on the other hand, have seen trust as an important predictor of successful negotiation conflicts between workers within or between groups (e.g. Zand, 1972), or between employees and management (e.g. Mishra & Spritzer, 1998).

As a *dependent variable*, trust can result from institutional arrangements (e.g. Zucker, 1986; Shapiro, 1987), from third party relationships corroborating one's reputation of being trustworthy (e.g. Burt & Knez, 1996), or from attributions made in relation to the other party (Mayer, et al., 1995). If we consider relationships between unfamiliar individuals or between individuals and the system, the models from the sociological perspective suggest the development of institutionalized patterns of norms and values (e.g. Zucker, 1986). When we focus on relationships between familiar actors, trust can result from individual attributions based on the other party characteristics, such as competence, ability, concern openness, and reliability (e.g. Buttler, 1991; Mishra, 1996; Mayer et al., 1995). Such models are more characteristic of interpersonal studies conducted within an psychological or an economic framework.

In some studies trust has also been presented as a *moderator variable*. In Mishra & Spreizter (1998) trust moderates the effects of downsizing and employees reactions to those effects. Das & Teng (1998) model trust as a moderator between control mechanisms and control level.

Despite some disciplinary trends to use the concept in a particular form, scholars model the concept in many different ways, regardless of their theoretical background. According to Rousseau et al. (1998) the way scholars study trust seems to be explained rather by differences in research interests than by differences in disciplinary frameworks (Rousseau, et al. 1998). This reflects, once more, the complexity of trust in organizational behavior.

3.2.2   Trust at different levels

The study of trust in organizations can refer to relationships between and within firms, within or between groups, between employees with the same hierarchical position or between employees with different hierarchical positions. Although the literature distinguishes the processes involved in each of these relationships, there is a lack of empirical evidence to corroborate these suppositions. Based on the existing literature, we describe trust at different levels of the organization. Also, we assume that the processes involved in each trust relationship are not confined to a single level. As argued by Rousseau et al. (1998), trust involves simultaneously psychological and group processes as well as institutional arrangements at all levels.

1   Interorganizational trust

Interorganizational trust refers to a climate of trust ingrained in modes of behavior between firms that enhances mutual learning, which is often supported by a common belief in and a commitment to mutual collaboration (Dodgson, 1993). As discussed earlier in this chapter, interorganizational trust demands a certain degree of institutionalization in order to establish continuity when the interpersonal relationships break down, as they often do, because of labor turnover or personal disagreements (Dogdson, 1993). However, within interorganizational network forms of collaboration, trust is most likely to be related to specific individuals than to the organization. Since these organizational forms are less institutionalized, more complex and unattached than any other form of organization (Sydow, 1998), boundary spanners play a crucial role in scanning, generating and transmitting information across boundaries.

In a more structural approach, Powell (1996) suggests that the type of network very much affects the process and outcome of trust development (see Table 3.1, pag. 28). However, it is important to acknowledge that interorganizational collaboration forms neither are simply "given" nor determine a certain level of trust. Instead, they possess opportunities and constraints for people to use when acting with each other (Sydow, 1998). Interorganizational trust is reinforced by mechanisms such as communication, sanctioning, power execution, etc. (Sydow, 1998). It is thus misleading to consider trust as an outcome or a value traced to culture, as parties learn by doing (Powell, 1996). Furthermore, during the process of collaboration, common purposes, shared interests, and reputation may be transformed as they become entangled with friendship, past experiences and future incentives (Powell, 1996).

The development and maintenance of interorganizational trust requires additional sources beyond the traditional mechanisms of trust production (i.e process, characteristic and institutional) proposed by Zucker (1986) (see Chapter 2 - page 11). Sydow (1998) proposes a "trust-sensitive" management approach which affects both individuals and organizations, and requires reflexivity and monitoring in relation to the process of trust production. This management

strategy is affected by the frequency and openness of communication between individuals, balance of autonomy, interdependence, and by the way these mechanisms enhance interorganizational practices and produce trust (Sydow, 1998).

2 Organizational trust

Organizational trust is based on institutional arrangements (e.g. laws and regulations), and professional practices that support the organization as a whole. These mechanisms create a common ground for understanding actions and they enhance patterns of behavior that can extend beyond particular individuals or transactions (Zucker, 1986). According to Ren & Levine (1991), organizational arrangements and regulations create a general climate upon which trust is produced and generalized to all levels of the organization.

To many authors (e.g. Cangemie, et al., 1990; Cassel, 1993; Creed & Miles, 1996), organizational trust begins and ends with attitudes and behaviors of leadership. Managers or leaders play a central role in determining the overall level of trust in the organization as well as at specific levels of the organization. They initiate most vertical exchanges in which the level of trust is evident in their actions, which might well be reciprocated (Creed & Miles, 1996). Moreover, managers control flows of information and opportunities to share key information in ways that influence levels of trust across organizational levels or units (Pfeffer, 1992). In addition, managers design reward and control systems which may be considered as displays of levels of trust within teams, departments or the organization as a whole (Creed & Miles, 1996). Finally, managers are responsible for the combination of strategy, structure, and internal mechanisms that provide the overall operating logic, resource allocation and governance of the organization.

According to Creed & Miles (1996) levels of organizational trust are embedded in managers' philosophies. These serve to focus expectations and attributions as well as to shape the nature of interactions, and statements of reciprocity within the organization (Creed & Miles, 1996). Table 3.2, shows the relationship between organizational structures and management mechanisms, each with specific trust requirements for an adequate functioning.

In the organizational forms prevalent in the 19th century, trust did not have a clear impact on the operating mechanisms, since traditional managerial philosophies stressed the limited competence of low ranking employees (Creed & Miles, 1996). Later in the vertically functional forms the human relations philosophy prevailed. The employees' needs for belonging and recognition are emphasized but also the need for thoughtful and supportive direction, and control. Trust was needed, but only in order to achieve some short term delegation and cooperation from the employees, since the core of the processes and operations is still centrally planned and controlled (Creed & Miles, 1996). In the matrix and in the divisional form, trust is required to facilitate rapid allocation of resources and decisions at different levels of the organization.

Table 3.2: Evolution of Forms and Philosophies

Product-Market Strategy	Organizational Forms	Management Mechanisms	Managerial Philosophies
1800 - Single product or service. Local or regional markets	Agency	Direct, personal control	*Traditional*
1890 - Limited 1920 Standardized	Functional	Central plans and budgets. Departments managed by staff specialists	*Human Relations*
1920 - Diversified, changing 1960 product or service line. National and international markers	Divisional	Corporate goal setting. Operating decisions at division level	*Human Relations/ Human Resources*
1960 - Standard and 1990 innovative products or services. Stable and changing markets	Matrix	Temporary teams and lateral resources allocation tools (internal markets or joint-planning systems)	*Human Resources*
1990 - Product or services ... produced by market linked units	Network	Broker-assembled temporary systems shared information systems for trust and coordination.	*Human Investment*

Source: *Creed & Miles (1996)*

The human resources philosophy stresses the importance of goal congruency, overlap between organizational and employee's needs, and behavioral patterns for developing a healthy organizational climate (Creed & Miles, 1996). In an environment where employees have freedom to think, grow, and make substantial contributions, they are usually more satisfied and self-motivated to achieve organizational goals, even with goals that are difficult to achieve (Cangemie, et al., 1989). Within the network forms of organization, trust is mostly needed in order to generate high adaptability and facilitate rapid external responsiveness. This requires a managerial philosophy that goes beyond the stimulation of current capabilities and training for current needs (Miles & Snow, 1992; Creed & Miles, 1996). The human investment philosophy is essentially based on the willingness to invest in education designed to enhance technical competencies, business understanding, decision-making abilities, and sell-governance capabilities (Creed & Miles, 1996). The concept of investment involves risk taking, because it exceeds all current needs, and in the case of the network form is extended to all levels of the organization, while in the other forms, trust requirements are more manifested in interfaces between senior managers and functional specialist (functional form), division executives (division form), or project teams (matrix form).

Alternative managerial philosophies have emerged in different periods of time and in different organizational forms, each carrying a minimal set of specific requirements of trust (Creed & Miles, 1996). Failures in meeting these requirements brings different consequences to each of the organizational forms.

Insufficiency of trust in functional forms reduces efficiency; in divisional forms it reduces effectiveness and increases costs; in matrix forms it causes the form to fail; and in networks it causes organizations to fail (Creed & Miles, 1996). As shown by the severeness of these effects, the importance of trust in organizations has augmented significantly, becoming in the network form one of the requirements for its survival. This suggests that although trust is important to all forms of organization, alternative forms have clear trust requirements and managerial philosophies have clear implicit levels of trust.

3 Interpersonal trust

Interpersonal trust in organizations refers to established relationships between organizational members. These relationships can be dyadic, group based or intergroup based. One of the most debated issues is whether interpersonal trust in organizations is only the product of rational decisions or it is also emotionally based.

The conceptualizations set forward by Gambetta (1988) and Coleman (1990) are fairly representative of the rational choice point of view in this context. Both suggest that one base of trust is the calculation or consideration of important elements that lead a person to decide whether to trust or not. The behavioral decision theories (e.g. Axelrod, 1984; Deutsch, 1962) are consistent with this point of view and tend to explain the decision of trusting through situational factors rather then personality characteristics. According to Good (1988) some situations are more likely to lead to trust than others. For instance, when the situation involves long-term interests between the people involved (e.g Pruitt & Kimmel, 1976), or where only small initial rewards are at stake and there is no potential for threat (Deutsch & Krauss, 1962), and where there is great potential for successful communication. Although these findings have been obtained in the context of game settings, they are relevant for ongoing work relationships such as buying and selling, where interactions occur between unfamiliar individuals.

The influence of institutional arrangements on interpersonal trust represents a second prominent rational base. Shapiro (1987) describes how certain institutional arrangements - the "guardians of trust" - such as normative prescriptions, socialization practices, structural constraints and network strategies are designed to maintain the integrity of relationships within organizational systems. For example, in situations where individuals have little information, or have not established any kind of bond with one another, trust may initially develop on the basis of individual dispositions, situational constrains, or institutional arrangements. Also, differences in hierarchical position in organizations tend to influence the base upon which trust develops and is maintained (Cook & Wall, 1986). As we have discussed previously, both organizational structures and managerial practices influence the overall level of trust, by generating common expectations and behaviors in order to support activities within or between organizations.

Table 3.3: Trust antecedents

Authors	Antecedent Factors
Boyle & Bonacisch (1970)	Past interactions, index of caution based on prisoners' dilemma outcomes
Butler (1991)	Availability, competence, consistency, discreteness, fairness, integrity, loyalty, openness, promise, fulfillment, receptivity
Cook & Wall (1980)	Trustworthy intentions, ability
Dasgupta (1988)	Credible threat of punishment, credibility of promises
Deutsch (1980)	Ability, intention to produce
Farris, Senner & Buterfield (1973)	Openness, ownership of feelings, experimentation with new behavior, group norms
Frost, Stimpson & Maughan (1978)	Dependence on trustee, altruism
Gabarro (1978)	Openness, previous outcomes
Giffin (1967)	Expertness, reliability as information source, intentions, dynamism, personal attraction, reputation
Good (1988)	Ability, intention, trustees' claims about how (they) will behave
Hart, Capps, Cangemi & Caillouet (1986)	Openness/congruity, shared values, autonomy/ feedback
Hovland, Janis & Kelley (1953)	Expertise, motivation to lie
Johnson-George & Swap (1982)	Reliability
Jones, James & Bruni (1975)	Ability, behavior relevant to the individual's needs and desires
Kee & Knox (1970)	Competence, motives
Larzelere & Huston (1980)	Benevolence, honesty
Lieberman (1981)	Competence, integrity
Mishra (1996)	Competence, openness, caring, reliability
Ring & Van de Ven	Moral integrity, goodwill
Rosen & Jerdee (1977)	Judgment or competence, group goals
Stikin & Roth (1993)	Ability, value congruence
Solomon (1960)	Benevolence
Stickland (1958)	Benevolence

Source: Mayer, Davis & Schoorman (1995)

Other researchers, particularly psychologists, tend to view interpersonal trust to some extent as a result of emotions (e.g. Mayer, et al, 1995; McAllister, 1995; Lewicki & Bunker, 1995, 1996). Bigley & Pearce (1998) suggest that interpersonal trust can be based upon different mechanisms, depending on de degree of knowledge or familiarity among the people involved. In situations where individuals have accumulated meaningful knowledge and have established some kind of bonds with one another, interpersonal trust tends to be more based on the attributions individuals make about the other person's character and the motives and intentions underlying these actions. Several characteristics have been identified as influencing the likelihood of being trusted. These characteristics are summarized in Table 3.3. In most studies, integrity and competence seem the critical elements taken in consideration before trusting someone. Mayer et al., (1995) add benevolence to these two characteristics and propose that these three factors explain the major portion of trust among familiar actors. Benevolence is the perception of a positive

orientation from the other party, which reflects the kind of attachment or involvement of a particular relationship (Mayer, et al., 1995).

The idea that trust is both rationally and emotionally based is supported by McAllister (1995), who distinguishes between cognition- and affect-based trust. These bases appear to have different antecedents: reliability of role performance for cognition-based trust; frequency of interaction, and citizenship towards the trustor for affect-based trust. He also suggests that in work relationships some level of cognition-based trust may be necessary for affect-based trust to develop, which differs from other theories (e.g. Holmes, 1991) that focus on close relationships. For instance, initial extra-role conduct performed by a newcomer might be attributed to integration strategies and the need to make a good impression, rather than to care and concern. Once reliability and dependability norms have been established, and thus some level of cognition-based trust, attributions concerning other peoples' motivation for that citizenship behavior may follow (McAllister, 1995).

All these perspectives offer potential insights and suggest different loci of explanation for trust in work relationships. The particular application of these models might depend on specific research problems (Bigley & Pearce, 1998). For instance, differences in trust levels between familiar workers and unfamiliar workers, may be better explained by models integrating both cognition- and affect-based trust. Whereas differences in levels of trust related to particular changes in situations (e.g. "rules of the game"), organizational structures or processes, rational decisions or institutional arrangements may be more adequate (Bigley & Pearce, 1998).

3.3   Summary

In this chapter we started with describing the most relevant changes that lead to the trust imperative for organizations. With this we do not mean to suggest that before these transformations trust was absent from organizations. Only that mechanisms, such as formal rules and standard procedures were able to guarantee the functioning and survival of organizations. In modern organizations, not only trust based on formal mechanisms, but also trust based on interpersonal relationships constitute an essential feature for an effective functioning. The importance of interpersonal trust derives from its ability to enhance collaboration and mutual learning, which helps managing complexity and fosters a capacity for action and change (Shaw, 1997). However, trust should not be seen as the solution for all organizational problems. Ironically, the increased need for trust in the modern organization makes the role of checks and controls even more important. On the one hand, because violations of trust are more likely to occur when the vulnerability increases, and on the other hand, the effects such violations can lead to drastic consequences for organizations.

The importance that trust has gained in organization studies during the past few years, is reflected by the growing body of research into different areas of organizational behavior. Although many theoretical assumptions have been written with respect to trust in organizations, the lack of empirical research poses an evident problem. Trust has been associated with different work relationships in which different processes are involved. Several researchers (e.g. Rousseau, et al, 1998) suggest that a complex phenomena such as trust should be provided with a theory and research methodology that reflects its many facets and levels. However, managing conceptual diversity can be difficult and some times not so useful with respect to particular contexts. Bigley & Pearce (1998) argue that the most relevant criterion for assessing the viability of a framework is the extent to which it is useful in addressing particular research problems. Therefore, a meaningful framework for the study of trust in work teams should reflect considerations about the relevant significant interpersonal and intergroup processes as well as the conditions and effects in specific contexts. In the following chapter we describe the theoretical framework for the study of trust in work teams.

Chapter 4

A Framework for the study of trust in work teams

Throughout the previous chapters it has become evident that trust can be studied in different ways and be seen as performing multiple functions. This has contributed to the diversity of opinion about what trust is, and what factors are important for its study in various contexts. In order to be clear about these issues, this chapter describes first the research domain in which we intend to study trust. We define the domain of work teams and describe the most important models that explain performance and effectiveness of teams in organizations. Secondly, we discuss the conceptual issues regarding trust in this domain. We will present a definition and specify the components of trust. In addition, we discuss the relevant conditions and implications of trust in work teams. Finally, we present a conceptual model in which team, organizational, and work conditions are linked with trust to explain performance and effectiveness of teams. This chapter ends with a set of research questions and hypotheses.

4.1   Research domain

The importance of teams, or groups, in organizations has been recognized over the years. Teams form a link between the individual and the organization (Gladstein, 1984). They operate in almost any type of organizations and function to accomplish organizational goals, and to fulfill individual needs not met by the organization (Ancona & Caldwell, 1992). One problem of doing research with teams is that the label "team" is normally associated with an enormous variety of social and organizational forms. McGrath (1984) distinguishes between research on *natural teams*, those that exist independent of a researcher's activities and purposes (these include formal or informal teams in organizations or in other settings), *concocted teams*, those that have some qualities of natural teams but were modified in some way for the purpose of research, and *quasi teams*, those that are highly constrained by the researcher in their activity and setting. Therefore, a delimitation of the research domain is necessary in order to understand what is meant by work teams and how to select them. In this section we discuss first the notion of work teams. Subsequently, we describe the most relevant models to understand team performance and effectiveness.

4.1.1   Work teams: teams as performing units

Traditional research has emphasized the impact that teams have on individuals (e.g. Whyte, 1989). Most of these studies have examined how the individual responses to certain aspects of work can be influenced by norms, beliefs and orientations shared within the team. According to this line of research, teams are a part of the context in which individuals work, and are essential to understand individual behavior (Guzzo & Shea, 1992). In a more recent perspective, teams are viewed as performing units in organizations. Here, "work" is the occasion for the team to come together, and "working" is the principal activity connecting the team members to each other and the team to its environment (Hackman, 1987). Rather than focusing on the team as a part of a work context, this perceptive emphasizes the collective performance and the factors that determine it. It is according to this last perspective that teams are approached in this book.

For the purposes of this chapter work teams are defined according to the attributes proposed by Hackman (1991) - identity, task and context. Accordingly, work teams are defined as real groups. That is, existent bounded social units with some degree of interdependence and differentiation in roles and tasks from which it is possible to recognize members as distinct from non members (Alderfer, 1987). Team members are dependent upon one another for some shared purpose and they invariably develop specialized roles within the team as that purpose is pursued (Hackman, 1991). Furthermore, work teams have one or more tasks to perform, i.e., they produce some outcome which group members contribute to and are responsible for. In the course of accomplishing this outcome, it is important that team members interact to a

certain extent by way of exchanging information, sharing resources, and coordinating with or reacting to one another (Guzzo, 1995). Finally, work teams operate in an organizational context. This means that the team as collective manages relationships with other individuals or groups in the larger system in which the group operates. Only if all these attributes are present, work teams fall into the domain studied here. In addition, as in Hackman (1991) and Guzzo & Shea (1992), no distinction is made between the terms "group" and "team". Both labels apply to the type or entity just defined.

4.1.2　Models to understand team performance and effectiveness in organizations

The dominant way of thinking about team performance and effectiveness is reflected by an input-process-output model (Guzzo & Shea, 1992). In this type of model, *input* refers to member characteristics such as expertise, status, personality attributes, abilities, experience and demographic attributes. In more recent models, inputs include also organizational and work conditions. *Process* refers to the interaction among group members, typically including social exchange of information, influence attempts, leadership efforts, and expressions of approval or disapproval of fellow team members (Guzzo & Shea, 1992). *Outputs* refers to the products yielded by the team, which might include ideas, decisions, plans, performance and effectiveness. The relations between these components is explicitly causal. In Figure 4.1 model (A) represents its simplest form. Here, the nature (quantity or quality) of the team's output is a result of the nature of the team process, which is it self a consequence of the characteristics of the members, organizational and work conditions (Guzzo & Shea, 1992). In the same figure two alternatives to the dominant model are also displayed. Model (B), shows input factors as having a direct effect on the outputs, which retains some of the influence of the process on the outputs. In model (C), the mediating role of team process is eliminated. Inputs determine directly the nature of team members' interactions and team outputs, which implies a more radical departure from the dominant way of thinking.

Figure 4.1: Models of team process influence
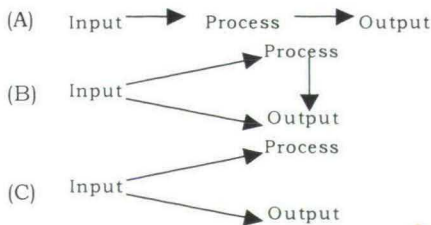
Source: *Guzzo & Shea (1992)*

In the present section we review different models of performance and effectiveness in work teams. These models represent to a certain extent an evolution on the way of thinking about work teams. Process loss models propose a general understanding of the effects of interaction process on team performance and effectiveness. Most of the time these models have taken an rather pessimistic view by focusing on the losses of the team processes in relation to the optimal potential. Intervention models emphasize the social interaction processes within the team as determinants of team performance and effectiveness. Contingency models propose a more focused and targeted explanation for the functioning of work teams by considering contextual factors and task design as input variables.

1 Process losses models

Traditional sociopsychological approaches to the role of group process on team performance have been essentially based on the general model proposed by Steiner (1972):

Actual productivity = potential productivity-process losses

According to this model, *potential productivity* is the highest possible performance level attainable and it is determined by the available resources within the team. The *actual productivity* of the team fails to match this potential due to *process losses*, which reflect less optimal ways of combining members' resources into a team product. According to Steiner (1972) process losses are due to deficits in coordination and motivation among team members. Research evidence on "social loafing" has indicated that decreases in members' effort can be originated from feelings of being dispensable (Weldom & Mustari, 1988), low control over the task outcome (Price, 1987), no identification or no evaluation or comparison with other team members (Harkin & Szymanski, 1987), or by tasks not being intrinsically meaningful (Brickner, Harkin & Ostrom, 1986).

Process loss frameworks have also been used to explain team performance. For instance, Hill (1982) reviewed studies of individual versus team performance in tasks involving learning, problem solving and concept mastery. He concluded that team performance was superior to its average member performance but often inferior to that of its most competent member. In brainstorming tasks, Diehl & Stroebe (1987) found losses in team performance in relation to individual performance. They suggest that team losses were due to production blocking, i.e. suppression of ideas because of time constrains, team members' distraction, or individuals following other members' ideas. Shiflett (1979), on the other hand, suggests that performance and effectiveness of teams were not only consequences of resource variables such as member knowledge, skills, etc., but also of transformers (situational constraints). He justified the process losses by

the influence of situational constraints on shaping the nature of resources available and the manner in which they are incorporated.

Process loss models do raise issues relevant for understanding performance and effectiveness of teams, such as the optimal use of individual resources, individual versus group performance, or coordination and motivation among team members. However, these models present some limitations in relation to the variables considered as input variables. In most studies only the qualities inherent of group members are considered. With the exception of the work of Shiflett (1979), the matter how individuals transact and draw resources from their environment is not addressed. Moreover, issues related to the objectives and dynamics of teams are neglected as well, as are different effective task performance indicators (McGrath, 1991). Finally, the gains associated with the team processes are often not considered in these models (Hill, 1982).

2 Intervention models and team development

Intervention models on team processes aim to improve the social interactions among team members as a strategy to enhance team performance and effectiveness. Activities such as "training" or "team-building" are examples of these interventions. Such intervention activities are intended to remove some of the emotional and interpersonal obstacles to effective team functioning and thereby allow members to devote more attention to the actual work task. It makes sense that more competent and open relationships among team members should lead to better team performance effectiveness. Moreover, when dealing with dysfunctional "process problems", members may discover new ways of working together which might help to achieve high levels of performance and effectiveness (Argyris, 1969). The literature on team interventions (e.g. Guzzo & Shea, 1992; Shea & Guzzo, 1987; Woodman & Sherwood, 1980) acknowledges to a certain extent the positive effect of team building and team development on the attitudes and perceptions of team members. However, their real impact on task performance and effectiveness of teams remains unclear. Research evidence shows that interventions mainly designed to improve interpersonal interactions are the least likely to affect team performance (e.g. Harold, 1978). More successful are interventions that attempt to change task processes such as helping teams clarify members' roles or general team objectives, or provide technical assistance to complex tasks (Woodman & Sherwood, 1980). These findings suggest that intervention processes may not be universally useful but may succeed in raising team performance in some circumstances (Guzzo & Shea, 1992).

Team intervention techniques have lead some researchers to take an interest in team development. The traditional point of view suggests that teams must undergo several developmental stages or solve certain conflicts before they are able to perform effectively (e.g. Tuckman, 1965). Studies supporting this

perspective are common in competing theories using laboratory or training teams. More recent approaches, though challenged these stages as well as the need for solving all conflicts within teams in order to increase performance. Gersink (1988, 1989) suggests teams do not progress through stages of development on their way to task accomplishment. Instead, their development seems tied to the calendar life and deadlines of tasks. Berg & Smith (1987) argue that internal conflicts in work teams are never completely solved, but rather persist and have salience at different times due to different circumstances in organizational teams. They offer examples of continuing unsolved paradoxes common to the life of teams, such as those of identity, dependency, intimacy and trust. According to this point of view, conflicts are a common phenomenon and the exploration and confrontation of them is a necessary component of the team life (Berg & Smith, 1987). According to McGrath (1991), the limitations of team development frameworks are the result of not taking into consideration the physical, temporal and social or organizational contexts in which the teams are supposed to perform. Groups that exist in every day life, typically have multiple current tasks to perform, and have to deal with general temporal problems, such as planning, deadlines, and coordination of activities (McGrath, 1991). Such behaviors definitely do not occur in fixed sequences or phases. Team development frameworks emphasize, though, the importance of interpersonal interaction processes in shaping the resources needed for a team to perform effectively. The contingency framework introduces task design and the contextual influences on work team effectiveness.

3 Contingency task models

Contingency task models differ from process loss and intervention models in several respects. First, they consider not only team characteristics, but also the design of tasks and other contextual variables as input of team process and effectiveness. Secondly, these models challenge the idea of a general and unified input-process-output framework to explain group effectiveness. Although there is enough evidence confirming that group process are affected by the nature of the inputs, only a few studies substantiate that differences in group interaction processes are related to differences in group performance (Guzzo & Shea, 1992). This suggests that this relationship is not a simple one, but may depend on critical task contingencies. The review of Hackman & Morris (1975) of this framework proposes to some extent a mediation role of processes in the input-performance relationship. More precisely, they argue that three factors may make a difference in the process of group interaction: (a) the use of member skills, (b) the use of appropriate task performance strategies, and (c) member effort. This suggests that specific roles of team interaction processes on a given situation will depend substantially on the tasks being performed. The
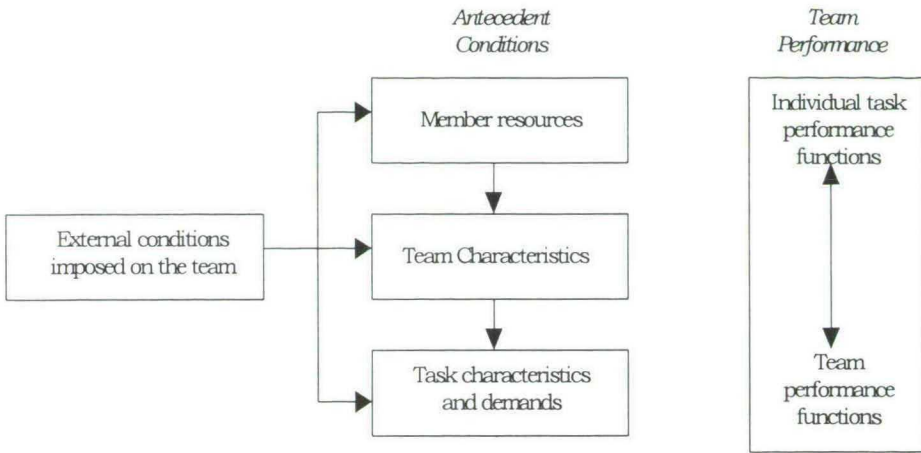
Figure 4.2: Conceptual model of team performance - Nieva, Fleishman & Reich (1978)

particulars of how the design of tasks influences team effectiveness were later elaborated in Hackman & Oldham (1980) and Hackman (1987). The emphasis on task design as an input factor has opened the door to contextual influences on team effectiveness in sociopsychological research. Based on the reviews of Goodman, Ravlin & Argote (1986) and Guzzo & Shea (1992), we examine some models of team performance effectiveness that highlight the role of task and organizational context in determining team effectiveness.

The first model was formulated by Nieva, Fleishman & Reich (1978) - *Conceptual model of team performance* (see Figure 4.2). The essence of this model is the assumption that team performance is a function of member resources, team characteristics, task characteristics and task demands. These are themselves a function of various external demands imposed on the team. External conditions in this model are not so explicit as in other models (e.g. Gladstein, 1984; Hackman, 1987). Here, they refer to the social system which determines to a large extent the membership of the team, the structure, and the procedures that the team carries out its function (Goodman et al., 1986). Team performance is divided into individual task performance and team performance functions. The individual performance functions are related to specific task behaviors performed by individuals such as pushing a button or monitoring a machine. The team performance refers to task related behaviors such as the coordination and quality of the interaction among team members necessary to perform the tasks (Goodman, et al.,1986). The reason for this splitting is that in some tasks, the role of individual behaviors may be more important in determining team performance than the team task behaviors. The contrary can be true for other group tasks.

X   Indicates a moderated relationship
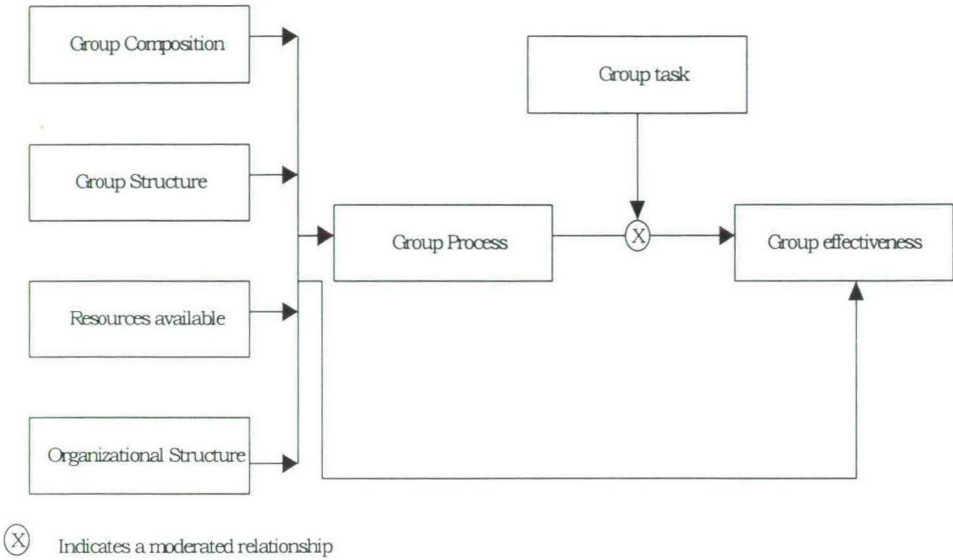
Figure 4.3: Model of group task effectiveness - Gladstein (1984)

The *Model of Task Group Effectiveness* presented by Gladstein (1984) in Figure 4.3 is a representative model for current theorizing on teams in organizations, and it is one of the few that has been formally tested. This model is based on previous research in group dynamics (e.g. McGrath, 1991). It begins with a series of grouped variables operating as inputs, or determinants of effectiveness: *group composition*, which is measured by variables such as tenure, heterogeneity and members' skills; *group structure*, which includes size, group roles, formal leadership, etc.; *available resources* which include training and availability, and *organizational structure*, here measured in terms of rewards for group performance and supervisory control. These input factors are thought to have both direct effects on group effectiveness and indirect effects mediated throughout group interaction process. The link between interaction process and effectiveness is expected to be moderated by the characteristics of the group task, such as task complexity or interdependence among group members.

This model was tested using a sample of approximately one hundred groups of sale representatives (Gladstein, 1984). As is often the case with such complex models, the results remain inconclusive in some respects. For example the moderator effect of group task on the relationship between group performance and effectiveness was not supported. The results also indicated that group process was not directly related to the actual sales of the groups. However, contrary to other studies, the effect of group structure on group process was supported.

The model proposed by Gladstein shares much of the earlier research work on the effects of contextual influences on group performance and effectiveness.
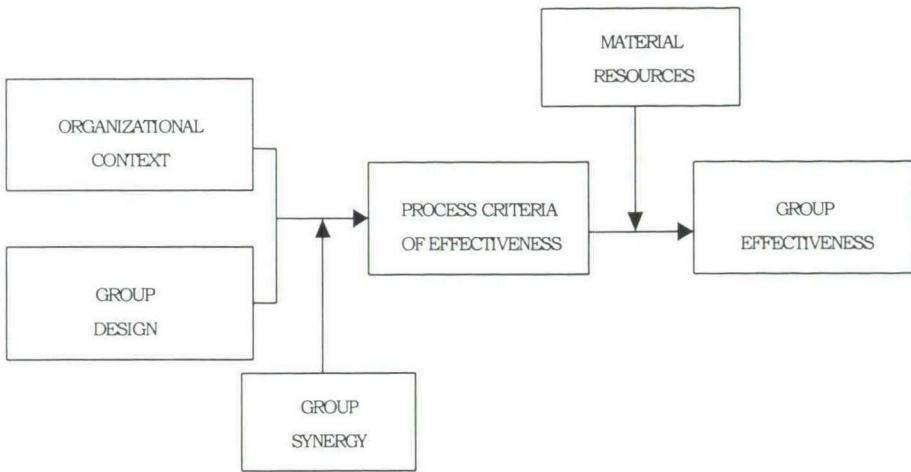
Figure 4.4: Normative Model of group effectiveness - after Hackman (1987)

The moderating role of task in the process-outcome relationship is similar to Hackman & Morris (1975), and it is considered as an input variable by Nieva et al. (1978) and later by Hackman (1987). This provides some indication of recognition of a shared set of factors as determinants of group performance and effectiveness, although some disagreement exists concerning their exact place (Guzzo & Shea, 1992).

In Hackman's (1987) *Normative model of group effectiveness* (see Figure 4.4), two categories including organizational context variables and group design variables were considered as inputs to explain process criteria of effectiveness which lead to team effectiveness. The organizational context variables include reward systems, education and training opportunities. The group design variables include the structure of the task, team composition and team norms about the performance process. Team effectiveness is measured not only by team performance but also by the continuity of the team and the satisfaction of members' needs (Hackman, 1987). The impact of the input variables on team effectiveness is mediated by the three aspects of interaction process already named in the beginning of these section (i.e. member skills, appropriate task performance strategies, member effort). According to Goodman et al., (1986) in some tasks, all three process criteria are important determinants, whereas in other tasks only effort is important. The relation between team process and team effectiveness is not a simple one. It depends on critical task contingencies such as the material resources required to accomplish the tasks well and on time. Also the relationship between input and process interaction is dependent on the team synergy, which can be thought of as the energy or effort of the team member that, if positive, leads to creative and innovative performance, and if negative inhibits performance.

Similar models can be found in the literature introducing new improvements to explain performance and effectiveness of teams. For example Shea & Guzzo

(1987) introduce feedback relationships among determinants of effectiveness so that, past levels of effectiveness alter the current sense of the team's potency to perform. However, like the above described models, Shea & Guzzo's model emphasizes the influences of organizational context as well as the task on the performance and effectiveness of teams. In fact, strong similarities can be seen across these contingency models in terms of the format and the specific input variables considered. Antecedents such as task characteristics, group composition and organizational factors appear in all the models. Team process variables are also considered, although they are more explicit in the models of Gladstein (1984) and Hackman (1987).

The criterion variables are also an important issue in contingency models. Since effectiveness is not a clear construct, a dimensional approach including performance and other dimensions of effectiveness is commonly used. The critical issue is whether these different dimensions can be explained at the same time and by the same model. Covariation problems between performance and other variables such as communication and satisfaction have been seen across studies (e.g. Shaw, 1976). The generalization of these models across different types of work teams is another major concern. Hackman & Morris (1975) challenge the idea that it is possible to construct models that are generalizable to across different settings. For example, within a given setting, a team may be involved in a production task or in a decision task. In most settings teams need to perform both tasks, to some extent, in order to accomplish effectiveness. However the question remains whether the model that is useful in explaining performance a tasks fits a decision making task (Goodman, et al, 1986).

How task, context and composition of teams will affect the interaction of team members and performance effectiveness is a question for continuing research. To most authors, contingency models are useful to organize our thinking about how work teams operate in organizations (e.g Goodman et al, 1986; Hackman, 1987; Guzzo & Shea, 1990). However, there is a need to improve these models in relation to the dynamics of processes within teams in order to identify the critical variables that affect performance effectiveness. This has encouraged research on the process through which teams develop shared understandings of appropriate actions (Bettenhausen & Murninghan, 1985).

Research introducing trust in team behavior has started in laboratory studies (e.g. Deutsch, 1962; Zand, 1972). In most of these studies trust was considered as a condition to cooperation or effective communication. Considered as an interaction process variable, trust can be related to task processes which mediated the relationships between conflict and performance. In field research (e.g. Bennis & Naurus, 1985; Brockner, Siegel, Dally, Tyler & Martin; 1997) the importance of trust has been emphasized at the management and leadership level to explain team effectiveness. Costa, Roe & Taillieu (1998) have emphasized the importance of work characteristics on trust to explain performance of tasks. As organizations have come to rely on team-based arrangements, understanding the role of trust at this level, and the implications for team performance and effectiveness has become a relevant research topic.

In this book we attempt to contribute to this understanding by considering trust as a process variable within teams, and by examining its implications for the performance and effectiveness of teams. Before presenting and discussing our conceptual model of the effects of trust on team performance and effectiveness some conceptual issues concerning trust and other relevant input variables are discussed in the following section.

4.2   Conceptual issues

Having defined the research domain in which we intend to study trust, this section discusses some conceptual issues related to trust in work teams. Theoretical assumptions and considerations about trust are essentially derived from the psychological perspective. We consider this perspective to be an appropriate basis for our conceptualization and definition of trust, since it focuses on the individual and the group as well as on the work processes as important conditions for trust. Nevertheless, particular assumptions from the sociological or the economic approaches that can be relevant for the study of trust in work teams, are also mentioned in our framework. In this section, we present a definition of trust and describe the components of trust. Subsequently, we discuss the factors that may have a causal link to trust within teams, and discuss the effects that trust might have on team performance and effectiveness. The concepts introduced as trust components, and the concepts described as antecedents and consequences of trust, serve as introduction for the model and hypotheses presented in section 4.3.

4.2.1   Definition of trust

One of the most cited definitions of trust for interpersonal relationships is "the willingness to be vulnerable" from Mayer et al. (1995). This definition has played a central role in many definitions proposed, such as in Mishra (1996), Bromiley & Cummings (1995), Jones & George (1998), Mcknight, Cummings and Chervanty (1998), etc. In other definitions, different words have been used to propose the same meaning. For instance, the "willingness to rely" on another (Doney, Cannon & Mullen, 1998), the "increase of one's vulnerability to another" (Deutsch, 1962; Zand, 1972), and the "intention to accept vulnerability" Rousseau et al. (1998).

In some definitions authors emphasize the expectations underlying the trust concept. For example, Lewicki & Bunker (1995, 1996) and Boon & Holmes (1991) assume that trust involves "positive expectations about others"; and for Elangovan & Shapiro (1998) trust is a "set of optimistic expectations". However, according to Lewicki & Bunker (1996), trust goes beyond the positive expectations with respect to the characteristics or intentions of those involved in the relationships, including also considerations about the situation and the risks associated with acting on such expectations. In other definitions, authors

propose that trust is a "risk taking behavior" or the "willingness to engage such behavior" (Cummings & Bromiley, 1996). Underlying the "decision to trust" is the individual willingness to become vulnerable (Zand, 1972), and the expectation or belief that others will act in a way that is beneficial or at least not detrimental for the relationship (Gambetta, 1988).

Although different, some degree of convergence towards a common meaning can be found among these definitions. First, most definitions acknowledge that trust is related to individual attributions about other people's intentions and motives underlying their behavior (Wrightsman, 1991). Secondly, these attributions influence and are influenced by individuals' general beliefs and expectations about the treatment they will receive from others (Mayer, et al., 1995). In turn, these are closely linked to the willingness to engage or the risk taking decision of engaging behaviors of trust when interacting with others (Deutsch, 1962; Kramer et al., 1996). Finally, these attributions and beliefs are contingent upon a certain context, and tend to be based not only on personal information but also on non-personal (situational) information that either serves to enhance or to inhibit the development of that trust. Based on these assumptions, we propose the following definition of trust.

"Trust is a psychological state that manifests itself in the behaviors towards others, is based on the expectations made upon behaviors of these others, and on the perceived motives and intentions in situations entailing risk for the work relationship with those others."

In this definition trust is viewed as an attitude held by an individual in relation to another individual or group of individuals within work teams. This definition applies to work relationships in team contexts. Moreover, it considers the individual state, the expectations and the behaviors, as distinct but related components of trust. This is consistent with Mayer et al.'s (1995) integrated model of trust. In addition, this conceptualization parallels other definitions of trust as a multidimensional or multifaceted construct (e.g. Cummings & Bromiley, 1996; Smith & Barclay, 1997).

Contrary to some other definitions (e.g. McAllister, 1995; Rousseau et al, 1998, etc.), our definition considers the behaviors of trust as components and not as an effect of trust. We argue that behaviors are an important component of trust, since they reflect the significance of the decision about trusting or not (Smith & Barclay, 1997). Moreover, it is through the observation and interpretation those behaviors that individuals learn about each others' motives and intentions, and are able to make inferences of trustworthiness (Zand, 1972).

4.2.2   Components of trust

In our definition, trust is conceptualized as a multi-component construct, reflecting the individual's predispositions, expectations in relation to others and behaviors towards others. Because trust is believed to vary with tasks, situations

and people (Hardy & Magrath, 1989), therefore these components are conceived as having multiple dimensions whose nature and relative importance may vary with the context relationship.

1. *Propensity to trust*, or the general willingness to trust others, is commonly viewed as a stable individual or group trait that people carry from one situation to another, which determinate how much they are willing to trust others (Rotter, 1980). Dispositional theories assume that trust is related to internal factors that predispose individuals to trust (see Chapter 2 -psychological approach: intra personal perspective).

People differ in their propensity to trust. Different experiences, personality types, cultural backgrounds, education, and several other social-economical factors are responsible for one's propensity to trust (Mayer, et al., 1995). Rotter (1980) argues that based on past experiences and generalizations from other situations, individuals are able to develop general expectations in relation to the behavior of others. These expectations establish the link between the decision to trust and the consequent reinforcements obtained through the attitudes of others, and are extended across situations (Rotter, 1980). Propensity to trust might help to explain variations in trust levels between individuals. But according to Mayer, et al., (1995), it should be viewed as a more situational specific trait affected by both personality and situational factors. Empirical evidence in simulated contexts suggests that propensity to trust is significantly related to workers behavior and performance (e.g. Colon & Mayer, 1994: in Mayer et al., 1995). Particularly, as situations become increasingly unfamiliar, the influence of trusting dispositions on behavior grows (Rotter, 1980). Hardin (1993) suggests that the individual disposition to trust affects the ability to engage in cooperative activities with other people. For example, individuals with low propensity to trust will be likely to have less positive interactional experiences than individuals with high propensity to trust, which contributes to perpetuate their low predisposition to trust (Hardin, 1993). Bigley & Pearce (1998) argue that low propensity to trust may influence work behavior on several occasions. For instance, low propensity to trust might be reflected in the resistance to accept newcomers, or to accept job changes that increase reliance on other coworkers (Bigley & Pearce, 1998). Within work teams, members' propensity to trust is likely to influence and be influenced by the perception of members' trustworthiness and their actions towards other members.

2. *Perceived trustworthiness* refers to the evaluation of the characteristics and actions of the person to be trusted, i.e. the trustee(s). Good (1988) defines trustworthiness as the extent to which individuals expect others to be and to behave according to their implicit or explicit claims. Three general bases can be identified that evaluate trustworthiness: (1) character - the extent to which individuals perceive others as being integer, consistent, loyal and discreet

(Gabarro, 1979; Butler, 1991; Smith & Barclay, 1997); (2) role competence - the extent to which individuals perceive others as having the skills, abilities and knowledge necessary for effective task performance (Gabarro, 1979; Butler, 1991; Smith & Barclay, 1997); (3) motives and intentions - reflecting the extent to which individuals perceive the purpose or the intentions behind the actions of others as being fair or unfair to the relationship.

Cummings & Bromiley (1996) present a less detailed and individual focused framework, considering three dimensions upon which people assess the trustworthiness of others (see also Chapter 2, page 15): (a) the belief that another person or group makes good-faith efforts to behave in accordance with explicit or implicit commitments; (b) the belief that another person or group is honest in whatever negotiations preceded such commitments; and (c) the belief that another person or group does not take excessive advantage when the opportunity is available. Within teams the perceived trustworthiness of members towards each other can be assessed according to these dimensions.

3. *Trust behaviors* refer to the actions that reflect the willingness to be vulnerable to others (Zand, 1972; Moorman, Zaltman & Despandé, 1992). Although a variety of actions may be indicative of trust, four categories have been consistently found throughout research: (1) communication openness - the degree to which individuals share information regarding plans, programs, expectations, goals motives and evaluation criteria (Lewicki & Bunker, 1995; Smith & Barclay, 1997); (2) acceptance of influence - the degree to which individuals voluntarily change their strategies to accommodate desires of others (Blau, 1969; Smith & Barclay 1997); (3) forbearance from opportunism - the extent to which individuals act in a spirit of cooperation, without cheating or withholding helpful information (Smith & Barclay, 1997); (4) control reduction - the degree to which individuals refrain from controlling or monitoring others (Gibb, 1964; Smith & Barclay, 1997). The relative importance of each form of behavior depends on the nature and context of the work relationship (Smith & Barclay, 1997).

In contexts of ongoing relationships such as work teams, these behaviors typically occur simultaneously, since one type of behavior may lead to another one. In this way, it seems more meaningful to consider these behaviors as complementary. According to Jones & George (1998), trust behaviors correspond to positive actions towards individuals that jointly can be optimized through cooperative behaviors. Thus, it makes sense to distinguish between:

3a. *Cooperative behaviors*, referring to the extent to which team members communicate openly about their work, accept the influence of others in relation to their work, and feel personally involved with the team;

3b. *Monitoring behaviors*, referring to the extent to which members feel a necessity to control other members' work and be surveillant in order to prevent opportunistic actions.

This distinction has the purpose of pointing at the role of monitoring in trust. According to most perspectives, trust excludes the deliberate control over the behavior of others. In fact, it is commonly suggested that monitoring comes into play when trust is not present. For example, if a team member trusts his/her colleague's ability to perform well, no monitoring behavior is needed. In this way, cooperative behaviors and monitoring behaviors would correspond to opposite poles of the same continuum. Subsequently, the more teams would perform cooperative behaviors the less they would perform monitoring behaviors and vice versa (Inkpen & Curral, 1997; Leifer & Mills, 1996).

In contrast, the transaction-cost point of view argues that monitoring and cooperative behaviors may complement each other. As suggested by Creed & Miles (1996), organizations have to simultaneously consider the costs of control mechanisms, costs of meeting trust requirements, and costs of trust building. Since both mechanisms are costly, several scholars argue that organizations do not pursue exclusively cooperative behaviors in any given situation. For work teams, this means that to reach a minimum level of trust necessary to work effectively, team members can use cooperative and monitoring behaviors to complement each other (Beamish, 1988).

In a more recent approach, Das & Teng (1998) propose that cooperative and monitoring behaviors can operate as parallel phenomena that jointly and interdependently contribute to the level of trust in a relationship. The key issue is whether trust is seen as given and static, or it changes when new tasks are introduced. When performing different task, teams have different trust requirements at different moments, depending on the knowledge and resources necessary as well as on the risks involved to perform those tasks. Consequently, a high level of trust may not automatically dictate an increase of cooperative behaviors and a lowering of monitoring behaviors.

In total four components of trust are considered in this framework. While similar multi-components models of trust (e.g. Mayer, et al, 1995; Smith & Barclay, 1997), propose several causal links between the dimensions considered, we believe that the relationship between these components is interactive. Therefore, propensity to trust, perceived trustworthiness, cooperative and monitoring behaviors are considered as interdependent and mutually affecting components of trust within teams.

4.2.3   Factors affecting trust within work teams

Across disciplines scholars seem to agree that trust occurs under conditions that entail uncertainty and vulnerability for the parties involved (Deutsch, 1962; Coleman, 1990). Within work teams, vulnerability and uncertainty between members can arise for different reasons. According to the contingency approaches to group behavior, three major factors are seen as affecting processes and outcomes of teams in organizations, i.e. team composition, work characteristics, and organizational context. Each includes specific variables that

affect teams in different ways. Based on the trust literature exposed in chapter 2 and 3, the following section describes the variables that are expected to have an effect on trust within work teams.

1 Team composition

Work teams vary in many respects and can be defined according to several characteristics (Hackman, 1987). For example, for some work teams physical separation is a defining characteristic of existence (e.g. flight crews), for other work teams time may be the bounding characteristic (e.g. project teams). However, in most studies team composition refers to individual differences among members. Differentiation among team members can be based on tenure in the organization and the work team, functional background, expertise, gender, culture, etc. Hackman (1987), for instance, differentiates teams in terms of group design, which includes variables such as team composition, task structure and group norms about performance processes. Gladstein (1984) includes descriptive variables such as organizational and job tenure, team heterogeneity and adequate skills, etc. (Gladstein, 1984). It is according to this last description that team composition is viewed here.

   Research on team composition has tried to establish which types of people work best together, and in what way team members must be compatible in order to work together effectively (Guzzo & Shea, 1992). Like in other research areas, there is no unified view about which personal factors should be considered as determinants of team process and effectiveness. However, there is a shared view that certain combinations of people in a team are more likely to result in greater performance effectiveness than others. The work of Janis (1982) emphasizes the value of heterogeneity among team members as means of enhancing the quality of group decision making. Hence, it appears that teams that maximize member differences may contribute to performance in problem solving and decision making (Guzzo, 1986). In particular, teams with mixed levels of ability tend to perform better than teams with similar levels of ability (Goldman, 1965). Yet, heterogeneous work teams are less able to rely on interpersonal similarity, common background or experience in order to develop trust (Zucker, 1986). As shown by Tziner & Eden (1985), similarly talented people in a team can be more effective when they are high in ability. Also variables such as team cohesiveness, can determine trust within a team. For instance, Cartwright and Zander (1985) speak of coexistence in teams of "person-oriented motives" and "group-oriented motives". It is the interdependence or the compatibility of these motives that leads team members to engage in cooperative or competitive interactions. The presence of strong or weak group-oriented motives may also be related with the individual preference for working on a team. Although team composition research is rarely associated with trust, the following variables can be expected to affect trust within teams:

1. *Team cohesion* refers to the forces that bind members together and to their team (Guzzo & Shea, 1992).

2. *Job adequate skills* refers to the ability, experience and knowledge of team members that is obtained through education, examples, transfer of knowledge by team members or others, and through job learning.

3. *Preference for working in a team*.

4. *Heterogeneity* refers to the extent to which team members have different professional education and work experience.

5. *Tenure* refers to organizational and job tenure.

2 Work characteristics

An important condition for trust at work are the situational conditions surrounding trusting choices. As many researchers note, trust is more than a set of expectations, but rather the confidence in face of risk (Lewis & Weigert, 1985). The notion of risk has been central to many definitions of trust, and it is often described as the contextual variable that weights the likelihood of the possible positive and negative consequences of trust. Task characteristics are important factors for the process and effectiveness of work teams (Hackman & Morris, 1975; Hackman & Oldham, 1980; Gladstein, 1984). The nature of tasks can be classified according to the information-processing approach (Lawrence & Lorsh, 1967; Galbraith, 1977). This approach distinguishes tasks according to complexity, interdependence and environmental uncertainty. These dimensions determine the information requirements of the task. In order to be effective teams must have information-processing capacity that matches the requirements of their tasks (Gladstein, 1984). For instance, when tasks are complex there is a need to discuss alternative performance strategies in order to achieve high levels of performance effectiveness (Hackman, Brousseau & Weiss, 1976). Whereas if tasks are simple, team members can use standard operating procedures, and discussion of alternative methods is not necessary (Gladstein, 1984). Morris & Moberg (1994) describe the working conditions that increase uncertainty and vulnerability towards others. We consider two of these conditions as relevant for our study of work teams:

6. *Functional dependence* concerns the extent to which the successful job performance of a given worker directly or indirectly depends on the contributions of another worker (Morris & Steers, 1980).

In organizations, tasks are often divided so that the combined efforts of various workers produce a cumulative product or service. As a result, workers are to a certain degree dependent on one another in order to accomplish their tasks. This notion does not only concern the achievement of organizational goals but also the needs and expectations of the workers themselves, such as a sense of work well-done, appraisal, pay raises, promotion, etc. (Morris & Moberg, 1994). Means for work specification and control, such as well specified schemes,

of standard procedures, can be used to set expected behaviors which ensure that exchanges of a particular sort will occur, and thereby, diminish the worker's uncertainty about these matters. However, they cannot effectively remove uncertainty concerning the actions of workers who are functionally interdependent (Morris & Moberg, 1994).

In a general way, functional dependence can be seen as a facilitator of trust because it encourages information exchange, discussion of possible strategies, and open communication, which gives room for acceptance and personal involvement. Furthermore, functional dependence is believed to increase proximity and personal involvement within groups (Zand, 1972), which at the same time are considered to be important prerequisite for trust (Lewicki & Bunker, 1996).

7. _Task ambiguity_ is related to the lack of work specifications, or standard operating procedures provided by the organization or colleagues, that can define expectations about what resources and actions will be required for successful task accomplishment (Morris & Moberg, 1994). In such situations, the worker's vulnerability towards others increases and trust becomes very important, especially in relation to "technical competence" and "fiduciary responsibility" of the trustee (Morris & Moberg, 1994).

Scholars have long addressed the role of ambiguity in increasing work stress and poor performance. Cohen (1980) shows that ambiguous tasks and inconsistent supervision increase the anxiety between members, decrease productivity and result in a less favorable attitude towards the manager. Also Rizzo, House & Lirtzman (1970) found that role ambiguity is negatively related to member satisfaction and positively related to anxiety and propensity to leave the organization. In this situation a lack of trust might increase monitoring behaviors to cope with the risks involved (Morris & Moberg, 1994). Hence, according to the transaction costs approach, ambiguous conditions increase the risk for opportunism, which might lead to some protective behavior in order to prevent being exploited. It is, thus expected that highly ambiguous task conditions would lead to less trust within teams.

3 Organizational context

The organizational variables that systematically appear as inputs in models of team performance effectiveness are normally related to supervision, degree of influence, rewards systems, training opportunities and technical consultation (see earlier models of Gladstein, 1984; Hackman, 1987). In the present framework we focus on two slightly different variables, however both address those same inputs.

8. _Organizational climate_ is originally conceptualized in terms of the distinction between theory X and Y of Mcgregor, and is related to the perceptions of supervision as being classic and bureaucratic versus work-centered and

personal (Ten Horn & Roe, 1984). In this perspective, organizational climate is assessed from the point of view of the subordinates. Workers evaluate behaviors of supervision in terms of information sharing, degree of participation, and decision making, and determine how they experience these behaviors as being helpful, friendly, tense, etc.

9. *Members' overall influence* refers to the influence of team members in the distribution of their work, budgets, evaluation and rewards.

The relationship between organizational climate and trust has been suggested in the work of Creed & Miles (1996) and in the work of Cangemie, et al. (1989) (see chapter 3). Although no empirical research has been conducted on this issue, both theories suggest that behaviors and philosophies of leadership are central to the development of a healthy climate that is able to create and sustain trust among workers. Research on the influence of leadership on team performance effectiveness has in part supported this view. One line of research, has focused on which leadership style leads to better team performance. In general, the results show that participative leadership tends to be more effective than authoritarian leadership (e.g. Nieva et al., 1978). More recent studies on self-managed teams also suggest the importance of the leader in making teams self managing (Manz & Sims, 1980). Another line of research, has indicated that the effects of supervision on work teams are dependent on the structure of the tasks and the composition of the team (e.g. Tzeiner & Eden, 1985). Although no consistent body of research exists on the effect of leadership on team effectiveness, the evidence suggests that behaviors such as sanctioning, developing orientation, coordination, and planning affect team performance. Moreover, these effects are generally dependent on some team processes or situational conditions (Goodman et al., 1986). In this way, it is expected that organizational climate and members' overall influence on the organization, affect levels of trust within teams.

4.2.4   Implications of trust for performance and effectiveness

Effectiveness is the general criterium considered in evaluating group functioning. According to Cohen & Bailey (1997) effectiveness of teams can be measured with respect to three major dimensions: (a) performance effectiveness in terms of quantity and quality of team outputs; (b) team members' attitudes; and (c) behavioral outcomes. Examples of performance effectiveness within teams are: productivity, quality, task performance, customer satisfaction, and innovation. Members' attitudes may be expressed in the satisfaction, commitment, stress, etc., of the team members. Behavioral outcomes refer to absenteeism, turnover, and safety. In most organizations, this type of information is treated as "confidential". Consequently, research conducted with real work teams often does not include behavioral measures of effectiveness.

Organizational researchers often try to compensate for this lack of information by including multiple dimensions of effectiveness in their studies. Cohen & Bailey (1997) suggest that effectiveness refers to a multiplicity of outcomes that are relevant in organizational settings and therefore should not be dealt with at one level of analysis only (Guzzo, 1995). It is important to be clear about which dimensions of effectiveness to consider and at what level. Given the possible effects of trust on several dimensions of effectiveness, we distinguish between:

1. *Team performance*, referring to the extent to which team members consider their team to perform well compared to what is expected from other teams in their organization.

2. *Team effectiveness*, referring to the extent to which team members feel satisfied and committed to their own teams, and do not experience stress in their work.

3. *General effectiveness*, referring to the extent to which team members feel committed and are satisfied with their job and organization .

Apart from the general assumption that trust is an important lubricant of the social system, and a facilitator of coordinated action among individuals (Williamsom, 1975; Arrow, 1974), some positive outcomes have been found to be associated with trust. Satisfaction and commitment have been used by many researchers as dimensions of effectiveness predicted by trust. For instance, Gladstein (1984) finds a strong link between intragroup process (including open communication) and satisfaction. Smith & Barclay (1997) reveal that open communication and forbearance from opportunism lead to mutual satisfaction in contexts of buying and selling relationships. Morgan & Hunt (1984), in presenting the commitment-trust theory, argue that work relationships characterized by commitment and trust engender cooperation, reduce functional conflicts, tendency to leave and uncertainty. Accordingly, it would be expected that trust would have an effect on the satisfaction and commitment of team members with their own teams and organization.

The amount of stress experienced by team members can be an indicator of poor effectiveness. Research studying the relationship between trust and stress has not been so popular as the relationship with other dimensions of effectiveness. Even though, research emphasizing role stressors in teams (e.g role conflict and role ambiguity) suggests that as individuals devote more cognitive resources to coping with a stressor, e.g. by increasing monitoring activities, the more is the effort in evaluating and enact appropriately in order to perform their duties (Fried et al., 1998). In this way, it is expected that the stress felt by team members might be related to the level of trust within the team. In particular it is expected that as monitoring behaviors increase also high stress among team members is expected.

The influence of trust on performance has been suggested by many authors (e.g. Bromiley & Cummings, 1995; Butler & Cantrell, 1994; McAllister, 1995); Yet, the existing research evidence shows little about this effect. The inclusion of the behaviors of trust may provide one line of explanation. Zand (1972) has proven that groups with low levels of trust have less tendency to share information and ideas, are less personally involved, and impose controls when coordination is necessary. Monitoring and defensive behavior is normally seen as non-productive activities (McAllister, 1995), because they increase costs, restrict change, and reduce cooperation (Bromiley & Cummings, 1995). Allocating energies to pursuit such behaviors, leaves fewer resources to accomplish fundamental work objectives. On the other hand, groups with high levels trust seem to be more open to discussion, develop more innovative and original solutions, solve their problems effectively, and have more self-control and less arousal in situations of treat (Zand, 1972). Efficiency and coordination within team units is only possible when interdependent actors work together effectively, maximizing their skills and contributions (McAllister, 1995), and not restricting exclusively to what is specified in their job descriptions (Katz, 1964). If trust facilitates openness, communication and coordination among such actors, a positive effect on performance and can be expected.

4.3   Integrated model for the study of trust in work teams

The extensive literature on trust has stimulated the discussion and integration of different points of view in the study of trust in organizations. In chapter 2 we started with an overview of the different approaches to trust within three major perspectives: sociology, economics and psychology. In each perspective different aspects were emphasized, providing us with a large number of factors to consider as possible conditions to trust. Because trust is neither transsituational nor context-free, the relevance of such factors depends on the context in which trust is studied (Morris & Moberg, 1994). For this reason, more specific theoretical considerations and empirical research findings on trust in organizations were presented in chapter 3, while the research domain was defined in chapter 4. Although trust has been recognized as an important and critical topic in organizational behavior, little systematic research has been conducted. The difficulty of providing a consistent general framework as well as a global definition of trust, have been pointed out as main reasons for the lack of empirical evidence. More recent approaches, though, emphasize the advantages of problem-centered frameworks for studying trust (e.g. Bigley & Pearce, 1998). The aim of our work is to contribute to this understanding by examining the nature and importance of trust in work teams. For this purpose we used an input-process-output framework for group behavior (see Figure 4.5).

4.3.1   Research model and research questions

The integrated model for the study of trust within teams is portrayed in Figure 4.5. Trust is represented by the inverse "**T**", and incorporates the components propensity to trust, perceived trustworthiness, and cooperative and monitoring behaviors. Furthermore, the model contains a great number of variables (see sections 4.2.3 and 4.2.4) that characterize the different relevant input and output domains covered in research on group behavior in organizations. The integrated model consists of three parts. The central part refers to the nature of trust, the upper part points at which factors affect trust, and the lower part explores the importance of trust through the relationships with the criterion variables performance and effectiveness. We address three research questions:

Question 1: Is trust within teams a multi-component construct?

Question 2: Is trust within teams affected by team composition as well as by work characteristics and organizational context?

Question 3: Is trust within teams important for team performance and effectiveness?

These questions aim to contribute to the discussion around the previous and more generalized questions introduced in chapter 1. However, for the purposes of this book, we confine these questions to the work domain of work teams.

The first question explores the nature of trust within teams. We argue, in this chapter, that trust is a multi-component construct that comprises individual propensities, expectations about others, and behaviors towards these same others. With this question we intend to examine whether trust is a latent construct composed by propensity to trust, perceived trustworthiness, cooperative and monitoring behaviors.

The second question inquires which conditions are relevant for trust in the context of work teams. The literature exposed in chapters 2 and 3, suggests that trust in interpersonal or intergroup relationships is not only predicted by individual attributions but also by situational conditions. Contingency approaches to group behavior propose three major inputs as relevant predictors of work team process: team composition, work characteristics and organizational context. According to the integrated model in Figure 4.5, trust can be seen as a part of team processes. With this question we intend to examine how trust within teams is affected by these predictors.

Finally, the third question explores the relevance of trust for the functioning of work teams, by examining whether there is a relationship between trust and high performance and effectiveness of teams. In our model we distinguish between team performance, team effectiveness and general effectiveness. Previous results have supported the positive effects of trust on several dimensions of effectiveness such as satisfaction and commitment (e.g. Smith & Barclay, 1995; Morgan & Hunt, 1994). Some inconsistencies have been found with regard to the effects of trust on performance.
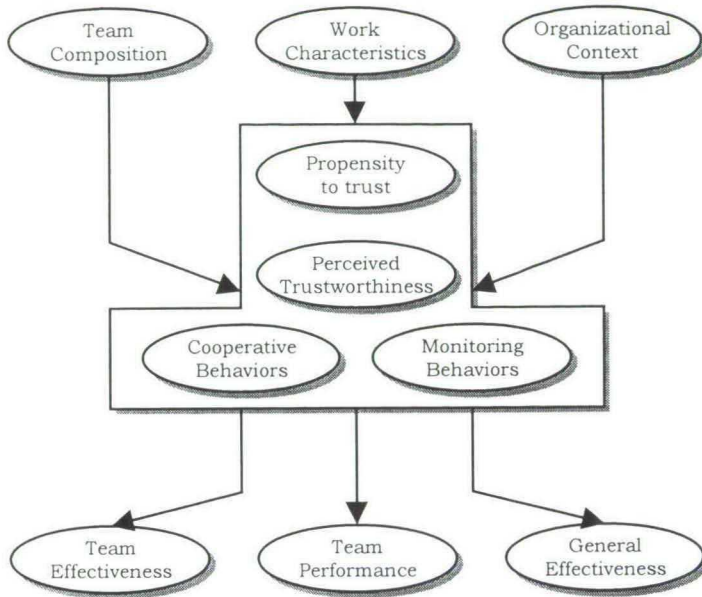
Figure 4.5: Integrated model for the study of trust in work teams

4.3.2   Main hypotheses

1   Trust

On the basis of the integrated model for the study of trust within work teams, and the preceding conceptual framework, the following hypothesis can be formulated. Our general hypothesis concerns the nature of trust within work teams and proposes the following:

Hypothesis 1: Trust within teams is a latent construct that is composed of positive relations with propensity to trust, perceived trustworthiness and cooperative behaviors, and of a negative relation with monitoring behaviors .

This main hypothesis can be broken down into three more specific hypotheses:

Hypothesis 1a: Propensity to trust, perceived trustworthiness, cooperative and monitoring behaviors constitute distinct components of trust.

Hypothesis 1b: The multi-component nature of trust can be explained by a second-order structure, where trust constitutes a second-order latent factor and each of the above named components first-order factors.

Hypothesis 1c: Except for monitoring behaviors all components are expected to have a positive relationship with trust.

2 Factors affecting trust in teams

Dealing with the upper part of the model presented in Figure 4.5, trust within teams is expected to be affected by variables related to the composition of teams, work characteristics and organizational context. We start with the relations between team composition and trust. As discussed earlier in this chapter (see 4.2.4 - 1) it is argued that team cohesion, job adequate skills, preference for working on a team, heterogeneity and tenure are expected to have a positive effect on trust. Therefore, the following hypotheses can be formulated.

Hypothesis 2a: Preference for working on a team is positively related to trust between team members.
Hypothesis 2b: Team cohesion is positively related to trust to trust between team members.
Hypothesis 2c: Job adequate skills are positively related to trust between team members.
Hypothesis 2d: Team heterogeneity is positively related to trust between team members.
Hypothesis 2e: Tenure is positively related to trust between team members.

The relationship between work characteristics and group process is an essential aspect of contingency approaches to group behavior (see section 4.1.2 - 3). In the trust literature, functional dependence and ambiguity are seen as conditions that entail vulnerability and uncertainty for those involved, and therefore are necessary for trust to occur. Scholars agree about the positive relation between functional dependence and trust. However, the relationship between ambiguity and trust is subject to more controversy. According to a human sciences point of view, ambiguity might lead to trust because it increases the need for open discussion of possible alternatives (Barber, 1983). In opposition, the transaction costs point of view of Williamsom (1975) suggests that in ambiguous situations the risk for opportunism is high which might increase protective or defensive behaviors. With regard to this variable we adopt the economic point of view. Accordingly,

Hypothesis 3a: Functional dependence within teams is positively related to trust between team members.
Hypothesis 3b: Task ambiguity is negatively related to trust between team members.

The influence of the organizational context on trust in teams is mostly reflected through the climate engendered by management practices and the members' overall influence on the organization (see section 4.2.3 - 3). Based on the existent literature, a climate based on work-centered and personal involvement supervision is therefore expected to have a positive relation to trust within teams as well as member's overall influence. This leads to the following hypotheses:

Hypothesis 4a: Organizational climate is positively related to trust between teams.

Hypothesis 4b: Members' overall influence in the organization is positively related to trust between team members.

3 Effects of trust on the performance and effectiveness of teams

In relation to the effects of trust on team effectiveness, the model distinguishes between team performance, team effectiveness and general effectiveness. We start with the effects of trust on team performance. The performance of teams can assessed in terms of how well tasks are performed (task performance), and of how well the team performs in relation to what is expected from them by other teams (role performance). Consistent with the existent literature, we expect trust within teams to be positively related to the performance of those teams. Therefore,

Hypothesis 5a: Trust within teams is expected to be positively related to task performance.

Hypothesis 5b: Trust within teams is expected to be positively related to role performance.

Team effectiveness includes the criteria team satisfaction, relationship commitment and stress. The effects of trust on these variables are expected to be as follows,

Hypothesis 6a: Trust within teams is expected to be positively related to relationship commitment.

Hypothesis 6b: Trust within teams is expected to be positively related to team satisfaction.

Hypothesis 6c: Trust within teams is expected to be negatively related to stress within teams.

Trust within teams is also expected to affect effectiveness on a more general level. In particular, it is expected that trust within teams affects the general satisfaction and commitment of the team members. As in Moday, Porter & Steers (1982) commitment to the organization is viewed in terms of attitude and continuance. Attitudinal commitment refers to the extent to which individuals come to identify with the goals and values of the organization and want to maintain their membership to the organization (Staw, 1977). Continuance commitment refers to the desire of maintaining the membership to the organization based on economic reasons, prior investments or lack of alternatives available (Kanter, 1968). Attitudinal commitment is viewed as a positive attitude towards the organization whereas continuance commitment is seen as a more calculative attitude. The relationship between both two variables in relation to trust is expected to be opposite. Accordingly,

Hypothesis 7a: Trust within teams is expected to be positively related to general satisfaction.

Hypothesis 7b: Trust within teams is expected to be positively related to attitudinal commitment.

Hypothesis 7c: Trust within teams is expected to be negatively related to continuance commitment.

4.3.3   Additional research interests

Within organizational theory, trust has been appointed with many different causal roles. Some theoretical models describe trust as a cause (e.g. Mishra & Spreitzer, 1998), others describe it as an effect (e.g. Burt & Knez, 1996), and a few present it as a moderator (Das & Teng, 1998). In this model trust is positioned in a mediator role, although it is not our intention to test the mediating capacities of trust between inputs and outcomes within work teams. Instead, we intend to explore the relationships between inputs and outcomes with respect to trust and examine weather this notion should be explored by contingency frameworks. Consequently, the following question can be explored.

Question 4: Is an input-process-output structure the most adequate to study trust within work teams?

Although our integrated model departures from the simplest input-process-output structure, we cannot exclude the possibility of feedback effects, or direct effects between the antecedents and the outcomes. Contingency approaches argue that the specific role of interaction processes depends on the type of tasks being performed. In some cases, work characteristics and organizational factors may influence the interaction processes of teams, and at the same time have an effect group effectiveness (e.g. Gladstein, 1984; Hackman, 1987). On the other hand, research on team composition suggests that certain combinations of people in a team are likely to result in more performance effectiveness than others. In this way, it is prudent to examine the adequacy of our model structure and explore the possibility of other significant relationships.

4.4   Summary

In this chapter we have proposed a framework for the study of trust in work teams. In essence, trust is viewed as an attitude that incorporates individual propensities, perceptions of trustworthiness and behaviors of trust. The multi-component nature of trust is illustrated in the integrated model, with the inclusion of propensity to trust, perceived trustworthiness, and cooperative and monitoring behaviors as distinct but related components of trust. Except for monitoring behaviors, all components are conceived as positive elements of trust.

In order to arrive at this framework we have discussed several theoretical models of group behavior in organizations. We started by describing process models which attempt to explain the actual productivity of teams by focusing on the losses with group processes and the unbalance in relation to the potential productivity. We discussed also the relevancy of intervention models which emphasize the resolution of conflicts and improvement of interpersonal relationships as mechanisms to increase team performance. In both types of models is neglected the importance of contextual aspects in which teams are supposed to perform. Contingency models consider these aspects together with composition of teams and team process in the study of group performance and effectiveness. Therefore, contingency models were chosen as a base to explore which determinants are relevant for trust within teams and what are the consequences of trust in relation to the performance and effectiveness of those teams. In the integrated model presented in this chapter, trust is viewed as a process variable that is influenced by team composition, work characteristics and organizational context, and influences criteria such as team performance, team effectiveness and general effectiveness. Some hypotheses were formulated in relation to these effects. These hypotheses will be tested in chapters 7 and 8. Before turning to the results, in the following chapter we will discuss the procedures, the instruments and the methods used in our research.

Chapter 5

Method

In order to test the model and hypotheses formulated in chapter 4, several field studies were conducted. These studies took place in different health care organizations in the Netherlands where data was collected using interviews and questionnaires. In this chapter we describe the research methods and procedures employed in these studies. In section 5.1, we discuss the research strategy and present an overview of the studies, their purposes and the type of variables used. In section 5.2, we provide a more detailed report of the studies, and describe the organizations and the characteristics of the samples. In section 5.3. we present the method and the stages involved in the development of the trust measures. In sections 5.4. we focus on the method used for model testing and portray the hypothesized models to test our hypotheses. These concern the nature of trust, factors affecting trust within teams, and effects of trust in teams. Some concluding remarks are summarized in section 5.5.

5.1   Research strategy and studies

The strategy followed in this project consisted in the conduction of several field studies in one sector of economic activity. The choice for field studies had different reasons. In the first place, the exploratory nature of this project. With few exceptions restricted to the United States, little systematic research has been undertaken on trust in organizations. Most of the prepositions and assumptions with respect to trust have yet not been explored. It is thus important to invest in empirical research addressing these issues, so that existent theories can be confirmed and/or re-developed. Secondly, the study of trust in work teams presupposes the influence of factors related with the composition of the teams, work characteristics and organizational context. These factors are difficult to isolate from the real team environment, therefore field studies constitute an appropriate method.

The studies were restricted to a specific health care environment in the Netherlands. Because we are studying teams, it was necessary to conduct research in several organizations to obtain a sufficient number of teams for testing our model and hypotheses. Of course, it would have been desirable to have as many different organizations as possible participating in this project. Nevertheless, a considerable number of organizations would have been needed to obtain enough variance in work activities of the teams, which would have compromised the conclusion of our research in the time frame of this project. For these reasons we considered appropriate to circumscribe the research to teams from one particular sector of economic activity.

5.1.1   Overview of the studies and research phases

From April 1997 to October 1998 we conducted two pilot studies and three main studies (see Table 5.1). The first pilot study was based on interviews with hospital professionals and professionals from various other organizations. This

Table 5.1: Overview of the studies

Studies		Time of study	No and team participants
Pilot :	Interviews		
	a. Hospital North Brabant	April 1997-	16 professionals
	b. Mixed sample	July 1997	16 employees from various organizations.
	Survey		
	Hospital North Brabant	October 1997	98 employees (14 teams)
Main:	Surveys		
	a. Social Care-Zaandam	March - April 1998	151 employees (41 teams)
	b. Social Care-Purmerend	April - May 1998	148 employees (44 teams)
	c. Ribw-Twente	June - July 1998	96 employees (27 teams)

study was carried out from April through July 1997. The second pilot study consisted in a survey conducted in a hospital in the province North Brabant, in October 1997. The main studies were surveys conducted in three health care organizations in the provinces North-Holland and Twente, from March 1998 through October 1998.

These studies served different purposes. Generally speaking, two research phases can be distinguished in this project (see Table 5.2). The *first phase* was devoted to the development of trust measures. These measures were developed on the basis of existing instruments and interviews. For propensity to trust and perceived trustworthiness, measures were adapted from two existent trust instruments, respectively the Revised Philosophies of Human Nature - RPHNS - (Wrightsman, 1964) and the Organizational Trust Inventory - OTI - (Cummings & Bromiley, 1996). For the trust behaviors, two new scales were constructed based on the interviews. The internal consistency of the four scales was tested in the pilot survey study. The confirmation occurred with the sample of team results of the main studies (team sample). The validation was tested with the samples from the main survey studies and with the team sample. The methods and procedures used in this phase are discussed in section 5.3 of this chapter.

The *second phase* served the purpose of model testing. Because of the large number of variables included in our model (see Figure 5.1), it was impossible to test all hypothesized relationships at once. For this reason, we split the model into three parts and tested them separately. The parts of the model refer to, the nature of trust in teams (central part), factors affecting trust in teams (upper part), and the effects of trust in teams (down part). The total model was tested afterwards using the scales as objective indicators. All models were tested with the team sample. These models and the instruments are described in section 5.4.

Figure 5.1 displays all the variables included in our integrated model. In the pilot survey, we only included the trust measures: propensity to trust, perceived trustworthiness cooperative and monitoring activities; and the commitment variables, attitudinal and continuance commitment. In the main surveys all variables were included.

Table 5.2: Research phases and purposes of the studies

Samples	1st phase Development of Trust measures	2nd phase Model Testing
Pilot: Interviews Survey	.Scale construction .Exploratory structure	
Main: Surveys (team sample)	.Confirmatory structure .Validation	.Nature of trust in teams .Factors affecting trust .Effects of trust in teams
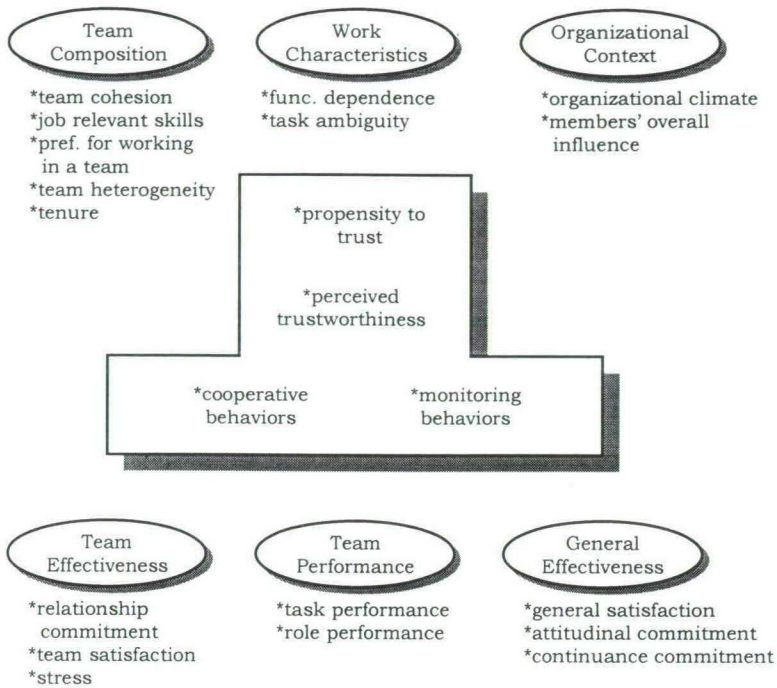
Figure 5.1: Integrated model for the study of trust in work teams with the variables used in the studies

5.2   Description of the studies

In this section we present in more detail the studies conducted in this project. We specify the procedures applied and describe the characteristics of the samples in each study.

5.2.1   Pilot interviews

The interviews were conducted in the context of another research project that had the purpose of examining the influence of internal communication and trust on the acceptance of change (Van Dijk, 1997; Nieuwland 1997). The interviews were structured, and contained questions about internal communication, the work environment, and trust. At the beginning of each interview, an introduction was given, explaining the purpose of the interview and guaranteeing the confidentiality of the answers. The questions about trust were open and were asked in the last part of the interview. Before posing the questions about trust, the interviewer asked the respondents to describe their team with respect to the team climate, contact with the management and relationships among colleagues.

Table 5.3: Age, gender and tenure in the two samples

Samples	Age mean	sd	Gender male	female	Org. Tnr mean	sd	Job Tnr mean	sd
a. Hospital NB	37.4	3.7	8(50%)	8(50%)	10.4	5.7	6.4	3.8
b. Mixed	32.9	11.6	8(50%)	8(50%)	4.7	3.9	2.6	2.3

Table 5.4: Work hours, position and contract in the two samples

Samples	Work hours mean	sd	Position H.Mg.	M.Mg.	Staff	Workers	Contract Full-time	Part-time
a. Hospital NB	30.5	6.6	6%	38%	6%	50%	50%	50%
b. Mixed	32.9	6.3	6%	25%	19%	50%	63%	38%

In total 32 interviews were conducted, 16 with hospital professionals in a hospital in North-Brabant (NB), and 16 with professionals from various other organizations (see Table 5.3 and Table 5.4). The interviews with the mixed sample served the purpose of increasing the variation in the answers and minimize possible effects of professional group characteristics. Both samples contained equal numbers of male and female respondents.

The mean age in the hospital sample was 37.4 years (sd=3.7). The youngest respondent was 31 years old and the oldest was 44 years old. In the mixed sample the mean age was slightly lower (mean=32.9, sd=11.6), and the distribution between the youngest and oldest respondent was wider, i.e., the youngest respondent was 20 years old and the oldest 55 years old. The mean of organizational tenure and job tenure at the hospital NB were 10.4 years (sd=5.7) and 6.6 years (sd=3.8) respectively. In the mixed sample the mean organizational tenure was 4.7 (sd=3.9) and for job tenure was 2.6 (sd=2.3).

In the mixed sample 63% of the respondents worked full-time and the mean of working hours a week was 32.9 hours, with a standard deviation equal to 6.3 (see Table 5.4). In the hospital sample 50% of the respondents worked full-time, and the mean of working hours a week was 30.5 hours, with a standard deviation of 6.6. In both samples 50% of the respondents were workers. At the hospital NB 38% of the respondents had a middle management position, 6% a higher management position, and 6% a staff position. In the mixed sample, 6% of the respondents were higher managers, 25% middle managers and 19% were staff. In both samples 50% of the respondents were workers.

5.2.2   Pilot survey

The pilot survey was conducted in the context of the same research project as the interviews. Data was collected at the same hospital, without including any of the respondents interviewed.

Out of the 208 questionnaires sent to hospital employees in three different sectors (i.e. policlinic, general surgery and cardiology), 98 were returned answered providing a response rate of 47,6%. Within the three sectors, 14 teams, comprising 3 to 7 each, participated in this study. From the 98

Table 5.5: Descriptive statistics for the hospital study

Age		Gender		Org. Tenure		Contract		Position	
mean	sd	male	female	mean	sd	Full-time	Part-time	M.Mg.	Worker
33.1	7.5	16(15%)	75(83%)	7.2	7.0	45%	55%	10%	90%

respondents, 16 were male (15%) and 82 were female (83%) (see Table 5.5). The 10% of the respondents performing a middle management function were all male. The mean age was 33.1 with a standard deviation of 7.5. The youngest respondent was 21 years old and the oldest 51 years old. The average organizational tenure was 7.2 (sd=7) and 55% of the respondents worked part-time.

5.2.3   Main studies

Three survey studies in different health care organizations, constituted the main research of this project. In this section we give a brief description of these organizations and the procedures employed in the conduction of these studies. Further, we describe the samples within each organization and the so-called *team sample* which includes the teams from all the studies.

1   The organizations

Social Care-Purmerend and Social Care-Zaandam are two semi-public organizations that function within the framework of the law on social provision of employment. These organizations perform the social function of providing jobs for those who have difficulties in finding one, and at the same time are commercial and market oriented. Both Social Care-Purmerend and Social Care-Zaandam are located in the province of North Holland. Their interest in participating in this study resulted from the planned merger between these organizations in the year of 1999. For that purpose it was useful for the management to assess differences and communalities between the two organizations with respect to organizational climate, work characteristics, trust within teams, satisfaction, commitment, and stress.

The Ribw-Twente is a regional institution that provides care and supervises residences and domiciles for individuals with physical or mental limitations in the province Twente. This institution is comprised by 9 independent work clusters dispersed through the hole province. Ribw was formed as a result of a merger between different social care services in the province. This process began in 1995 and was completed approximately one and half year before this study. The interest in participating in this study was to assess levels of climate, satisfaction, commitment, performance and stress in all clusters.

Although the organizations had different reasons for participating, all studies were conducted in an identical manner. The organizations were approached by us with the request to participate. Through meetings with the management team, we explained the aim of our project, discussed the time schedule, and the

possible benefits of the outcomes. In each organization the management team informed the respective departments and team supervisors about the purpose and timing of the research.

In all organizations the teams were selected with help from the personnel departments and the management. The teams were selected on the basis of their work content and the number of individuals that were functionally dependent. The teams that participated in this study had a minimum of 3 members and their work content was related to "people" and/or "information". At Social Care-Purmerend and Ribw-Twente the questionnaires were sent to the teams by the respective departments and team supervisors. In the Social Care-Zaandam the teams were called to answer the questionnaire by the personnel department. This procedure was adopted at Social Care-Zaandam in order to maximize the participation of the team members. After concluding the surveys, each organization received a report with the results concerning their own organization (i.e. Costa, Taillieu & Schalk, 1998a; 1998b). In the following paragraphs we describe the characteristics of the samples in each organization.

2 The samples

At Social Care-Purmerend 64 teams were approached to participate. From the 250 individuals that received the questionnaire, 148 (59.2%) returned it answered. In total 44 teams could be identified (see Table 5.6). From the 148 respondents, 116 were male and 32 were female. The mean age was 43,7 years with a standard deviation of 8.8. The youngest respondent was 25 years old and the oldest 62 years old. The mean for organizational tenure was 12.6 years (sd=7.9). For job tenure the mean was 2,6 years (sd=1.2). All the respondents had long term contracts and the average of work hours per week was 35 hours (see Table 5.7). In this sample 18 % of the respondents completed high-school, 48% completed lower occupational training, 20% completed middle occupational training, 13% completed higher occupational training and 2% completed university (see Table 5.8).

At the Social Care-Zaandam 50 teams were called to participate in the study. From the 206 individuals approached, 151 (73.3%) answered the questionnaire, making possible the identification of 41 teams. Of these respondents, 113 were male and 38 were female. The age average was 41.4 years with a standard deviation of 11. The youngest respondent was 19 years and the oldest 59 years. The mean for organizational tenure was 11 years (sd= 8.0), and the mean for job tenure was 2.5 (sd=1.0). All the respondents had a long term contract

Table 5.6: Age, gender and tenure in the three survey studies

Studies	No. Teams	Age mean	sd	Gender male	female	Org. Tnr mean	sd	Job Tnr mean	sd
Social care									
a. Purmerend	44	43.7	8.8	116(78%)	32(22%)	12.6	8.0	2.6	1.2
b. Zaandam	41	41.4	11.0	113(75%)	38(25%)	11.0	8.0	2.5	1.0
c. Ribw-Twente	27	33.7	8.0	31(32%)	64(68%)	3.8	3.3	3.6	5.1

Table 5.7: Week work hours, type of function and contract in the three surveys

Studies	Work hours mean	sd	H.Mg.	M.Mg.	Staff	Workers	Type Contract
Social Care							
a. Purmerend	35	5.6	5%	12%	18%	63%	100% Long term
b. Zaandam	36	6.3	6%	15%	8%	64%	100% Long term
c. Ribw-Twente	30	5.3	2%	13%	5%	78%	95% Long term

Table 5.8: Education level in the three survey studies

Studies	High School	Lower	Occupational training Middle	Higher	University
Social Care					
a. Purmerend	18%	48%	20%	13%	2%
b. Zaandam	23%	37%	22%	7%	2%
c. Ribw-Twente	11%	1%	17%	71%	1%

and the mean number of working hours a week was 36 (sd=6.3). In this sample 23% of the respondents completed high-school, 37% had a lower occupational training, 22% had a middle occupational training, 7% had a higher occupational training, while 2% were university graduates.

At Ribw-Twente 96 employees returned an answered questionnaire, accounting for a response percentage of 64%. In total 27 teams were identified. From the 96 participants, 31 were male and 64 female. The age mean of the respondents was 33.7, with a standard deviation of 8. The youngest respondent was 22 years and the oldest 54 years. The mean for organizational tenure was 3.8 years (sd=3.3), and the mean for job-tenure was 3.6 years (sd=5.1). Most of the respondents (95%) had a long term contract, with a average number of working hours a week equal to 30 (sd=5.3). In this sample 11% completed high-school, 1% had a lower occupational training, 17% had a middle occupational training, 71% had a higher occupational training, and 1% were university graduates.

Comparing the three samples, we can note that the respondents at Social Care-Purmerend and at Social Care-Zaandam contain most similar characteristics. Of course, this can be expected since both organizations operate within the same branch and geographical area. As shown in Table 5.6, the mean age at Purmerend was 43.7 (sd=8.8) and the mean age at Zaandam was 41.4 (sd=11.0). Both samples contained predominantly men. The mean job tenure was 2.6 (sd=1.2) at Purmerend and 2.5 (sd=1.0) at Zaandam. The mean organizational tenure, though, was slightly higher at Purmerend (mean=12.6; sd=8.0) than at Zaandam (mean=11.0; sd=1.0).

At Ribw-Twente the results are somewhat different than at the other two samples. The mean age at Ribw-Twente was 33.7 (sd=8.0) which is lower than at the other Social Care organizations. Contrary to the other samples, at Ribw-Twente 68% of the respondents are women. The mean organizational tenure was 3.8 (sd=3.3) which is lower than at the Social Care organizations (see Table 5.6). However, the mean job tenure at Ribw-Twente was 3.6 (sd=5.1) which is higher

than at Social Care-Purmerend and Social Care-Zaandam, 2.6 (sd=1.2) and 2.5 (sd=1.0) respectively.

Common to all samples is the predomination of the long term contract, and the fact that most of the respondents are workers (see Table 5.7). At Social Care-Purmerend, 73% of the respondents fulfill this position, at Social Care Zaandam 64%, and at Ribw-Twente 78%. The sample from Social Care-Purmerend contained a higher number of staff (18%). The mean of work hours at Ribw-Twente was 30 hours (sd=5.3) which is lower than the means at Social Care-Purmerend and Social-Care Zaandam, which were 35 hours (sd=5.6) and 36 hour (sd=6.3) respectively.

With regard to the educational level of the respondents, the samples Social Care-Purmerend and Social Care-Zaandam are again similar. At Ribw-Twente the great majority of the respondents had completed high occupational training (71%). At Social Care-Purmerend 13% and at Social Care-Zaandam only 7% of the respondents completed the same occupational training. The predominant educational level at Social Care-Purmerend and Social Care-Zaandam was the lower occupational training, with percentages equal to 48% and 37% respectively. At Ribw-Twente 1% of the respondents had completed lower occupational training. In all samples less than 2% of the respondents had a university education.

3 The team sample

The team sample includes the responses of the teams from all three organizations. The team responses were obtained by aggregating the individual scores on each item within the teams. This aggregation was obtained by computation of means. Table 5.9 reports the descriptive statistics for this sample.

The team sample contained 112 teams, 44 of which were from Social Care-Purmerend, 41 from Social Care-Zaandam and 27 from Ribw-Twente (see Table 5.6). The number of members in each team ranged from 3 to 6. From the 112 teams, 55 (48%) included only male respondents, 8 (7%) included only female respondents and 47 (45%) included respondents from both genders. The majority of these teams (51%) included only workers. Further, 3% of the teams had only higher managers, and 13% included only middle managers. The percentage of teams having members with a different job level was 33%.

The team sample is the most used sample in both phases of this research. In the first research phase, this sample is used to confirm the internal structure, the reliability and to validate the trust measures. In the second research phase, this sample is to test our hypotheses.

Table 5.9: Descriptive statistics for the team sample

N teams	range no. members	Gender in teams			Job level in teams			
		male	female	mixed	H.Mg.	M.Mg.	Workers	Mixed
112	3 - 6	55(48%)	8(7%)	47(45%)	3(3%)	15(13%)	58(51%)	36(33%)

5.3   Development of trust measures: method

According to the definition presented in chapter 4, we developed different trust measures. These measures correspond to the trust components defined in the same chapter, i.e., propensity to trust, perceived trustworthiness, cooperative activities and monitoring activities. This process was conducted through structural and criterion research methods described by Drenth (1975). The structural method involved different stages. In the first stage we explore the meaning of the concept trust through the interview study. In the second stage, we reviewed the measures found in the literature and compared the contents of each scale with the contents of the trust components. In the third stage, we constructed several scales, based on these measures and the results from the interview study. The content of the items was judged by experts and subsequently improved. The criterium research consisted in the analysis of the internal structure and validation of the scales. The internal structure was tested using exploratory and confirmatory procedures and reliability analysis. The validation tested the convergent and discriminant validity of the measures. The results of these procedures are presented and discussed in chapter 6.

5.3.1   Structural research methods

1   Interviews

With the purpose of exploring the meaning of the trust concept, we asked three specific questions. The answers to these questions were analyzed by content analysis methods (Holsti, 1969). First we established the content categories of each question and then examined "specific segments of content" (Holsti, 1969:116) that characterize the same category. Each question asked was targeted at one specific content category:

> 1 - In the first question the respondents were asked to describe the behavior of a person that they trust in their work environment. The answers to this question served as indicators of how individuals perceive trustworthy colleagues.
> 2 - In the second question the respondents were asked if they would behave differently at their work place towards people that they trust and people that they did not trust.
> 3 - In the third question, if the answer to the last question was affirmative, the respondents were asked to describe the difference in their behavior. In some cases this question had to be reinforced with another question so that the answers would be more directed to the work environment. In this question the respondents were asked about the way in which they organize their work, when working with people that they trust and with people that they do not trust. With these questions we intended to establish differences in behavior towards colleagues that were trusted and colleagues that were not trusted.

2 Review of existing measures

In reviewing the literature on trust, we found several instruments and scales which had already been validated. We examined whether these measures identified with one or more components of trust proposed, were applicable to group contexts, and were compatible with the contents found in the interviews. Measures exclusively applicable at the individual or organizational level were rejected. Only the scales or items that were in accordance with the content of each component of trust and that could be answered at the group level were retained. As mentioned earlier, we used two existing instruments to measure propensity to trust (RPHNS-Wrigtstman, 1964) and perceived trustworthiness (OTI- Cummings & Bromiley, 1996). Further, we developed two new scales to measure cooperative and monitoring behaviors.

3 Item generation

The generation of items for the trust behavior scales (cooperative and monitoring activities) was based on some of the existent measures and on the content of answers in the interview study. In total 40 items were formulated. These items were examined by experts, i.e. work and organizational psychologists. The items were first evaluated according to the criteria:

- comprehensibility (whether the item was easy to understand);
- length (whether the item was too long)
- singularity (whether the item included more than one question).

Based on the comments some items were reformulated. The new items and the items from the scales propensity to trust and perceived trustworthiness, were again judged by other two experts, also work organizational psychologists, with regard to:

- relevance (whether the item was relevant for the trust construct)
- centrality (whether the item was central for the trust construct)
- repetition of the item content.

The same experts were also asked to comment on the comprehensibility and adequacy of the items. Based on the comments some items were excluded from the scales and several improvements were conducted in order to obtain a testable instrument.

5.3.2   Criterium research methods

1 Internal structural analysis

The internal structure of the trust measures was first tested with series of Exploratory Factor Analyses (EFA) using Principal Components Analysis (PCA) with Varimax rotation in SPSS 7.5. For these procedure we used the pilot survey study at the Hospital in North Brabant. Secondly, the obtained structure was confirmed through Confirmatory Factor Analysis (CFA) using Lisrel 8.02

(Jöreskog & Sörbom, 1993). For this procedure we used the team sample. Finally, we calculated the reliability of the measures for the three main studies samples and for the team sample. Although it is desirable to conduct exploratory and confirmatory analyses with other studies than the ones of the main research (Byrne, 1998), this was not possible, since there were not enough teams to engage this procedure.

Exploratory analysis (EFA)

The EFAs were conducted using the individual responses, in accordance to the traditional approaches to item analysis and scale development. 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 (Anderson & West, 1996; 1998). Particularly in this project, the maximization of the sample size of the pilot survey study is very important since the number of respondents (N) was 98.

Preceding the EFAs we conducted a test of suitability of the data set for factor analysis as recommended by Comrey (1978). For this purpose we used the Kaiser-Mayer-Olkin (KMO) measure to determinate the adequacy of the sample. KMO values >.70 indicate that the data is suitable for factor analyses procedures. The significance of the KMO was indicated by the Barlett test for sphericity. Significant KMO values have p<.05.

The first EFA was conducted without any factor constraints, in order to establish the number of factors by the Scree test (Catel, 1966). The subsequent EFAs are constrained to the number of factors obtained with the Scree test. In this case, four factors were indicated by Scree test.

Confirmatory analysis (CFA)

The four-factor structure obtained with EFA procedures was subjected to confirmatory factor analysis (CFA) with the team sample. Based on Bentler & Bonnet (1980) and Byrne (1989; 1998) we did run several CFAs for concurrent model structures, in this case with one-, two-, three- and four-factor structures.

The adequacy of these models was compared with six indices: the χ^2, the Expected Cross-Validation Index (ECVI), the Goodness-of-Fit Index (GFI), the Adjusted Goodness of Fit Index (AGFI), the Parsimony Goodness of Fit Index (PGFI), and Comparative Fit Index (CFI). These fit indices complement each other in assessing the fit of the data to the model.

The χ^2 measure is the traditional fit index normally used to see how well the model fits the population. Non significance of χ^2 indicate a good model fit. However, the sensitivity of the χ^2 to the sample size can lead to problems of fit (Byrne, 1998). Therefore we included the CFI, the GFI and AGFI as additional fit indices. These indices indicate a good model fit for values >.90. The EVIC, was also included in order to access the probability of cross-validation across similar samples of the same population. The EVIC has a lower bound of zero but no upper bound. According to Kalloway (1998), smaller EVIC values indicate better fitting models. Furthermore, we added the PGFI which takes into account the

complexity of the model in the assessment of goodness of fit. Unlike the other fit indices, there is no standard for how high the parsimonious indices should be in order to indicate an adequate fit (Kalloway, 1998). According to Byrne (1998) values of parsimonious fit >.50 indicate a good fit to the data.

Reliability analysis
The scales from the best fitted CFA factor structure, were subject to reliability analysis with Cronbach alpha. The reliability of the scales was calculated for each main study sample and for the team sample. Scales with Cronbach alphas >.70 were considered reliable.

2 Validation

The convergent and discriminant powers of the trust scales were tested according to two different procedures. 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. In both procedures, we used the team aggregated data from the three surveys and from the team sample.

Convergent validity within teams and discriminant validity between teams
In research with groups, using aggregated measurements of individual responses, its important to examine if there is agreement within the group in order to justify the aggregation (Schneider & Bowen, 1985). James, Demaree & Wolf (1984; 1993) propose an intra-rater reliability index -r_{wg} - that tests the adequacy of aggregation of team measurements. The r_{wg} index is defined as the proportional reduction in error variance (James et al., 1984) and can be calculated according to the formula:

$$r_{wg} = (\sigma_E^2 - S_x^2)/\sigma_E^2 = 1 - (S_x^2/\sigma_E^2)$$

S_x^2 is the observed variance on a rating variable x, and σ_E^2 is the expected variance. According to James et al. (1984) σ_E^2 is best represented by a the variance of a discrete, uniform distribution and thus is equal to 2.0. Values of r_{wg} equal to .70 or above, demonstrate high consistency within groups and justify the aggregation within that team. This is the same value provided by Nunnaly (1978) as an acceptable level for an internal consistency reliability coefficient for this type of research.

The discriminant power the trust measures between the teams, was tested with ANOVA procedures, according to the recommended methods in George (1990) and Anderson & West (1996; 1998). 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).

Convergent and discriminant validity with external criteria

The validation of the trust measures with external criteria variables was conducted with Parsons correlations (two-tailed). The convergence of these scales was examined through correlations between the four scales and *overall trust* - "In general I trust my team members". The discriminant power of the scales was examined through correlations with objective measurements and with two scales of commitment: affective and continuance.

5.4   Model testing: structural equation modeling

After developing and validating the scales measuring trust, our research entered a second phase: the model testing phase. In this phase we used structural equation modeling procedures. Structural Equation Modeling (SEM) is a statistical methodology that takes a confirmatory approach (i.e. hypothesis-testing) to the multivariate analysis of a structural theory based on evidence (Byrne, 1998). SEM conveys the test of the hypothesized model in a simultaneous analysis of the entire system of variables to determine the extent to which the model is consistent with the data. According to Bryrne (1998) statistical models provide an efficient and convenient way of describing the latent structure underlying a set of observed variables.

Apart from the advantages of using SEM procedures to analyze data, its dependence on sample size and number of estimated parameters (model complexity) constitutes a considerable limitation. With smaller samples (n<150) the danger of obtaining non-convergent solutions even for more specified models increases (Boomsma, 1982). With larger samples (n>400), trivial discrepancies can lead to the rejection of a satisfactory model since absolute indices of fit are influenced by the sample size (Bollen, 1989). Two main conditions have been suggested for conducting SEM procedures. First, that the sample size should not be lower than 100 (Loehlin, 1992). Second, that one factor should have at least three observed variables (Boomsma, 1982). Since the sample size in our research for SEM analysis was 112, once data had been combined at team level, and our latent variables included a large number of observed indicators, we consider our data to be basically adequate to perform SEM procedures. The program chosen to use SEM procedures was the Lisrel 8.02. Although several other programs can also be used to conduct the same statistics, the Lisrel is the most longstanding and distributed program.

Within the possible strategies to test equation models described by Jöreskog & Sörbom (1993), Maximum Likelihood (ML) is by far the most followed type of estimation procedure. ML estimation is a full information technique that allows the estimation of all parameters within a model simultaneously, making it possible to test several hypotheses at the same time (Kelloway, 1998). This strategy also allows the modification and re-estimation of parameters within in a given model, after rejecting the initial hypotheses of that model. In the following section we describe the initial hypothesized models that test our hypotheses.

5.4.1 Hypothesized models

Given the level of complexity of our integrated model, we decided to conduct first SEM analyses to different portions of the model. In the central section of the integrated model (see Figure 5.1), we test the multi-component nature of trust. In the upper section of the model we examine the factors affecting trust within teams. Finally, in the lower section of the model we explore the effects of trust in relation to the performance and effectiveness of teams. For each of these sections we hypothesized different models. To make sure that the scales presented adequate reliability coefficients for SEM procedures, we calculated primarily Cronbach alphas for all scales included in these models. The integrated model was also tested with SEM analyses, however, the scales were used as manifest variables. All models were tested based on the correlation matrix of the variables. The results obtained were standardized.

The fit of each model was examined according to several fit indices. As before, we used the χ^2 measure, the Goodness of Fit Indices (GFI and AGFI), the Comparative Fit Index (CFI), and the Parsimonious Goodness of fit Index (PGFI). Additionally, we introduced the Parsimonious Normed Fit Index (PNFI), and we used two more indices based on the analysis of residuals. The Root Mean Square of Approximation (RMSEA) and the standardized Root Mean Squared Residual (RMR). According to Steiger (1990) RMESA values <.80 indicate a good fit, values <.05 indicate a very good fit and values <.01 indicate an outstanding fit. Moreover, the RMSEA has the important advantage of going beyond the point estimates providing 90% confidence intervals for the point estimated, in case of a very good fit (RMSEA<.05). The RMR ranges between 0 and 1. In general, values less than .05 are indicators of a good fit, values between .05 and .08 are indicators of a mediocre fit, and values above .08 are considered indicators of a poor fit (Kelloway, 1998; Byrne, 1998).

1 Multi-component nature of trust

Instruments
Four scales were used to measure trust in accordance to our definition of trust and component specification presented and discussed in chapter 4. The scales were 7-point Likert (1=completely incorrect, ... 7= completely correct). After examining the internal structure and the convergent and discriminant validity of these measures (see chapter 6), we ran reliability analyses for the team sample and the teams in each main study sample. Table 5.10 reports the descriptive statistics for the trust scales.

Except for monitoring behaviors, the trust scales reported highly satisfactory reliability (α>.80) in the team sample. Monitoring behaviors obtained the lowest alpha coefficients in all samples. At Social Care-Purmerend the alpha is .67, at Social-care Zaandam is .70 and at Ribw-Twente .72. In the team sample the alpha obtained for monitoring behaviors is satisfactory (α=.71). For perceived trustworthiness and propensity to trust the reliability obtained is highly

Table 5.10: Descriptive statistics for the trust scales

Studies		Propensity to Trust				Perceived Trustworthiness		
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	6	.82	31.7	9.2	6	.81	30.4	8.0
b. Zaandam	6	.81	28.7	8.6	6	.80	28.7	8.4
c. Ribw-Twente	6	.82	28.1	6.7	6	.80	34.5	5.7
. . . .								
Team sample	6	.84	29.4	6.3	6	.87	30.4	5.8
Studies		Cooperative behaviors				Monitoring behaviors		
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	7	.77	33.2	8.7	3	.67	15.2	4.0
b. Zaandam	7	.70	32.0	7.5	3	.70	15.4	4.4
c. Ribw-Twente	7	.77	38.3	6.2	3	.72	14.1	5.4
. . . .								
Team sample	7	.81	34.0	6.8	3	.71	14.3	4.1

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

satisfactory in all samples (α=.80). In the team sample, the alpha for propensity to trust was .84 and for perceived trustworthiness .87. For cooperative behaviors the alpha obtained was .81 at the team sample.

Method and Models
The multi-component nature of trust was tested in different stages. First, we identified the factor-structure underlying trust through exploratory and confirmatory procedures. This took place in the 1st research phase. Secondly, it was necessary to examine whether these factors were related to a higher order factor trust. For this purpose, we introduced a second-order factor (trust), and four additional structural relationships (γ) between trust and the four first-order trust components. Figure 5.2 illustrates the second-order model and the respective structural path relationships. In order to identify this model the variance of trust had to be constrained to 1.00 (Byrne, 1998). The observed variables (i.e. items) loaded at one first-order factor only. Initially, no model attenuations were introduced. Modifications such as deletion of items or error correlations between observed measures occurred, if necessary, in posterior modified models. Error correlations were allowed between items within the same latent factor. According to the hypotheses discussed in chapter 4, except for monitoring activities all path relationship between trust an the other components are expected to be positive.

Because trust is an essential variable in all hypothesized models, we needed to obtain a simpler model structure. Based on the results obtained with the second-order model, we hypothesized a one-factor model for trust, with the four components operating as observed variables (see Figure 5.3). We obtain the observed measurements, through computation of means with the items in each component. This structure was introduced in the other hypothesized models and fixed to the values obtained in the model hypothesized in Figure 5.3. In this way, it was possible to compare results across models.
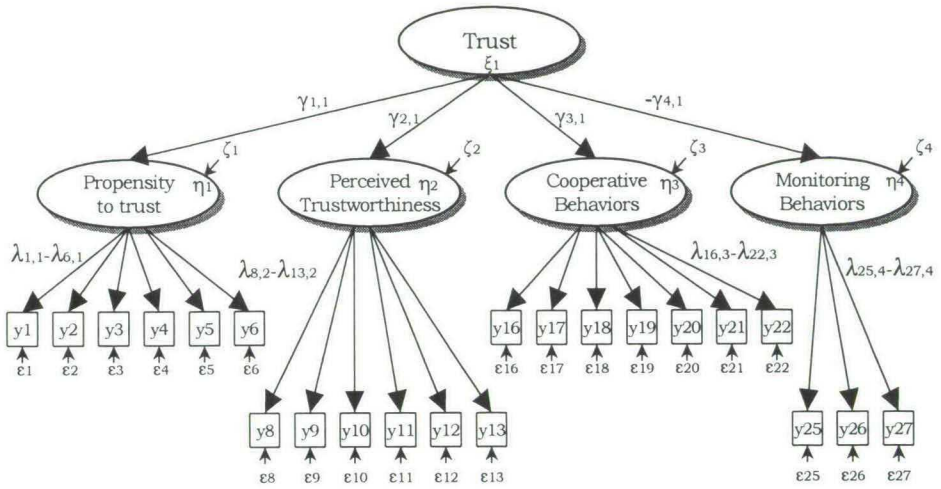
Figure 5.2: Multi-component structure of trust (2nd-order structure)
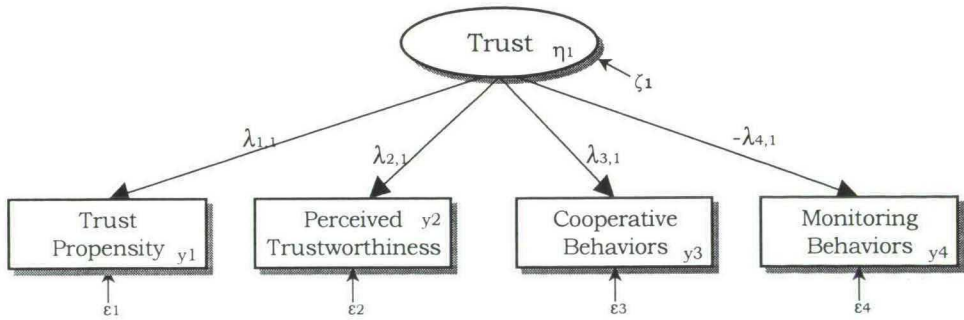
Figure 5.3: Multi-component structure of trust (observed 1st-order structure)

2 Factors affecting trust within teams

Three factors are hypothesized to affect trust within teams: team composition, work characteristics, and organizational context. Since these factors are composed by several specific variables, we develop three hypothesized models to test these effects.

Instruments

1- The variables referring to the <u>composition of teams</u> were assessed by team measurements of organizational tenure and job tenure, and by the scales team cohesion, job adequate skills, team heterogeneity, and preference for working in a team. Team cohesion was measured with a 5-item scale from Podsakoff et al. (1993) adapted by De Vries (1997). Job adequate skills (6-item scale), team heterogeneity (4- item scale) and preference for working in a team (5-item scale) were scales adapted from the Organizational Assessment Inventory-OAI (Van de Ven & Ferry, 1980). All scales were 7 point Likert (1=completely incorrect, ... 7= completely correct).

As shown in Table 5.11, except for team heterogeneity, all Cronbach alpha's were satisfactory. The reliability for team cohesion was the most consistent across samples, with a range between .83 at Social-Care Purmerend to .85 at Social Zaandam. In the team sample the alpha for team cohesion was $\alpha=.84$. For job adequate skills, the reliability ranged from .76 at Social Care-Purmerend, to .89 at Ribw-Twente. In the team sample the reliability was $\alpha=.80$. Preference for working in a team also obtained satisfactory reliability coefficients in all samples, however, with lower alpha coefficients than the previous scales. The range was between .70 (Social Care-Zaandam) and .76 (Ribw-Twente). In the team sample, preference for working in a team obtained a reliability equal to .73 (see Table 5.11). The scale team heterogeneity showed low reliability coefficients in all the samples ($\alpha<.70$). Therefore, we decided to exclude this variable from further statistical procedures.

Table 5.11: Descriptive statistics for team composition scales

Studies	Team Cohesion				Team heterogeneity			
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	5	.83	27.8	4.9	3	.59	16.1	3.2
b. Zaandam	5	.85	27.0	5.5	3	.57	15.7	3.2
c. Ribw-Twente	5	.84	25.6	4.8	3	.50	16.4	2.5
Team sample	5	.84	27.2	3.6	3	.51	16.5	1.8
Studies	Job adequate skills				Pref. for working in a team			
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	4	.76	20.0	4.9	5	.72	26.3	6.5
b. Zaandam	4	.78	20.9	4.6	5	.70	25.2	6.8
c. Ribw-Twente	4	.89	21.0	4.9	5	.76	16.8	3.5
Team sample	4	.80	21.6	2.6	5	.73	21.2	4.5

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

Table 5.12: Descriptive statistics for work characteristics scales

Studies	Functional dependence				Task ambiguity			
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	6	.74	31.2	6.7	5	.67	14.9	5.9
b. Zaandam	6	.72	29.6	6.9	5	.68	15.2	4.3
c. Ribw-Twente	6	.75	31.6	5.6	5	.71	17.5	4.9
Team sample	6	.74	30.7	4.2	5	.72	15.9	4.5

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

Table 5.13: Descriptive statistics for organizational characteristics scales

Studies	Member's overall Influence				General climate			
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	5	.84	11.3	4.8	8	.71	24.2	3.2
b. Zaandam	5	.87	11.3	4.9	8	.74	22.2	3.6
c. Ribw-Twente	5	.76	12.8	3.5	8	.82	26.2	3.1
Team sample	5	.87	11.5	3.4	8	.81	23.7	2.9

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

2 - The work characteristics variables, functional dependence and task ambiguity were adapted from existing measures developed by Ten Horn, Dienes, Roe & Zinovieva (1995). An example of a functional dependence item was "In order to do my work I'm dependent of the work of my team members". An example of task ambiguity item was "There are no written rules or manuals to conduct my job". The items were answered with a 7-point Likert scale (1=completely incorrect, ... 7=completely correct). An initial factor analysis was run, and two scales were extracted (see Appendix B).

For functional dependence the reliability coefficients ranged between .72 (Social Care-Zaandam) to .75 (Ribw-Twente). In the team sample the reliability was satisfactory (α=.74). In relation to task ambiguity the reliability in the main studies was satisfactory only at Ribw-Twente (α=.71). However, in the team sample the reliability noted a slight increase (α=.72). For this reason we maintained the scale task ambiguity for further analysis.

3 - The organizational context variables were measured with two different scales. The organizational climate scale contained 8 items concerning the behavior of supervisors towards their subordinates (Roe, Ten Horn, Zinovieva & Dienes, 1997). The items were answered using a 4-point Likert scale. The reliability for this scale ranged between α=.82 at the Ribw-Twente and α=.71 at the Social Care-Purmerend (see Table 5.13). In all studies the reliability of this scale was satisfactory, for the team sample alpha is α=.81. The member's overall influence was measured with a four item scale from (Koopman-Iwema, 1980). The answers were scaled in a 5-point Likert scale (1=very little influence...5=very much influence). The reliability for this scale ranged between α=.87 at the Social Care-Zaandam, to α=.76 at Ribw-Twente. In the team sample the reliability is α=.87.

Method and Models

Common to the three models are the dependent variable trust ($\eta 1$), and the fixed parameters $\lambda 1$ to $\lambda 4$. In these models the observed variables load at one latent factor only, and independent latent variables are allowed to correlate. However, for a better comprehension of the figures, we excluded the curved arrows indicating the correlations between the latent factors. Further, no initial attenuations were introduced in the models, although some modifications might occur later, in order to improve the fit of the models.

The model in Figure 5.4 illustrates the hypotheses referring to the effects of team composition on trust. Except for tenure, all independent latent variables have more than 3 indicators, as recommended in SEM procedures. All the structural relationships are expected to be positive.

Figure 5.5 portrays the hypothesized relationships for the effects of work characteristics on trust within teams. Functional dependence is expected to have a positive effect on trust, whereas task ambiguity is expected to have a negative effect on trust.

In Figure 5.6, the model hypothesizes the effects of the organizational context on trust. Both effects are expected to be positive.
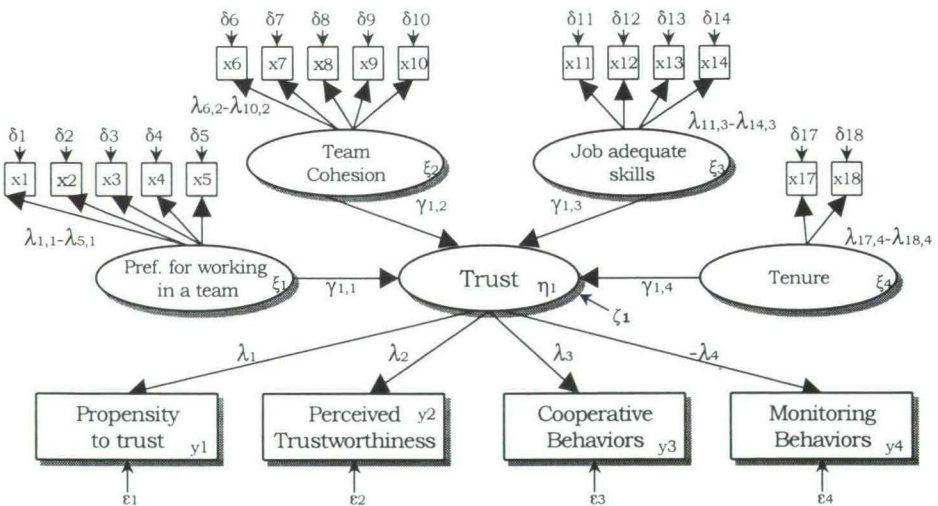
Figure 5.4: Hypothesized model for team composition effects on trust
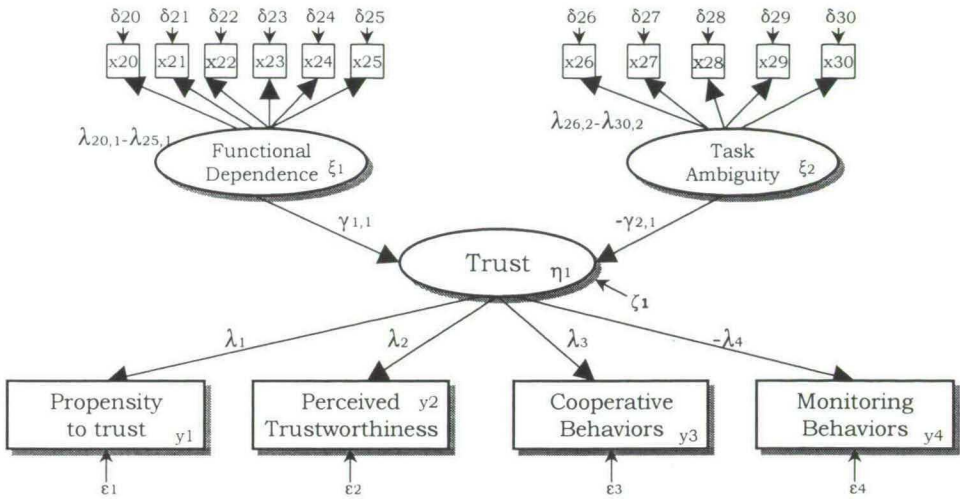
Figure 5.5: Hypothesized model for work characteristics effects on trust
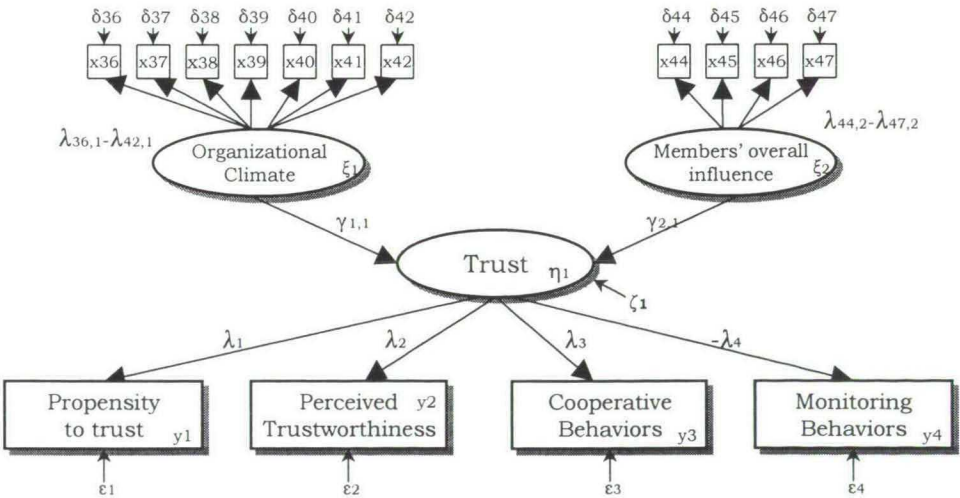
Figure 5.6: Hypothesized model for organizational context effects on trust

3 Effects of trust on the performance and effectiveness of teams

Instruments

Performance and effectiveness of teams were measured with several criterion instruments. These instruments were grouped into three categories: team performance (task performance and role performance), team effectiveness (relationship commitment, satisfaction and stress), and general effectiveness (organizational commitment, general satisfaction and stress). All scales were 7-point Likert scale (1=completely disagree, ...7=completely agree). Before assessing the reliability statistics, we ran factor analyses in each category. These factor analyses were conducted with PCA procedures and Varimax rotation (see Appendix B).

1 - For team performance we used the scales task and role performance from Roe et al., (1997). Because these scales measured performance at the individual level, we adapted them to team contexts. An example of a item measuring task performance was "I think our team deserves a good evaluation from the supervisor", and of an item measuring role performance was "The organization can always count with our team". The original scales contained 9 items each. Due to some cross loading with PCA factor analysis, we reduced the number of items to 6 for measuring task performance, and 5 items to measure role performance. The reliability for the scales were reasonably satisfactory (see Table 5.14). For task performance the Cronbach alpha's ranged from .70, at Social Care-Zaandam, to .80 at Ribw-Twente. At the team sample the reliability obtained was $\alpha=.77$. For role performance the reliability was almost constant in all samples. Social Care-Purmerend the coefficient obtained is slightly higher ($\alpha=.72$).

2- For team effectiveness, the scale measuring relationship commitment was adapted from an 8-item commitment scale from Freese & Schalk (1996). Team satisfaction was measured by a 6-item scale from Smith & Barclay (1995), and stress was measured with a 7-item scale adapted by De Vries (1997).

The reliability obtained for relationship commitment and team satisfaction were satisfactory; both scales obtained $\alpha>.80$ in the team sample (see Table 5.15). For stress the reliability obtained ranged between $\alpha=.72$ (Social Care-Zaandam) to $\alpha=.79$ (Ribw-Twente). In the team sample the alpha coefficient obtained for stress was .75, for relationship commitment was .80, and for team satisfaction was .85. All three scales with a satisfactory reliability.

Table 5.14: Descriptive statistics for the performance scales

Studies	Task performance				Role Performance			
	no.	α	m	sd	no.	α	m	sd
Social care								
a. Purmerend	6	.75	32.9	6.1	4	.72	18.6	6.3
b. Zaandam	6	.71	31.2	6.4	4	.71	19.0	5.2
c. Ribw-Twente	6	.74	28.0	4.9	4	.71	13.1	3.7
Team Sample	6	.77	33.7	4.5	4	.71	16.1	3.5

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

Table 5.15: Descriptive statistics for the team effectiveness scales

Studies	Rel. commitment				Team satisfaction				Stress			
	no.	α	m	sd	no.	α	m	sd	no.	α	m	sd
Social care												
a. Purmerend	8	.74	47.7	6.7	5	.73	30.3	4.0	6	.77	23.7	8.2
b. Zaandam	8	.76	43.5	9.1	5	.86	28.4	6.2	6	.72	24.0	7.6
c. Ribw-Twente	8	.84	45.9	6.6	5	.70	27.7	3.4	6	.79	24.5	6.7
Team sample	8	.80	45.1	5.9	5	.85	28.9	3.7	6	.75	26.7	5.5

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

Table 5.16: Descriptive Statistics for the general criteria scales

Studies	Affective commitment				Continuance commitment				General satisfaction		
	no.	α	m	sd	no.	α	m	sd	no.	α	m	sd
Social care												
a. Purmerend	5	.72	28.9	4.4	5	.72	24.5	7.2	8	.83	46.5	7.4
b. Zaandam	5	.71	23.8	6.0	5	.72	23.9	6.1	8	.86	42.2	10.7
c. Ribw-Twente	5	.72	29.0	3.8	5	.72	18.2	5.8	8	.83	44.6	6.4
Team sample	5	.72	21.6	3.4	5	.74	17.3	4.4	8	.88	44.2	6.5

no. is number of items, α is Cronbach alpha, m is mean , and sd is standard deviation

3 - The scales measuring general effectiveness were the 5-item scales for affective and continuance commitment, developed by Freese & Schalk (1996). The scale measuring general satisfaction (11-items) was from De Vries (1997).

The reliability found for the general criterion scales was satisfactory. For both affective and continuance commitment the reliability was consistent in all three studies (see table 5.16). The reliability obtained in the team sample were α=.72 for affective commitment, and α=.74 for continuance commitment respectively. The reliability obtained by Freese (1999) was higher for affective commitment (α=.82), and lower for continuance commitment (α=.69). The highest reliability coefficients in all samples were obtained for general satisfaction, i.e. α=.83 at Social Care-Purmerend and Ribw-Twente, and α=.86 at Social Care-Zaandam. For the team sample the reliability for general satisfaction was α=88. De reliability obtained by De Vries (1997) for general satisfaction was α=.81.

Method and Models
In the hypothesized models trust is the independent variable ($\xi1$). The parameters $\lambda1$ to $\lambda4$ are fixed to the same values as the previous models, so that comparisons can be made regarding the effects of trust across models. Also, the observed variables load in one factor only. In general, the initial models do not include further attenuations. Only, one error correlation is initially hypothesized in the model of the effects of trust on performance (see Figure 5.7). Because measurements of task and role performance are obtained by one source only - it is fair to assume the existence of common method variance. Therefore, we add a new hypothesis (hypothesis 5c), proposing that the measurement errors associated with task performance and role performance correlate. Trust is expected to have a positive effect on both task and role performance.
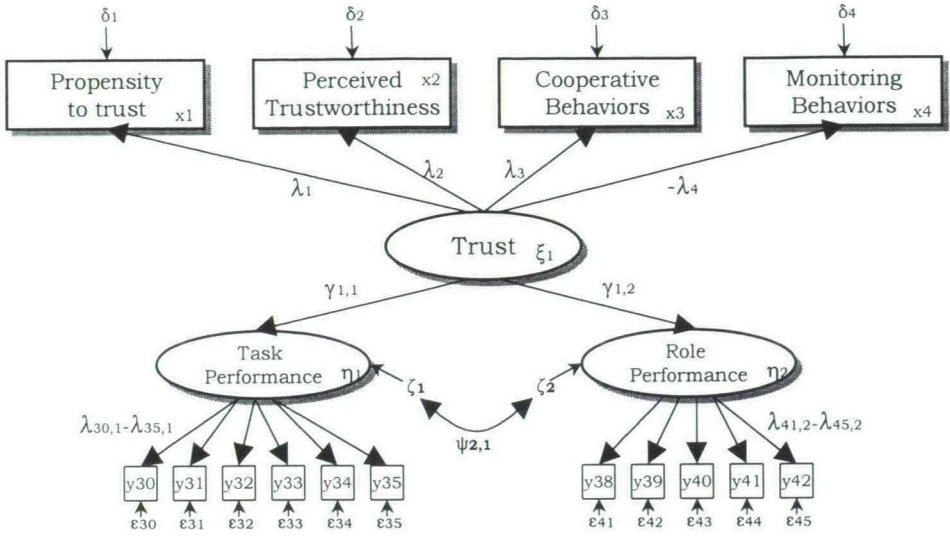
Figure 5.7: Hypothesized model for the effects of trust on performance
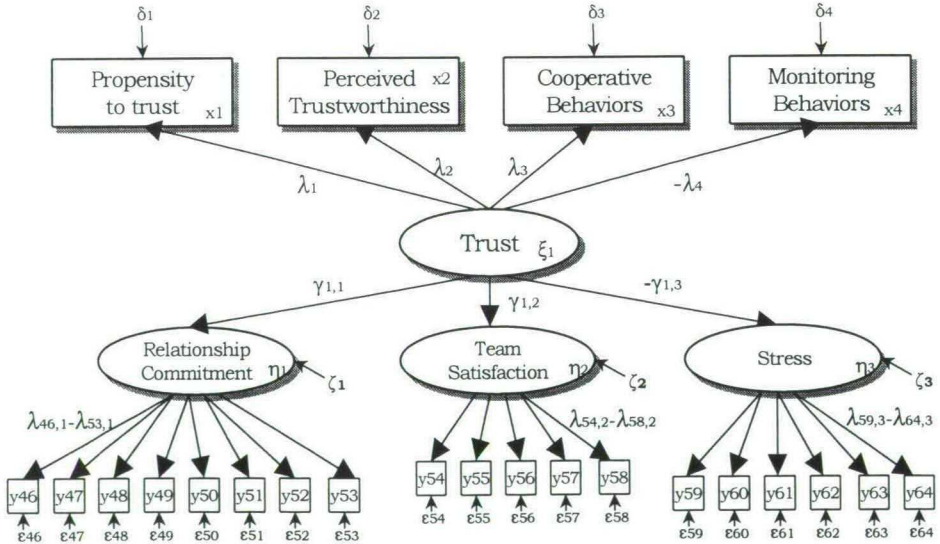
Figure 5.8: Hypothesized model for the effects of trust on team effectiveness
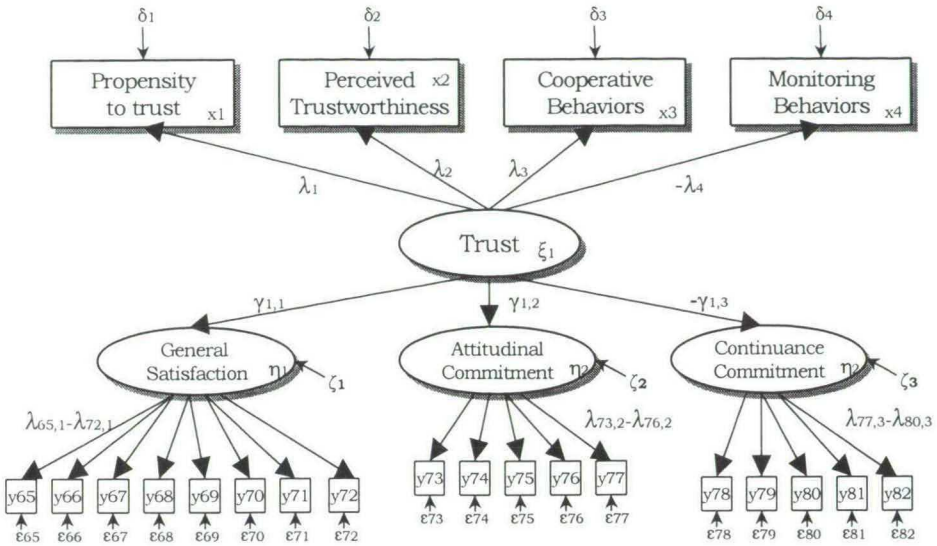
Figure 5.9: Hypothesized model for the effects of trust on general effectiveness

Figure 5.8 portrays the hypothesized model for effects of trust on team effectiveness. The structural relationships, suggests a positive effect of trust on team satisfaction and relationship commitment and a negative effect on stress.

In Figure 5.9, the hypothesized model for the effects of trust on general effectiveness is shown. It proposes a positive effect on general satisfaction and affective commitment and a negative effect on continuance commitment.

4 Total integrated model

To gain a better insight into the role of trust within work teams, we tested the integrated model using the variables as manifest indicators. These were calculated by computation of means of the remaining items in each scale that had a significant relation with trust. The initial hypothesized model is described in Figure 5.10.

Given the exploratory nature of this particular model no hypotheses are previously formulated. Like the other models, the parameters $\lambda 1$ to $\lambda 4$ of variable trust ($\eta 1$) are fixed parameters. The observed indicators load at one latent variable only and independent latent variables are allowed to correlate. No initial attenuations are introduced, although some might occur later in order to improve the model. In the case of this particular model, the improvements may include the introduction of new path relationships and changes in the structure of the model.

δ4   δ5

Functional Dependence | Task Ambiguity

δ1   δ2   δ3   δ6   δ7

Pref. working in a team | Team Cohesion | Job adequate Skills   Organizational Climate | Members influence

$\lambda_{4,1}-\lambda_{5,1}$

$\lambda_{1,1}-\lambda_{3,1}$ $\lambda_{6,1}-\lambda_{7,1}$

Team Composition ξ_1 Work Characteristics ξ_2 Organizational Context ξ_3

$\gamma_{1,1}$ $\gamma_{2,1}$ $\gamma_{3,1}$

ε_1 Propensity to trust λ_1 λ_3 Cooperative Behaviors ε_3

λ_2 Trust η_1 λ_4

ε_2 Perceived Trustworthiness ζ_1 Monitoring Behaviors ε_5

$\gamma_{1,2}$ $\gamma_{1,3}$ $\gamma_{1,4}$

Team Effectiveness η_2 ζ_2 Team Performance η_3 ζ_3 General Effectiveness η_4 ζ_4

$\lambda_{2,5}-\lambda_{2,7}$ $\lambda_{3,8}-\lambda_{3,9}$ $\lambda_{3,10}-\lambda_{3,12}$

Task Performance | Role Performance

ε_8 ε_9

Relationship Commitment | Team Satisfaction | Stress   General Satisfaction | Attitudinal Commitment | Continuance Commitment

ε_5 ε_6 ε_7 ε_{10} ε_{11} ε_{12}

Figure Hypothesized model for trust determinants and effects of trust within teams

5.5   Summary

In this chapter we described the strategy, the research phases and the methods used in our research project. In addition, we provided a description of the participating organizations and the respondents in the different studies. Because we needed to obtain a sample with the team responses from the three organizations, we compared the main study samples in relation to several objective measurements. The samples Social Care-Purmerend and Social Care-Zaandam were the most similar in terms of age, gender, job and organizational tenure. The participants of these two organizations were predominantly men, were in average older than 40, and had a low educational level. These individuals worked for their organization in average longer than 10 years, and performed the present function for a period of two and half years. The respondents from Ribw-Twente were predominantly women, had a high occupational training, and worked in average for this organization less than four years. Although the

samples contained some differences, the majority of the respondents were workers, had a long term contract and worked longer than 30 hours a week.

The choice to conduct field studies was justified by the aim of this project in studying trust in work teams. We used two forms of data collection. The interviews, which made possible to explore the meaning of trust in work contexts this context, and the questionnaires with which research findings can be compared with those from previous research. In total we carried out five studies and two research phases can be distinguished.

In the first research phase we explored meaning of the concept trust and subsequently develop and test four trust measures. According to a structural method approach, the meaning of trust was explored through the interviews. Furthermore, a comparison was made between the contents of the existing measures of trust and the content of the interviews, before developing the trust measures. To measure the components propensity to trust and perceived trustworthiness, we decided to use two existing instruments. This decision was made based on the similarity in content between these scales and the components of our study, and the reliability reported in the literature constituted the main reasons for this decision. Based on the interviews we develop one scale to measure cooperative behaviors and another scale to measure monitoring behaviors. The criterion methods served to test the internal consistency and the validation of the measures. The internal consistency of the trust measures were examined through exploratory and confirmatory analyses. Both procedures were conducted with different samples, respectively the pilot survey and the team sample. The validation procedures were described in relation to the convergence and discriminant power within and between groups, and with external criteria. In chapter 6 we discuss the results obtained in this phase.

In the second research phase, the model testing phase, we described the methods used in structural equation modeling and the necessary conditions to conduct these procedures. Next, we discussed the instruments and models that we have used to test our hypotheses. Measures that were considered not reliable ($\alpha < .70$) were excluded from further statistical analysis. Only the scale team heterogeneity was excluded for this reason.

Because of the high number of variables, our model was initially split it into three parts. Each part addresses a particular aspect of our research, and includes different hypothesized models. For the multi-component nature of trust we hypothesized a second-order factor structure, in which the four components, propensity to trust, perceived trustworthiness cooperative and monitoring activities, constitute first-order factors that are related to the second-order factor trust. For the other models we hypothesized a simpler structure, with one latent factor trust and four observed indicators. For the factor affecting trust in teams we hypothesized three models, each portraying the relationships related to team composition, work characteristics, and organizational context. We also developed three models hypothesizing the effects of trust. The integrated model is tested with the variables operating as manifested indicators. All hypothesized models are tested using LISREL 8.02 (Jöreskog & Sörbom, 1993).

Chapter 6

Development
of trust measures

The first research phase of this project was devoted to the construction of trust measures. These measures correspond to the trust components propensity to trust, perceived trustworthiness, cooperative and monitoring behaviors. In this chapter we give an account of the stages involved in the development of these measures and discuss the results concerning internal structure and validity. In section 6.1 we provide an analysis of content of the trust concept and describe the development of the scales. We reflect on the content of the interviews and review the existing measures of trust. In section 6.2 we discuss the results of the exploratory and confirmatory structure of the trust scales, and test our hypothesis 1a. In section 6.3, we examine validity of these scales by establishing their convergent and discriminant powers within and between teams, and by exploring those powers with external criteria. At the end of this chapter the discussion of the results is presented.

6.1   Analysis of content

Before developing the scales, we need to examine the structural characteristics of the trust concept in terms of content. We argued in our framework that trust is composed of different components each with a different nature. We start by examining the content of trust through some exploratory interviews. Subsequently, we review the existing measures of trust, and compare the content of these measures with the one of the interviews. Finally, we construct four different scales, each measuring one of the trust components proposed.

6.1.1   Interviews

The interviews were structured according to three questions: In your work...

> (1)...how do you describe a person that you trust?
>
> (2)...do you behave differently towards colleagues that you trust, and towards colleagues that you do not trust?
>
> (3)...how do you behave towards colleagues that you trust?... and towards colleagues that you do not trust?

These questions were directed to the components, perceived trustworthiness, cooperative and monitoring behaviors. With respect to propensity to trust no questions were asked, since the literature and existent measures are consistent with respect to its content (see section 6.1.2 in this chapter). The content of the answers was analyzed using content analysis methods (Holsti, 1969). Because of the exploratory nature of these interviews and the small number of respondents in each sample (n=16), it was only possible to compare the content using frequencies.

The first question is referred to perceived trustworthiness. As shown in Table 6.1, the respondents in both samples gave similar answers about how they perceive trustworthiness in others. Being "discreet" is the most frequently named content in both samples. The frequency in the hospital sample is 8 and in the mixed sample is 7. Being "honest" comes into second place, with a frequency of 6 at the hospital NB and a frequency of 5 in the mixed sample together with "Doesn't take advantage". Being "Competent", "keeps commitments", and "doesn't misuse information" have frequency 5 at the hospital NB. "Share responsibilities", being "intelligent' and "open to listen" have frequency 3, in the same sample. In the mixed sample "competent" have frequency 3, and "doesn't gossip" and "is open to listen" have frequency 2. The other contents reported under this question were mentioned only once by one of the respondents.

Table 6.1: Answers and frequencies for perceived trustworthiness

Questions	Hospital North Brabant (NB)	Mixed Sample

Question : 1
In your work, how do you
describe a person hat you
trust?
	Somebody that...
	.is discreet (7)
	.is honest (6)
	.is competent (5)
	.keeps commitments(5)
	.doesn't misuse information(5)
	.shares responsibilities (3)
	.is open to listen (3)
	.is intelligent (3)
	.communicates openly
	.is humorous
	.is supportive
	.is positive
	.works extra
	.has ethics
		Somebody that...
		.is discreet (7)
		.is honest (5)
		.does not take
		  advantage (5)
		.is competent (3)
		.is open to listen (2)
		.keeps
		  commitments (2)
		.doesn't gossip (2)
		.is straightforward
		.is friendly
		.takes you seriously
		.is supportive
		.is intelligent
		.is spontaneous
		.presents alternatives

(#) frequencies

The second question served to identify differences in behavior towards people that are trusted and people that are not trusted. As shown in Table 6.2, the majority of the respondents in both samples affirms to behave differently towards colleagues that are trusted and towards colleagues that are not trusted. However, 6 respondents (32%) at the Hospital sample and 2 respondents at the mixed sample (13%) said not to behave differently. Although the respondents considered trust to be important for their work, some of them argued that "if trust is there, it's a gain but if it isn't, people have to work in the same way". Some of these respondents also suggested that "it is a part of the job sometimes to have to work with people that we don't trust". Others suggest that they "are normally not very close to the people that they work with".

The third question is directed at the specific differences in behavior. In both samples, respondents most frequently report to have behaviors of vulnerability and openness towards colleagues that they trust. In the hospital sample to "talk about things other than work" and "become vulnerable" have the highest frequencies, 5 and 4 respectively. Being "...open about myself", "..don't have to be careful about what to say" and being "..more open to ideas or suggestions", have frequency 3 at the hospital NB. The answers in the mixed sample are less diversified than the hospital sample. However, the content mentioned is similar. "Become personally involved" and "do not hold information back" are the contents most frequent named with frequency 5 and 4 respectively.

In relation to behaviors towards colleagues that are not trusted, the most frequent answers in the hospital sample are "hold something back" and being "formal", with frequency of 6 and 4 respectively (see Table 6.2). In the mixed sample being "formal" is the most frequent answer, together with "becoming suspicious", both with frequency 4. Becoming some what more reserved by

Table 6.2: Answers and frequencies for trust behaviors

Questions	Hospital North Brabant (NB)		Mixed Sample	
Question 2:				
In your work, do you behave	Yes	No	Yes	No
differently towards colleagues	10	6	14	2
that you trust, and towards	(63%)	(32%)	(88%)	(13%)
colleagues that you don't trust?				
Question 3:				
How do you behave towards	I...		I...	
colleagues that you trust...	.talk about other things than work. (5)		.become personally involved. (5)	
	.become vulnerable. (4)		.do not hold information back. (4)	
	.am open about myself. (3)		.am more open for ideas. (2)	
	.am more open to ideas or suggestions. (3)		.not afraid of saying anything.	
	.don't have to be careful about what to say. (3)			
	.am open about information			
	.am more informal.			
and colleagues that you	I...		I...	
don't trust?	.hold something back. (6)		.am formal. (4)	
	.am formal. (4)		.become suspicious. (4)	
	.choose what to tell. (3)		.am alert. (3)	
	.check every thing. (3)		.worry about my work. (2)	
	.don't show problems or anxieties.(3)		.do not show myself.	
	.communicate superficially. (2)		.don't give any room to changes.	
	.don't ask any help.		.make more clear arrangements.	
			.am selective about information.	

(#) frequencies

"...not showing problems or anxieties", or "...choose what to tell" or "...communicate superficially" have frequency 3 and 2 in the hospital sample. With the same frequency, the respondents in the mixed sample emphasize being "alert", and being "...worried about the work". In the hospital sample "check every thing" has frequency 3.

The answers to question 1 show that trustworthiness is perceived through qualities such as honesty, discreetness, competence, reliability, not taking advantage and keeping commitments. The answers to questions 2 and 3 clearly indicate that people behave differently towards colleagues that they trust than towards colleagues which they do not trust. This confirms the importance of considering cooperative and monitoring behaviors as measures of trust. Based on these results, the content identified as cooperative behaviors covers, open communication, personal involvement (vulnerability), informal contact, and acceptance of influence from others. The content identified as monitoring behaviors covers, suspicion, surveillance, control and opportunistic behavior towards others (see Table 6.3).

6.1.2   Existing measures

In accordance with the theories that represent our research domain, we selected several instruments that measure trust. An overview of these instruments is given in Table 6.3. Most of these instruments, measure only one trust component and do not exclusively apply to team contexts. The contents measured by each instrument are described under each trust component. The categories considered are propensity to trust, perceived trustworthiness and trust behaviors[1].

Propensity to trust
Two scales measuring propensity to trust are the Interpersonal Trust Scale (ITS) from Rotter (1967), and the Revised Philosophies of Human Nature Scale (RPHNS) from Wrightsman (1964). Both instruments measure trust in a form of "general expectancies". In the case of the ITS, these expectancies are related to the credibility of social agents and societal optimism. This scale contains 25 items, such as for example "Most elected officials are really sincere in their campaign premisses.", and "Most people can be counted on to do what they say they will do.". The RPHNS measures general expectancies of trust in opposition to cynicism.

A revision of these measures conducted by Stack (1978) suggests that the ITS and the RPHNS are quite similar. However, to measure propensity to trust in this study, we choose the sub-scale "trust" from the RPHNS (Wrightsman, 1964). This sub-scale measures expectations about the way people generally behave, which is consistent to our description of propensity to trust (see chapter 4). Moreover, the items in the RPHNS are more directed to expectations about interpersonal relationships than the items in the ITS, which makes it more appropriate for application in group contexts. Furthermore, the test-retest reliability, calculated with Spearman-Brown correlations, shows a coefficient $r=.74$ for the RPHNS and a coefficient $r=.68$ for the ITS (Stack, 1978).

Perceived Trustworthiness
The instruments measuring perceived trustworthiness described in Table 6.3, apply to interpersonal dyads or group relationships. Several of the aspects measured are common across these instruments. For instance, the content "honesty" (Butler, 1991) is present in all instruments. In Smith & Barclay (1997) this content is included in "character", whereas in Cook & Wall (1986) is included in "faith in trustworthiness". This latest scale also includes the content "consistency" (Butler, 1991), which is referred to in the Organizational Trust Inventory (OTI) as "keep commitments". Another common content across the instruments is "competence" (Buttler, 1991; Smith & Barclay, 1997). In the case of Cook & Wall (1986) "competence" is referred to as "confidence in ability".

---

[1] The category "Trust behaviors" includes both cooperative and monitoring behaviors.

Table 6.3: Overview of trust measures and comparison with the trust components

Measures	Propensity to trust	Components Perceived trustworthiness	Trust behaviors
General Expectations *ITS* - Rotter (1967)	.Credibility in social agents .Societal optimism		
RPHNS - Wrightsman (1964)	.Trust propensity .Cynicism(*)		
Interpersonal (Dyads) *CTI* - Butler (1991)		.Integrity, Honesty, Fairness, Competence, Consistency, Loyalty, Discreetness, Openness, Receptivity, Availability, Fulfillment	
Smith & Barclay (1997)		.Character .Role Competence .Judgment .Motives or intentions	.Rel. investment .Acceptance of influence .Communication openness .Forbearance from opportunism
Curral & Judge (1995)			.Communication openness .Informal accord .Surveillance(*)
Group Relationships Cook & Wall (1986)		.Faith in trustworthiness .Confidence in ability	
OTI-Cummings & Bromiley (1996)		(Cognitive & Affective) .Keeping commitments .Honest in Negotiations .Not take advantage	(Beh. intentions)
This study	.Propensity to trust	.Keep commitments .Honesty .Not take advantage .Reliability .Competence	- *Cooperative* .communication openness .involvement (a) .informality (a) .acceptance of influence - *Monitoring* .surveillance(*) .opportunism(*) .suspicion(*)(a)

ITS - Interpersonal Trust Inventory
RPHNS - Revised Philosophies of Human Nature Scale
CTI- Conditions of Trust Inventory
OTI-Organizational Trust Inventory
(*)- revised scale
(a)-scale resulting from interviews

Some particular instruments such as the OTI from Cummings and Bromiley (1996) and the instrument proposed by Smith & Barclay (1997), include both measures of perceived trustworthiness and trust behaviors. In the case of the OTI the items refer to intentions of behavior. Another particularity of the OTI is that the different components are measured across the same content dimensions. Perceived trustworthiness includes items that emphasize the affective and cognitive aspects of those dimensions. Examples of these items are "I think that _____meets its negotiated obligations to our department"- (cognitive item), "I feel that _____tries to get the upper hand"- (affective item). An example of a behavior intention item is "We intend to share information cautiously with _____".

After analyzing the content of the interviews (see section 6.1.1), and by comparing the content with the existing measures of perceived trustworthiness (see Table 6.3), we find strong similarities between the answers and the Conditions to Trust Inventory (CTI) from Butler (1991), and the OTI (short version) from Cummings & Bromiley (1996). Because the OTI was constructed for group contexts, and presented acceptable psychometric properties (Cummings & Bromiley, 1996), we considered the short version of this instrument as an adequate scale to measure perceived trustworthiness. This scale contains 12 items measuring affective and cognitive aspects of perceived trustworthiness. Behavioral intention items are not included. According to Cummings & Bromiley (1996), the overall fit for the measurement model on the 12 items is substantially satisfactory: the χ^2 was 110.32 (df=51; p=0.0), the Goodness of fit (GFI) was .95, the Comparative fit (CFI) was .98, and the Non-normed index (NNFI) was .98 (Cummings & Bromiley, 1996). Although the Chi-square was significant, all the other measurements of fit were above .90, the limit considered for an adequate model fit.

Trust behaviors
The behavior most emphasized in almost all instruments is "communication openness". Only the OTI does not mention this aspect. Another important behavior of trust is "acceptance of influence" which is mentioned by Smith & Barclay (1997) and also by Curral & Judge (1995), who refers to "informal accord". The OTI refers to "not take advantage" which is comparable to the content "forbearance from opportunism" in Smith & Barclay (1997). Curral & Judge (1995) also focuses on similar issues; however they include them in the reverse from - "surveillance".

To fully measure cooperative and monitoring behaviors according to the content dimensions in our study, we considered the existent instruments to be inadequate. First of all, these instruments only emphasize part of the content included in our study. Secondly, validated instruments such as the OTI, refer only to behavioral intentions and not the concrete behaviors of trust. Moreover, the behavioral intent items were excluded from the short version of the OTI, because they provided less reliable measures (Cummings & Bromiley, 1996). Only a few sub-scales such as, "communication openness" and

"surveillance" from Curral & Judge (1995) and "acceptance of influence" from Smith & Barclay (1997) were retained and adapted to teams contexts. In the following section we describe the development of the scales.

6.2   Scale development

As for the aspects that we focus in our study, propensity to trust and perceived trustworthiness seem to be best represented by the existing measures described in Table 6.3. For cooperative and monitoring behaviors, these measures reflect only part of the content. Therefore, most of the items needed to be self-generated. Even though, some of the existing scales were adapted and incorporated in with new formulated items.

Propensity to trust is measured with the subscale trust from RPHNS. This subscale includes 10 positive statements about general expectancies of the behavior of other. Examples of these items are: "Most people will speak out for what they believe in", "The typical person is sincerely concerned about the problems of others.".

Perceived trustworthiness is measured with the OTI-short version from Cummings & Bromiley (1996). For our purposes, the 12 items of this scale were adapted to intragroup situations. Examples of these items are "In my team some people have success by stepping on other people", "In my team people are honest in negotiation processes".

Trust behaviors are measured by 40 items, which 20 items represent cooperative behaviors and 20 items represent monitoring behaviors.

For the cooperative behaviors measure five items were adapted from the sub-scale communication openness from Smith & Barclay (1997). In addition, six extra items were developed measuring openness within work meetings, room for personal vulnerability within the team, and social interaction within team members. Four items were adapted from the sub-scale influence of acceptance from Smith & Barclay (1997), and three items were developed focusing on flexibility and compromising within the team. Examples of cooperative items are "In my team we provide each other with timely information" and "In my team people are open for advice or help from others".

For the monitoring behaviors measure the three-item sub-scale "surveillance" from Curral & Jeudge (1995) was adapted to intragroup situations. Seven items were developed in relation with monitoring the work of team members. Four new items were developed, reflecting "less involvement" and "formal contact" with team members. Six items were constructed based on opportunistic behavior. Examples of monitoring items are "In my team people check whether others keep their promises", and "In my team there are people that profit from the work of others".

The 40 items developed were judged by three experts, i.e. work and organizational psychologists. The items were evaluated according to the criteria: comprehensibility, length, and singularity. By unanimity of the judges in relation to one of this features, some items were reformulated.

The items were again evaluated together with the 10 items measuring propensity to trust and the 12 items measuring perceived trustworthiness, this time by two other experts, also work organizational psychologists, with respect to the relevance and centrality of the items to the trust. These experts were also asked to comment on the comprehensibility, adequacy and repetition. Based on these comments some items from the scales cooperative and monitoring behaviors were excluded because of repetition of contents.

The final measures consist of: 10 items measuring propensity to trust (Wrightsman, 1964); 12 items measuring perceived trustworthiness (Cummings & Bromiley, 1996); 18 items measuring cooperative behaviors; and 14 items measuring monitoring behaviors. One extra item measuring overall trust was also included. The items are presented in Appendix A.

6.3   Internal structural analysis

The internal structure of the trust measures was examined through exploratory and confirmatory factor analysis with two different samples. The Exploratory Factor Analyses (EFA) were ran using data from the pilot survey. Reliability and intercorrelations between factors were also obtained for this sample. The Confirmatory Factor Analysis (CFA) was conducted with data from the team sample. The reliabilities obtained for the trust scales were presented in section 5.4.1 (see chapter 5, pag. 84), together with the reliabilities for the other scales included in the hypothesized models.

6.3.1   Exploratory Analysis

The suitability of the data from the pilot survey for factor analysis procedures was confirmed with Kaiser-Mayer-Olkin (KMO) equal to .82, and a significant Barlett test for sphericity (p<.000).

The first EFA was conducted without any rotation or limitation of factors. A four factor solution was indicated by application of the Scree Test (Cattel, 1966). The factors extracted hold eigenvalues (ev) >1, explaining in total 50,1% of the variance. In the following EFAs, the solution has been restrained to four factors with Varimax rotation. Table 6.4 shows the four-factor solution with the item loadings on each factor. The four factor solution contains 28 items with loading equal to .50 or above. The factors have ev>1 and explain 52.8% of the total variance. As few cross-loadings occurred in this solution, we decided to use the highest loadings to determine to which factor an item belonged. The items that correspond to the factors are printed in bold.

Table 6.4: Factor loadings on a four PCA factor solution with Varimax Rotation on the trust scales

Items	Factors			
	I	II	III	IV
Perceived Trustworthiness				
y8	**.71**	.24	.18	.00
y9	**.83**	.00	-.17	-.00
y10	**.79**	.17	-.00	-.18
y11	**.63**	.30	-.00	.00
y12	**.75**	.19	-.00	-.00
y13	**.69**	.13	-.00	-.00
y14	**.62**	.23	-.00	-.17
y15	**.55**	.44	.19	.00
Cooperative Behaviors				
y16	.00	**.73**	.12	.00
y17	.19	**.59**	-.00	.19
y18	.12	**.63**	.17	.20
y19	.41	**.50**	.17	.12
y20	.44	**.60**	.11	.15
y21	.22	**.58**	.00	-.00
y22	.37	**.67**	.18	-.00
y23	.35	**.63**	.00	.11
y24	.25	**.55**	.13	-.00
Trust Propensity				
y1	.12	-.12	**.72**	.20
y2	-.21	.15	**.61**	-.15
y3	.00	.23	**.71**	-.00
y4	.00	.00	**.85**	-.00
y5	-.00	.00	**.53**	.12
y6	.15	.16	**.73**	.13
y7	-.00	.17	**.68**	-.00
Monitoring Behaviors				
y25	-.00	.14	-.00	**.61**
y26	-.00	.00	.19	**.75**
y27	-.00	.12	-.00	**.79**

The four factor solution discriminates between the factors initially proposed. Factor I accounts for 27.17% of the total variance (ev=7.06) and includes 8 of the original 12 items of the OTI scale. We call this factor perceived trustworthiness. Factor II includes 9 items of the initial 18 of the scale cooperative behaviors. This factor accounts for 13.4% of the total variance and presents an eigenvalue equal to 3.23. The items loading on this factor measure communication openness, personal involvement and acceptance of influence within the team. We call this factor cooperative behaviors. Factor III comprises 7 items of the original trust scale of Wrightsman (1964), and accounts for 7.6% of the variance with an eigenvalue of 2.4. We call this factor propensity to trust. The fourth factor (Factor IV) contains only three items of initial 14 corresponding to monitoring behaviors. This factor explains 4.7% of the variance and has an eigenvalue equal to 1.3. This factor is called monitoring behaviors.

Table 6.5: Descriptive statistics, reliability and intercorrelation matrix for the four-factor solution

Factor		n	Descriptive Statistics				Inter-correlation matrix			
			no.	m	sd	α	I	II	III	IV
I	P. trustworthiness	98	8	55.0	10.9	.89	1.0			
II	Cooperative beh.	93	9	53.8	9.2	.87	.61**	1.0		
III	Trust propensity	95	7	28.3	7.3	.82	.04	.28**	1.0	
IV	Monitoring beh.	92	3	14.1	3.5	.68	-.06	-.18*	-.21	1.0

n is number of respondents, *no.* is number of items, *m* is mean, *sd* is standard deviation and *α* is cronbach alpha
* (p<.05) ** (p<.001)

More detailed analyses were undertaken to analyze the internal homogeneity of this solution. Table 6.5. presents the descriptive statistics, reliability and intercorrelations of the four-factor solution at the Hospital NB sample. The Alpha coefficients of the Factors I, II and III range between .89 (perceived trustworthiness) and .82 (trust propensity), indicating acceptable levels of internal homogeneity and reliability for these factors. Only Factor IV (Monitoring behaviors) which has only three items displayed a low alpha coefficient ($α$=.68).

Correlations between scales occurred using the sum scores of each factor. In total three correlations were significant, between monitoring behaviors and cooperative behaviors (r=-.18, p<.05), between propensity to trust and cooperative behaviors (r=.28, p<.001), and between perceived trustworthiness and cooperative behaviors (r=.61, p<.001). Although these correlations are not high enough to rise concerns about multicollinearity, they do imply a possible halo effect in the trust measurements.

6.3.2   Confirmatory Analysis

The adequacy of the EFA four-factor structure was subject to confirmatory factor analysis (CFA) with the team sample (n=112). The specification parameters were the following: (a) the factors are intercorrelated; (b) each observed variable - item - loads only on one factor; (c) if necessary error measurements associated with each observed variable can be correlated, but only when these variables load on the same factor.

Using Lisrel 8.02, we confirmed the four-factor model with five items less than the EFA structure. Factor I (perceived trustworthiness) excluded two items (y14 and y15), Factor II (cooperative behaviors) excluded y23 and y24, and Factor III (propensity to trust) excluded y7. For a more detailed description of these items see Appendix A. Furthermore, three error correlations were introduced in the CFA four-factor model. One error correlation occurred between y12 and y13 within the factor perceived trustworthiness, and two others occurred within the propensity to trust factor, between y5 and y6, and between y6 and y4.

As reported in Table 6.6, the four-factor model shows a significant $χ^2$ equal to 237.1 (df=180, p=.003). However, the CFI is .94 which indicates a good model fit.

Table 6.6: Comparison of fit indices between CFA models - team sample

Models	χ^2	df	p	χ^2/df	EVIC	CFI	GFI	AGFI	PGFI
Independent model	1094.1	210							
1-Factor	578.7	185	.000	3.1	6.0	.60	.60	.50	.48
2-Factors	469.6	184	.000	2.6	5.1	.71	.68	.60	.54
3-Factors	300.9	182	.000	1.7	3.6*	.88	.80	.74	.63
4-Factors	237.1	180	.003	1.3	3.2*	.94	.83	.78	.65

*EVIC <EVIC saturated model < EVIC independent model

Both the GFI and AGFI are moderated, showing fit equal to .83 and .78 respectively. PGFI is equal to .65, which indicates a good parsimonious fit. Therefore, we consider the fit of the four-factor model adequate.

Following Bentler & Bonnet (1980) and Byrne (1998) we ran also several CFAs for concurrent model structures. In all models we maintained the three error correlations between the same observed variables. In Table 6.6 are also presented 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 less 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 (Weaton, Muthén, Alwin & Summers, 1977).

The models with the best fit are the three- and four-factor model. For the three- factor model the χ^2/df is 1.7, and for the four-factor model is 1.3. The EVIC also confirms the good fit of these models, since the values are inferior to the values of the EVIC of saturated and independent models. 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, only for the four-factor model the comparative fit is > .90. Based on these results the four-factor model is to be favored above the three-factor model. Consequently, hypothesis 1c, proposing that trust includes the components propensity to trust, perceived trustworthiness, cooperative and monitoring behaviors, is considered to be confirmed by these results. The other hypotheses concerning the structure of trust will be tested in Chapter 7.

6.4   Validation

6.4.1   Convergent and discriminant validity within and between teams

Using the CFA four-factor structure, we calculated the intra-rater reliability - rwg (James et al, 1984) for the teams in each organization and for all the teams in one sample. The results displayed in Table 6.7, show that all rwg in the three survey studies are >.70. This indicates that the level of agreement within teams

Table 6.7: Validity of the four-factor structure: convergent within teams and discriminant between teams

Studies	teams	Propensity to trust				Perceived trustworthiness			
		m	sd	F	rwg(6)	m	sd	F	rwg(6)
Social care									
a. Purmerend	41	4.7	.88	1.4	.91	5.1	1.09	3.3**	.85
b. Zaandam	44	3.8	.93	1.9*	.89	4.6	.75	1.2	.94
c. Ribw-Twente	27	4.0	.60	1.2	.96	5.8	.62	1.3	.96
Team Sample	112	4.2	.92	10.9**	.89	5.1	.98	15.8**	.87
Studies	teams	Cooperative behaviors				Monitoring behaviors			
		m	sd	F	rwg(6)	m	sd	F	rwg(3)
Social care									
a. Purmerend	41	5.7	.65	1.3	.96	4.9	1.00	1.4	.75
b. Zaandam	44	5.0	.83	1.6*	.92	4.7	.91	1.6	.81
c. Ribw-Twente	27	5.4	.58	1.7*	.97	4.5	.67	1.0	.91
Team Sample	112	5.7	.76	9.4**	.93	4.8	.91	3.0*	.81

m is mean , sd is standard deviation, F is ratio ANOVA, rwg is intra-rater reliability
*p<.05 **p<.01

is high. The highest is intra-rater reliability is for cooperative behaviors at Ribw-Twente (rwg=.97), and the lowest is for monitoring behaviors at Social-Care Purmerend (rwg=.75). In the team sample the lowest reliability obtained is for monitoring behaviors (rgw=.81), and the highest is for cooperative behaviors (rwg=.93). These results demonstrate consistency across teams within each organization and between the organizations, justifying the use of aggregated team scores on these variables. The discriminant power of the scales between the teams is tested with one-way ANOVAs. Also in Table 6.7, all F ratio results are greater than the unit. According to Hays (1991), this indicates that the scales have the power to discriminate between the teams. In 4, out of the 12 cases (33.3%), the F value is even statistically significant (p<.05 and p<.001). At the team sample the F ratios are all significant. The highest discriminant power is for perceived trustworthiness (F=15.8, p<.01). Trust propensity and cooperative behaviors have respectively F=10.9 (p<.01) and F=9.4 (p<.01). Monitoring behaviors has the lowest discriminant power F=3.0 (p<.05). These results confirm, thus, the discriminant power of the scales within the teams in each organization and between organizations.

6.4.2 Convergent and discriminant validity with external criteria

For the validation with external criteria variables, we have examined the convergent and discriminant validity of the trust scales through correlations with criterion variables.

In order to test the convergent validity of the scales, we correlated the four factors obtained by CFA with *overall trust* (one item measurement). As proposed in our framework (hypothesis 1c), we expect the scales trust propensity, trustworthiness and cooperative behaviors to correlate positively with overall trust. Whereas the scale monitoring behaviors is expected to correlate negatively

Table 6.8: Convergent validity: correlation with overall trust

Factor	Social-Care Purmerend	Social-Care Zaandam	Ribw-Twente	Team Sample
III Propensity to trust	.34**	.09	.20	.32**
I P. trustworthiness	.37**	.41**	.56**	.64**
II Cooperative beh.	.48*	.53**	.61**	.57**
IV Monitoring beh.	-.14	.10	-.04	-.20*

* (p<.05) ** (p<.001)

Table 6.9: Discriminant validity: correlation with education level

Factor	Social-Care Purmerend	Social-Care Zaandam	Ribw-Twente	Team Sample
III Propensity to trust	.35**	.22*	.18	.23*
I P. trustworthiness	.10	.07	-.02	.10
II Cooperative beh.	.10	.22*	-.20*	.26**
IV Monitoring beh.	-.07	-.03	.10	.07

* (p<.05) ** (p<.001)

with overall trust. Although we do not pretend to test our hypothesis 1c at this stage, the results in Table 6.8 confirm in part the expected direction of these propositions. For perceived trustworthiness and cooperative behaviors the correlations obtained are positive and highly significant in all samples. Propensity to trust is also positively related to overall trust in all samples, however, these correlations are significant only at Social-Care Purmerend and in the team sample. Monitoring behaviors correlate negatively with overall trust in the samples Social-Care Purmerend, Ribw-Twente and team sample, obtaining statistical significance (p<.05) only at the team sample. Contrary to our expectations, at Social-Care Zaandam monitoring behaviors were positively related with overall trust (r=.10). Although this correlation is not satistically significant, it indicates that the teams at this sample do not consider monitoring behaviors as negative indicators of trust. The correlations with affective and continuance commitment might provide more details to explain this result.

The expected convergence of the four trust scales with overall trust was only established totally in the team sample. The positive correlations were highly significant (p<.01) and ranged between r=.32 (trust propensity) and r=.64 (perceived trustworthiness). For monitoring behaviors a negative correlation of r=-.20 is significant for p<.05. In this sample the existence of different components of trust can be fully supported.

The discriminant power of the trust scales is based on the assumptions that trust includes components of a different nature (see chapter 4). To test the discriminant validity of propensity to trust we established correlations between the scale and objective measurements (age, gender and educational level). Because propensity to trust is considered to be based on the personal development and individual characteristics (Mayer et al., 1995), it can be expected that this component will correlate significantly with these objective measurements. The other trust components are not expected to correlate significantly with objective measures, since they depend on the relationship with specific others (in this case team members).

Table 6.9 reports the correlations between the trust scales and the educational level of the respondents. With respect to the other objective measurements no significant correlations were obtained with any of the scales. The discriminant power of propensity to trust in relation to the other trust scales is confirmed only at Social Care-Purmerend, with a substantial correlation coefficient r=.32 (p<.01). Propensity to trust shows significant correlations with educational level in other samples such as in Social Care-Zaandam and in the team sample. However, cooperative behaviors also shows a significant correlation with educational level in these samples. Moreover, at Ribw-Twente the correlation between educational level and propensity to trust is not significant, whereas the correlation with cooperative behaviors is r=.26 for p<.01.

The discriminant validity between the components perceived trustworthiness, cooperative and monitoring behaviors was established with correlations between the four components and criterion variable affective and continuance commitment. Empirical evidence (e.g. Morgan & Hunt, 1994) suggests a strong and positive relationship between trust between individuals and the commitment to the organization. Considering that continuance commitment is a more calculative than affective commitment (Kanter, 1968), it is expected that propensity to trust, perceived trustworthiness and cooperative behaviors are positively related to affective commitment, and negatively related to continuance commitment. For monitoring behaviors these relationships are expected to be in the opposite direction. Tables 6.10 and 6.11 report the results of the correlations between the trust scales and the criteria affective and continuance commitment.

With respect to perceived trustworthiness, we found a positive correlation with affective commitment and negative correlation with continuance commitment in all samples, which confirms our initial expectations. The negative correlation at Social Care-Purmerend, though, is not statistically significant (see Table 6.11). Propensity to trust does not correlate significantly with affective commitment in any of the samples (see Table 6.10). One significant correlation occurs between propensity to trust and continuance commitment in the Social Care-Purmerend sample (r=-.28, p<.01). At the other samples this correlation is not significant. Cooperative behaviors obtained a significant correlations with affective commitment in all samples. However, the expected negative correlation with continuance commitment is statistically significant only at Ribw-Twente (r=-.27, p<.01). At Social Care-Zaandam, the correlation between cooperative behaviors and continuance commitment is positive but not significant. Although this result contradicts our expectations, it is consistent with the previous positive correlation between monitoring behaviors and overall trust found in this sample. This may be an indicator that at Social-Care Zaandam teams are more calculative oriented to the organization than in the other samples. Therefore, trust within these teams can also be more calculative based, and be expressed not only by cooperative behaviors but also by monitoring behaviors.

Table 6.10: Discriminant power with affective commitment

Factor	Social-Care Purmerend	Social-Care Zaandam	Ribw-Twente	Team Sample
III Propensity to trust	-.02	.05	.06	.10
I P. trustworthiness	.36**	.40**	.47**	.44**
II Cooperative beh.	.31**	.34**	.31**	.45**
IV Monitoring beh.	-.06	.11	-.07	-.19*

* (p<.05) ** (p<.001)

Table 6.11: Discriminant power with continuance commitment

Factor	Social-Care Purmerend	Social-Care Zaandam	Ribw-Twente	Team Sample
III Propensity to trust	.28**	-.10	.12	-.11
I P. trustworthiness	-.01	-.18*	-.23*	.19*
II Cooperative beh.	-.07	.12	-.27**	-.15
IV Monitoring beh.	.28**	.16	.12	.26**

* (p<.05) ** (p<.001)

As was expected monitoring behaviors correlates positively with continuance commitment in all samples (see Table 6.11). However, these correlations are only statistically significant at Social Care-Purmerend and in the team sample, r=.28 (p<.01) and r=.26 (p<.01) respectively. The correlations between monitoring behaviors and the affective commitment are also in the expected direction, with the exception of Social Care-Zaandam where r=.11. Furthermore, those negative correlations are only significant in the team sample only (r=-.19, p<.05).

6.5   Discussion

The development of the trust measures comprised different stages. During the first stage, we concentrated on the exploration of the meaning of trust through the content of the interviews. Also, we examined the existent instruments with respect to their coverage of the trust components and their applicability in our research domain. In the scale construction stage, we considered the reliability of the existing instruments and adopted two instruments, i.e. the "trust" scale from the RPHNS (Wrightsman, 1964) and the OTI short version (Cummings & Bromiley, 1996), to measure propensity to trust and perceived trustworthiness respectively. Two new scales were developed to measure cooperative and monitoring behaviors. These scales were based on the results of content analysis of our interviews and some items from the existing trust measures. The four scales were judge by experts and subject to internal consistency testing.

In the internal structural analysis stage, both exploratory and confirmatory analysis corroborate the proposed four-factor structure, which confirmed our hypothesis 1a. A primary exploratory four-factor solution, based on data from the pilot survey, distinguished the four scales. The confirmatory results (CFA) in the team sample favored a four-factor structure in comparison with alternative models with one-, two-, and three-factor structures. However, the presence of common method variance in the masurements of the trust components indicates the need to confirm this structure in further studies using other samples.

At the validation stage, the results supported the convergent and discriminant power of the scales within and between teams. On the one hand, the intra-rater reliability indicated a high level of agreement between team members in relation to the trust measurements. This not only justifies the aggregation of data at the team level, but 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 3 and 6 members. The teams showed also an adequate level of variation in relation to the trust components in each organization and in the team sample, which indicates that the scales have power to discriminate between teams.

With respect to the validation with external criterion variables, the scales showed convergence with overall trust. Except at Social-Care Zaandam, the scales converged with overall trust in the expected direction, i.e. propensity to trust, perceived trustworthiness and cooperative behaviors were positively related to overall trust and monitoring behaviors negatively related. At Social-Care Zaandam the results indicated that members monitor the work of their colleagues while trusting. Analyzed in more detail, the results in this sample suggest further that monitoring within teams may be a function of the continuance commitment to the organization.

The discriminant validity with objective measurements, affective and continuance commitment, was not so well supported by our results. The scales were discriminative in the expected direction only in some samples. With respect to propensity to trust, the correlations with objective measurements were significant only for educational level, and not significant in all samples. Also, significant correlations were found between educational level and cooperative behaviors at Social Care Zaandam, at Ribw-Twente, and in the team sample. which shows that the scales do not have clear discriminant power with respect to objective measurements.

The correlations between the trust scales and affective commitment occurred in the expected direction in all samples. Only the correlation between propensity to trust and affective commitment was not statistically significant in any of the samples. Also, the correlation with monitoring behaviors is only statistically significant in the team sample. The expected positive correlation between continuance commitment and monitoring behaviors occurred in all samples, although they were only significant at Social Care-Purmerend and in the team sample. In this way, we can argue that team members that are more calculative committed to the organization tend to monitoring their team colleagues, whereas members more affectively committed tend to be more cooperative and monitor less their colleagues.

In general, the scales provided good levels of agreement in the measurements within teams and good discriminant levels in the measurements between teams. Although the scales converged to overall trust, their discriminant powers with several criterion variables are somewhat less consistent. This suggest that the scales need improvement, and again that future research is needed using teams in other work contexts.

Chapter 7

Trust, and factors affecting trust within teams

In this chapter we examine the hypotheses that deal with the nature of trust and the factors affecting trust within teams. In chapter 4, we argued that trust has a multi-component nature, and that in work teams, trust is influenced by factors related to the composition of teams, work characteristics and organizational context. We start, in section 7.1, with the results regarding the multi-component nature of trust by examining the hypotheses 1b and 1c. In sections 7.2. through 7.4, we present the results related to the influence of different factors on trust. More precisely, in section 7.2, we deal with the results concerning the effects of team composition on trust (hypotheses 2a, 2b, 2c, 2d, and 2e). In section 7.3, we examine the effects of work characteristics on trust (hypotheses 3a, 3b and 3c). In section 7.4, we investigate the effects of the organizational context on trust, examining the hypotheses 4a and 4b. Figure 7.1 illustrates the parts of the model dealt with in each section of this chapter. This chapter ends with the discussion of the results.
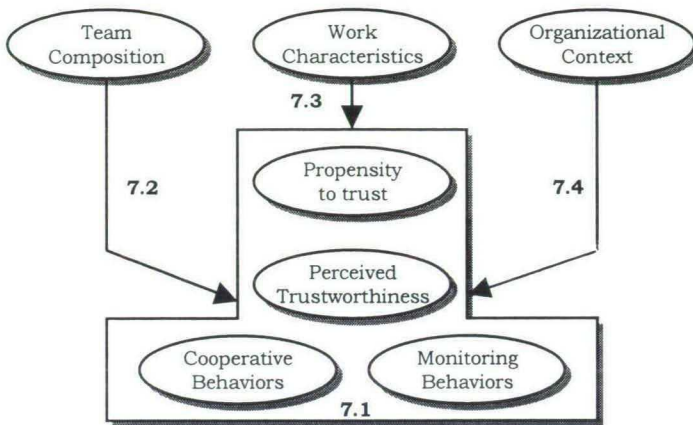
Figure 7.1: Aspects of the model examined in this chapter

7.1   Trust as a multi-component construct

The conceptualization of trust as a multi-component construct, suggests in the first place, that trust can be measured in terms of different components and that these converge to the same general meaning - trust. In describing the framework of this research, we have argued that propensity to trust, perceived trustworthiness, cooperative behaviors and monitoring behaviors, constitute distinct components of trust (hypothesis 1a). Secondly, we suggested that these factors should be related to some higher second-order factor, i. e. trust (hypothesis 1b).

Hypothesis 1a was confirmed in chapter 6 through exploratory and confirmatory analyses of the trust measures. In the validation of these measures, we found significant levels of convergence between the trust scales and overall trust (see chapter 6). In order to test hypothesis 1b, we introduced to the CFA model a second-order factor (trust), and four additional structural relationships (γ) between trust and the four first-order trust components. According to hypothesis 1c, except for monitoring behaviors, all path relationship between trust an the other components should be positive.

The results of structural equation analysis for the hypothesized second-order model are illustrated in Figure 7.2. For the clarity of the Figures, we omitted the results referring to the path relationships with observed variables, error variances of these variables and correlations among latent variables. More detailed results are reported in Table 7.1 (single print). These results include the Lisrel-Standardized Scores for the latent variables (γ), the observed variables (λ), the error variances for the latent variables (ζ), the error variances for the observed variables (ε), and the squared multiple correlations (R^2). The R^2 values
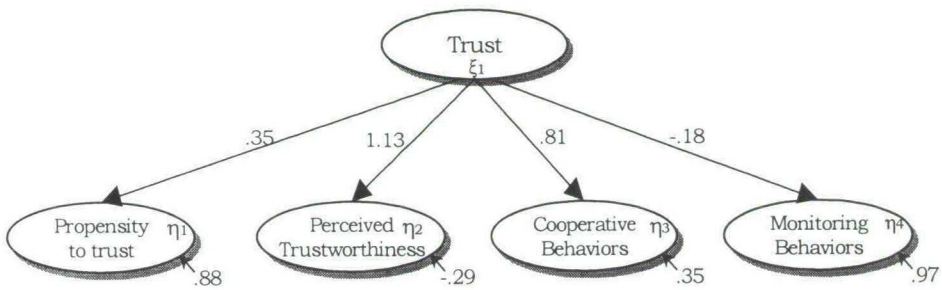
Figure 7.2: Hypothesized model - Trust (2nd order) and Trust components (1st order) - (n=112); χ^2=414.40 (df=247; p=0.00); GFI=.77; AGFI=.73; PGFI=.64; PNFI=.61; CFI=.82; RMR=.10; RMSEA=.09.

indicate the percentage of the latent factor explained by each indicator. The correlations between observed variables are reported in Appendix C.

The results presented in Figure 7.2 indicate a poor fit for the Hypothesized model. The χ^2 is highly significant (χ^2= 414.40; p=0.00) with 247 degrees of freedom. The GFI and AGFI are .77 and .73 respectively, which shows only a marginal adequacy of this model to the data. The parsimony indices, though, report .64 for PGFI and .61 to PNFI. Given the complexity of the Hypothesized model theses are values showing good model adequacy. However, the Comparative fit is <.90 (CFI=.82), which is consistent with the marginal fit of this model. The RMR is .10 and the RMSEA is .09, both above the limit considered adequate to fit this model (RMR and RMSEA <.05).

Another indicator of poor fit is the negative error variance of perceived trustworthiness ($\zeta 3,1$=-.29), and the subsequent square multiple correlation >1.00 (R^2=1.28). Negative error variances are incompatible with structural equation modeling because they suggest that a certain indicator explains more of the latent variable than the model can account for (Byrne, 1998). Since we fixed the variance of trust to 1.00, a squared multiple correlation equal to 1.28 indicates that perceived trustworthiness explains 28% more of the fixed variance of trust. Negative error variances can originate from the small size of the sample in relation to the complexity to the model, or any incorrectness of the correlations matrix. One way to overcome this problem is to rectify the scores by constraining the error variance to 0 or any other value close to 0, for instance to 0.01. If the R^2 is just above 1, and the error variances are not significant, the fit of the model should not decrease significantly with such rectification (Byrne, 1998).

With respect to the other trust components, the results obtained are less evident of model misfit. Cooperative behaviors explains 65% of the total variance of trust (R^2=.65), and present a standardized score equal to $\gamma 3,1$=.81. Propensity to trust explains 12% of the total variance of trust (R^2=.12), and the

Table 7.1: Lisrel Standardizes Scores for the Second-order Hypothesized and Modified Models

Paths	Hypothesized Model Lisrel-SS	Errors (ε, ζ)	R^2	Modified Model Lisrel-SS	Errors (ε, ζ)	R^2
Trust ($\xi 1$)						
$\gamma 1,1$	.35			.36		
$\gamma 2,1$	(1.13)			.99		
$\gamma 3,1$	.81			.91		
$\gamma 4,1$	-.18			-.23		
Propensity						
to trust ($\eta 1$)		.88	.12		.87	.13
$\lambda 1,1$	.70	.51	.44	.72	.49	.51
$\lambda 2,1$	.79	.38	.62	.82	.36	.64
$\lambda 3,1$	.90	.18	.81	.91	.20	.81
$\lambda 4,1$	.71	.51	.50	.70	.52	.49
$\lambda 5,1$	.32	.97	.10			
$\lambda 6,1$	.17	.90	.03			
Perceived						
Trustworth. ($\eta 2$)		(-.29)	(1.28)		.01(*)	.99
$\lambda 7,2$	.80	.36	.64	.85	.35	.65
$\lambda 8,2$	.64	.59	.41	.71	.54	.46
$\lambda 9,2$	.74	.46	.54	.78	.45	.55
$\lambda 10,2$	.86	.25	.74	.93	.19	.81
$\lambda 11,2$	.48	.76	.23			
$\lambda 12,2$	.66	.56	.42			
$\lambda 13,2$	.64	.59	.41			
$\lambda 14,2$	.61	.62	.40			
Cooperative						
Activities ($\eta 3$)		.35	.65		.18	.82
$\lambda 15,3$	.71	.51	.49	.73	.50(.19)Θ	.50
$\lambda 16,3$	.53	.63	.30	.53	.75(.19)Θ	.25
$\lambda 17,3$	.56	.69	.31	.64	.61	.39
$\lambda 18,3$	.60	.65	.47	.66	.58	.41
$\lambda 19,3$	.53	.52	.51	.59	.66	.34
$\lambda 20,3$	.69	.49	.28			
$\lambda 21,3$	.71	.72	.35			
Monitoring						
Activities ($\eta 4$)		.97	.03		.94	.06
$\lambda 22,4$	.66	.56	.43	.66	.57	.43
$\lambda 23,4$	.74	.44	.55	.76	.43	.57
$\lambda 24,4$	.45	.80	.21	.45	.79	.20

χ^2 = 414.40 (df=247; p=0.00)
GFI = .77; AGFI =.73
PGFI = .64; PNFI = .61
CFI = .82 RMR = .10
RMSEA =.09

χ^2= 134.43 (df=102; p=0.02)
GFI = .89; AGFI = .83
PGFI = .65; PNFI = .69
CFI = .95; RMR = .08
RMSEA =.05 (.03 ; .08) (*p*=.37)

(*) Error constrained to 0.01
Θ Error correlation

standardized Lisrel score is equal to $\gamma 1,1$=.36. Monitoring behaviors is the factor that explains the lowest variance of trust (R^2=.03), with a Lisrel score equal to $\gamma 4,1$=-.18.

Although the fit obtained by the Hypothesized model is only marginally acceptable, all structural relationships confirm the directions proposed in hypothesis 1c. In order to provide a better fit to the data, the Hypothesized

model was improved into a Modified model. These results are printed bold in Table 7.1 and illustrated in Figure 7.3. The Modified model excludes a total of 8 items, and includes one error correlation between two items within the factor cooperative activities. Item y6 is excluded because of the extremely low reliability with respect to the propensity to trust factor ($R^2 6,1=.03$). Furthermore, the unstandardized score of this item was non-significant (t-value < 1.96). As suggested by Byrne (1998), non-significant relationships should be deleted from structural models, because of their negative impact on the fit indices. Through the examination of the fitted residuals, the items y5, y11, y12, y13, y14, y20 and y21 were also excluded. The fitted residual for these items are >2.58, which indicates possible misfits of the model. As shown by the squared multiple correlations (R^2) and the error variances (see Table 7.1 - single print), these items reveal relatively low reliability to their latent factors in the Hypothesized model. The highest reliability is for y12 with $R^2=.41$ in relation to the factor perceived trustworthiness and the lowest reliability is for y5 ($R^2=.10$) in relation to the propensity to trust factor. The low reliability of these items is confirmed by the modifications indices, which suggested to add of a path from these items to other latent factors, or to add an error correlation with items from other factors. One error correlation is introduced between the items y15 and y16 in factor cooperative activities $\Theta(\delta15,\delta16)=.19$. This correlation makes sense since both items refer to openness and personal involvement. A description of these items can be found in Appendix A.

As shown in Figure 7.3, the overall fit for the Modified Model improves considerably. With 102 degrees of freedom, the χ^2 is only 134.23, although still significant with p=0.02. Both GFI and AGFI improve to a moderate acceptance level (<.90), with GFI reaching .89. The parsimony fit is .65 for PGFI, and .69 for PNFI. The RMSEA is .05, with a 90% confidence interval between .03 and .08, representing a good fit. The probability for the test of closeness fit, though, is <.50 (*p*=.37). The RMR value is .08, also indicating a less acceptable fit. However, the CFI is .95, which is considered to be an acceptable fit.
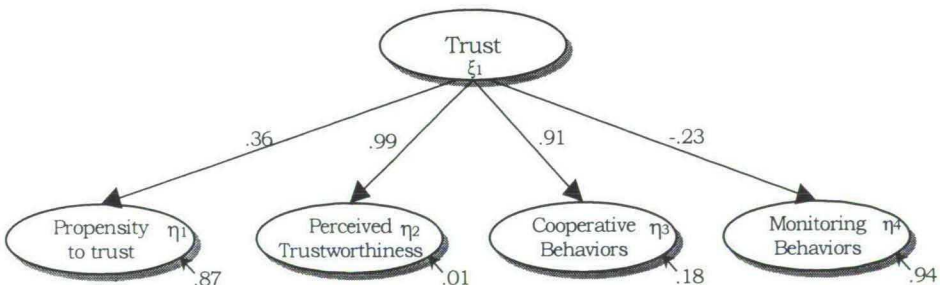
Figure 7.3: Modified model - Trust (2nd order) and Trust components (1st order) - (n=112); χ^2=134.23 (df=102; p=0.02); GFI=.89; AGFI=.83; PGFI=.65; PNFI=.69; CFI=.95; RMR=.08; RMSEA=.05 (.03 ; .08) (*p*=.36).

In spite of the moderate fit obtained with the Modified model, the initial error variance of perceived trustworthiness remained negative ($\zeta2,1$=-.07). Therefore, we constrained this error to 0.01 (see Table 7.1. - bold print). As expected, only monitoring behaviors shows a negative regression coefficient ($\gamma4,1$=-.23). According to the multiple squared correlations (see table 7.1 - bold print), trust within teams is essentially explained by the perceived trustworthiness (R^2=.99) and by the cooperative behaviors (R^2=.82). Propensity to trust and monitoring behaviors explain significantly less variance of trust, R^2=.13 and R^2=.06 respectively, but the unstandardized scores reported significant values (t-value > 1.96) for these components. The structural equations in the Modified model confirm thus, hypothesis 1c.

With regard to hypothesis 1b, our results do not confirm that the multi-component nature of trust can be explained by a second-order structure. The presence of a negative error variance constitutes a strong indication of model misfit. Nevertheless, the fact that the with the error attenuation the Modified model produced a convergent solution with a reasonable fit, suggests that the initial misfit might be more related to the size of our sample (n=112) rather than the structure of the model.

In order to suppress the limitations of the complex structure of second-order models, we decided to create a first-order factor model for trust with four observed indicators (see Figure 7.4). The observed indicators were obtained by summing the item scores in each trust component into a total score. The items summed in each component were the items included in the Modified Model (see Table 7.1). This simpler model not only serves the purpose of providing another test of hypothesis 1c, but also serves to define the structure of trust in the following models.

As shown in Figure 7.4. the overall model fit is good. χ^2 is 2.41 with 2 degrees of freedom, and not significant (p=0.30). The Goodness of fit is .99 and .95 for GFI and AGFI respectively, both indicating a good fit of this model to the data.
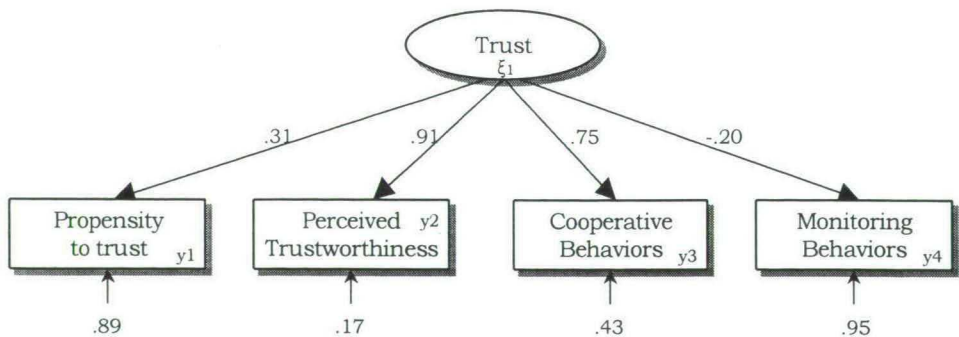
Figure 7.4: Trust as a 1st-order factor model - (n=112); χ^2=2.408 (df=2; p=0.30); GFI=.99; AGFI=.95; CFI=.99; RMR=.04; RMSEA=.04 (.00 ; .02) (*p*=.40).

The CFI is .99, the standardized RMR is .04 and the RMSEA is .04, which indicate a good model fit. In this model no constraints or attenuations were used. The standardized Lisrel scores for the four equations in Figure 7.4. present the same pattern as the structural equations obtained in the Hypothesized and Modified models (see Table 7.1). Perceived trustworthiness has the strongest relationship with trust ($\lambda 2$=.91), and explains 83% of the total variance (R^2=.83). Cooperative behaviors explain 57% of the total variance of trust (R^2=.57), with a standardized score equal to $\lambda 3$=.75. Propensity to trust explains 10% of the total variance of trust (R^2=.10) with a standardized score equal to $\lambda 1$=.32. Monitoring behaviors explains the less percentage of trust, only 4% (R^2=.04). The standardized score for monitoring activities is $\lambda 4$=-.20. As in the previous models, trust within teams is essentially explained by perceived trustworthiness and cooperative activities. Although propensity to trust and monitoring activities seem to be less central to trust, the initial estimates for the model in Figure 7.4 were highly significant (t-values>1.96). These results reconfirm hypothesis 1c, and suggest not only that trust has a multi-component nature, but also that each component has a different weight in determining trust.

To be able to compare the results across models either in relation to the factors affecting trust, or the effects of trust in teams, we fixed the structure obtained in Figure 7.4 in each of the subsequent models examined in this chapter, as well as in the models tested in chapter 8. Because Lisrel 8.02 does not identify negative fixed parameters, the score -.20 from the path between monitoring activities and trust is introduced as a "starting value", i.e. as initial estimate.

7.2   The effects of team composition on trust

The results for the Hypothesized model for the effects of team composition are illustrated in Figure 7.5. According to the hypotheses 2a to 2d, it is expected that preference for working in a team, team cohesion, job adequate skills and tenure have a positive effect on trust, and that team heterogeneity has a negative effect on trust. However, due to the low reliability of the scale "team heterogeneity" - α<.70 - (see chapter 5 - Table 5.11) this last effect is not tested.

The overall fit for the Hypothesized model is only marginally adequate. The χ^2 is 253.15, highly significant with p=0.00 and 149 degrees of freedom. The fit indices GFI and AGFI are .81 and .75 respectively, indicating only a reasonable fit for this model. Further, the CFI is moderate (CFI=.88). The RMR is .09 and the RMSEA is .08, both suggesting a poor fit for the Hypothesized model.

From the four structural relationships examined in the Hypothesized model, team cohesion ($\gamma 2,1$) shows the strongest effect on trust, with a standardized score equal to .38. Preference for working in a team reports a slightly lower effect
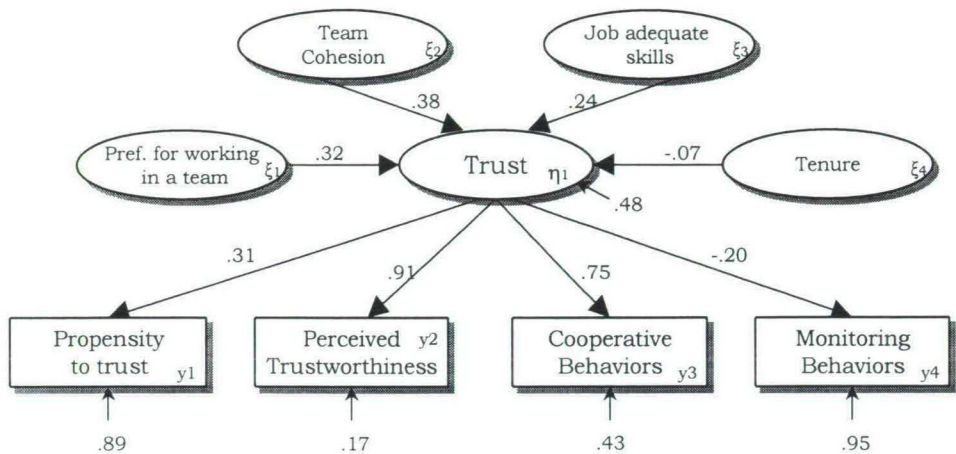
Figure 7.5: Hypothesized model - Effects of team composition on trust - (n=112); χ^2=253.15 (df=149; p=0.00); GFI=.81; AGFI=.75; PGFI=.63; PNFI=.66; CFI=.88; RMR=.09; RMSEA=.08.

low on trust ($\gamma 1,1$=.32), and job adequate skills shows an effect equal to $\gamma 3,1$=.24. These three scores are in the same direction as our hypotheses. Tenure, on the other hand shows the lowest and the only negative effect on trust $\gamma 4,1$=-.07, which contradicts our initial prediction.

Because of the fit obtained with the Hypothesized model is only marginal, a few modifications were introduced in order to improve it. The results for the Modified model are reported on Table 7.2 (bold print) and are illustrated on Figure 7.6. The Modified model excludes the items x5, x9 and x10, due to significant fitted residuals (fitted residuals > 2.58). The same model includes one error correlation between the items x3 and x4 in the factor preference for working on a team. This correlation was suggested by the modification indices, and it made sense, since it concerns two variables within one latent construct. Moreover, the content of the items supports this correlation; item x3 is "For the type of work that I do, it is better to work within a team"; and item x4 is "Working in a team increases my changes to perform better" (see Appendix A).

In spite of these modifications, the χ^2 remained high (χ^2=180.92; p=0.00, df=116). The GFI and AGFI improve to .86 and .80 respectively, suggesting a moderate fit. Only the Comparative fit index indicates a good fit for the Modified Model (CFI=.91). The parsimonious fit increases also, the PGFI to .64 and the PNFI to.66. The RMSEA is .07, with a 90% confidence interval between .05 and .09, which indicates a moderate fit. The probability value for the test of closeness is <.50 (p=.07). The RMR is .08, indicating a less good fit.

Table 7.2: Lisrel Standardized Scores for the Effects of team composition on trust for the Hypothesized and Modified Models

Paths	Hypothesized Model			Modified Model		
	Lisrel-SS	Errors (ε, ζ)	R^2	**Lisrel-SS**	**Errors (ε, ζ)**	**R^2**
Structural relationships(γ)						
$\gamma 1,1$	.32			.35		
$\gamma 2,1$	.38			.36		
$\gamma 3,1$	.24			.25		
$\gamma 4,1$	-.07			-.12		
Trust ($\eta 1$)		.48	.52		.44	.55
$\lambda 1$	.31	.89	.10	.31	.89	.10
$\lambda 2$	.91	.17	.83	.91	.17	.83
$\lambda 3$	.75	.43	.57	.75	.43	.57
$\lambda 4$	-.20	.95	.03	-.20	.95	.03
Pref. for working on a team ($\xi 1$)						
$\lambda 1,1$	.72	.47	.53	.76	.43	.52
$\lambda 2,1$	.84	.28	.72	.86	.26	.73
$\lambda 3,1$	.60	.63	.53	.54	.83(.26)Θ	.29
$\lambda 4,1$	.73	.46	.36	.41	.70(.26)Θ	.16
$\lambda 5,1$	.45	.79	.25			
Team choesion ($\xi 2$)						
$\lambda 6,1$	.77	.40	.61	.80	.37	.63
$\lambda 7,1$	.86	.26	.73	.89	.20	.80
$\lambda 8,1$	.77	.20	.59	.73	.46	.54
$\lambda 9,1$	.71	.43	.57			
$\lambda 10,1$	.57	.41	.32			
Job adequate skills ($\xi 3$)						
$\lambda 11,3$	.70	.51	.49	.70	.50	.49
$\lambda 12,3$	.81	.35	.65	.81	.34	.66
$\lambda 13,3$	.79	.37	.63	.79	.37	.63
$\lambda 14,4$	.61	.62	.37	.61	.63	.37
Tenure ($\xi 4$)						
$\lambda 17,4$	.97	.02	.99	.92	.16	.84
$\lambda 18,4$	.59	.64	.35	.65	.58	.42

$\chi^2 = 253.15$ (df=149; p=0.00)
GFI = .81; AGFI =.75
PGFI = .61; PNFI = .66
CFI = .88 RMR = .09
RMSEA =.08

$\chi^2 = 180.92$ (df=116; p=0.00)
GFI = .85; AGFI = .80
PGFI = .64; PNFI = .66
CFI = .91 RMR = .08
RMSEA =.07 (.05 ; .09) (*p*=.07)

Θ *Error correlation*

One slight improvement of the Modified model in relation to the Hypothesized Model, is the augment of explained variance of trust (see Table 7.2). From R^2=.52 in the Hypothesized model, the variance of trust explained in the Modified model raises to R^2=.55. Also the error variance of trust diminishes from ζ=.48, in the Hypothesized model, to ζ=.44 in the Modified model. Another improvement is the augment of the effect of preference for working in a team on trust. From $\gamma 1,1$=.32 in the hypothesized model, this effect increased to $\gamma 1,1$=.35 in the Modified model. For the effect job adequate skills on trust the Modified model reports a slightly improvement, i.e. from $\gamma 3,1$=.24 (hypothesized model) to $\gamma 3,1$=.25. Although the effect of team cohesion decreases in the
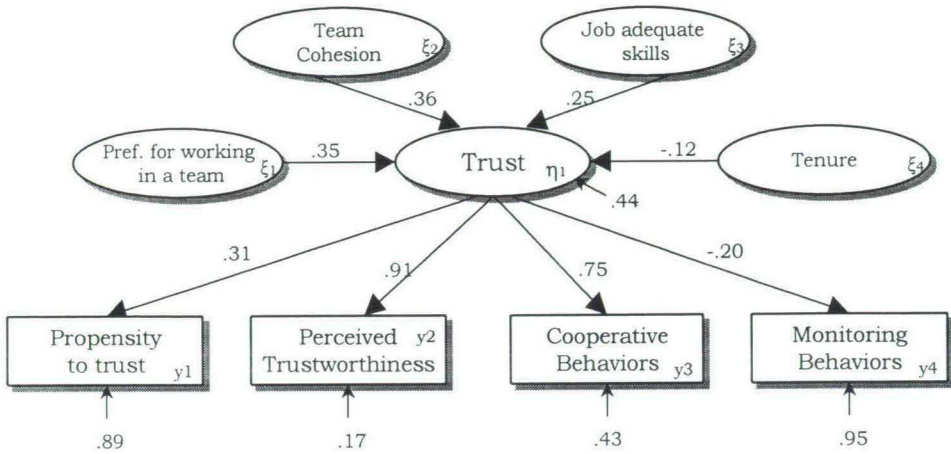
Figure 7.6: Modified model - Effects of team composition on trust - (n=112); χ^2=180.92 (df=116; p=0.00); GFI=.85; AGFI=.80; PGFI=.64; PNFI=.66; CFI=.91; RMR=.08; RMSEA=.07 (.05 ; .09) (p=.07).

Modified model, it remains the strongest effect on trust ($\gamma2,2$=.36) from the team composition variables.

Looking at our hypotheses, it appears that the results of both models support the expected positive effects of preference for working in a team, team cohesion, and job adequate skills on trust. Hypotheses 2a, 2b and 2c are therefore confirmed. Our results fail to support hypothesis 2e because the effect of tenure was negative. Observing the correlation matrix between latent variables (see Appendix C), we noted that tenure is negatively correlated with trust, preference of working in a team and job adequate skills (r=-.22, r=-.16 and r=-.23, respectively). With team cohesion, tenure obtained a zero correlation (r=.02). These correlations indicate, that individuals who work longer for their organization and perform the same function for a long time, not only have less trust in their teams but also prefer to work more on their own.

In order to explore further these results we conducted several correlations between organization- and job tenure with the four trust components and with affective and continuance commitments. The correlation matrix is displayed in Appendix C. The results show that organization and job tenure correlate positively with monitoring behaviors, r=.20 and r=.22 respectively (p<.05), and negatively with perceived trustworthiness, r=-.27 and r=-22 respectively (p<.001). These results explain the negative relationship between tenure and trust found in the models, indicating that the longer individuals worked at these organizations in the same function, the less they perceive their team members as being trustworthy, and the more they monitor the work of their team members. The correlations with propensity to trust and cooperative activities

were not statistically significant. The correlations with affective and continuance commitment indicate that tenure is somewhat related to less commitment to the organization. The correlations with affective commitment are r=-.04 for job tenure and r=-.12 for organization tenure, both not statistically significant. The correlations with continuance commitment, on the other hand, are significant, with r=.33 (p<.01) for job tenure and r=.45 (p<.01) for organization tenure. Accordingly, tenure cannot only be seen as indicator of low trust within teams, but also reflect an indication of less affective commitment and higher continuance commitment to the organization.

7.3. The effects of work characteristics on trust

With respect to the effects of the work characteristics on trust, functional dependence between team members is expected to have a positive effect on trust (hypothesis 3a) and task ambiguity is expected to have a negative effect on trust (hypothesis 3b). The results for the hypothesized model are presented in Figure 7.7.

With 89 degrees of freedom the χ^2 of the Hypothesized model is significant (χ^2=198.20; p=0.00). The GFI and AGFI are respectively .81 and .75, both indicating only a marginal fit. The parsimony indices are acceptable with PGFI=.61 and PNFI=.58. The CFI, though, reinforces the marginal fit of the Hypothesized model (CFI=.82). The RMSEA and the RMR are both above the limits considered acceptable for a good fit (RMSEA = .09 and RMR = .12). On these grounds, we consider the Hypothesized model to be only marginally acceptable.
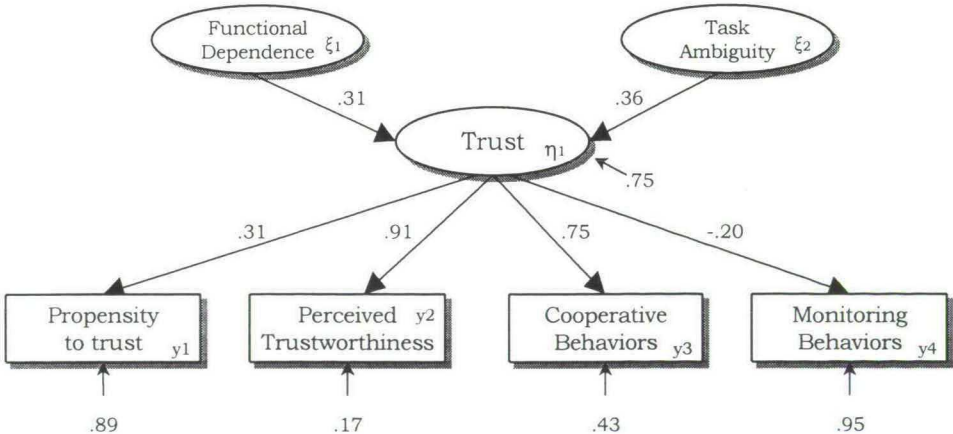
Figure 7.7: Hypothesized model - Effects of work characteristics on Trust - (n=112); χ^2=198.20 (df=89; p=0.00); GFI=.81; AGFI=.75; PGFI=.61; PNFI=.58; CFI=.82; RMR=.12; RMSEA=.09

Table 7.3: Lisrel standardized scores for the Effects of work characteristics on trust - Hypothesized and Modified models

Paths	Hypothesized Model			Modified Model		
	Lisrel-SS	Errors (ε, ζ)	R^2	**Lisrel-SS**	**Errors (ε, ζ)**	**R^2**
Structural relationships(γ)						
γ**1,1**	.31			**.33**		
γ**2,1**	.36			**.33**		
Trust ($\eta 1$)		.75	.25		**.76**	**.24**
λ1	.31	.91	.10	**.31**	**.91**	**.10**
λ2	.91	.17	.83	**.91**	**.17**	**.83**
λ3	.75	.43	.57	**.75**	**.43**	**.57**
λ4	-.20	.95	.04	**-.20**	**.95**	**.04**
Functional Dependence($\xi 1$)						
λ**20,1**	.59	.66	.34	**.59**	**.20**	**.35**
λ**21,1**	.66	.57	.43	**.65**	**.57**	**.42**
λ**22,1**	.75	.43	.57	**.76**	**.42**	**.57**
λ**23,1**	.65	.57	.42	**.68**	**.53**	**.47**
λ24,1	.54	.71	.29			
λ25,1	.16	.97	.03			
Task Ambiguity ($\xi 2$)						
λ**26,2**	.75	.45	.55	**.78**	**.39**	**.61**
λ**27,2**	.76	.42	.58	**.76**	**.41**	**.58**
λ**28,2**	.84	.29	.71	**.81**	**.34**	**.68**
λ29,2	.71	.51	.48			
λ30,2	.24	.94	.06			

χ^2 = 198.20 (df=89; p=0.00)
GFI = .81; AGFI = .75
PGFI = .61; PNFI = .58
CFI = .82 RMR = .12
RMSEA =.09

χ^2 = 73.28 (df=43; p=0.003)
GFI = .90; AGFI = .85
PGFI = .59; PNFI = .64
CFI = .92 RMR = .08
RMSEA =.07 (.05 ; .10) (*p*=.11)

Θ Error correlation

In order to improve the Hypothesized model, we introduced small modifications. The results for the Modified model are reported in Table 7.3 (bold print) and illustrated in Figure 7.8. The modifications exclude two items in each latent independent variables. The items x24 and x25 are excluded due to their extremely low relationship with their latent factor. Moreover, the unstandardized score of these items was not significant (t-value <1.96). The items x29 and x30 are excluded because of the highly significant residuals obtained (fitted residuals > 2.58) within their own latent construct. The items are described in Appendix A.

As shown in Figure 7.8, the χ^2 in the Modified model improves to 73.28 (df=43), however this value remains significant (p=0.003). The CFI reaches the acceptance level for a good fit (CFI=.92). The GFI is .90 indicating a good model fit, however the AGFI remains moderate (AGFI=.85). The parsimony goodness of fit index decreases slightly, from PGFI=.61 in the Hypothesized model to PGFI=.59 in the Modified model. The parsimony normed fit index improved considerably PNFI=.58 in the Hypothesized model to PNFI=.61 in the Modified

Model. The RMSEA indicates a moderate fit for the Modified model (RMSEA=.07), with a 90% interval between .05 and .10. However, the probability associated with the close fit was <.50 (p=.11). The RMR obtained is .08, indicating a reasonable fit. However, the percentage of trust explained decreased in the Modified model, from R^2=.25 in the Hypothesized model to R^2=.24 (see Table 7.3). The error variance of trust augments from ζ=.75 in the hypothesized model to ζ=.76 in the Modified Model.

In the Modified model the structural relationships remain positive. However, in the Hypothesized model task ambiguity had the strongest effect on trust ($\gamma2,1$=.36), and in the Modified model both functional dependence and task ambiguity have the same regression coefficients $\gamma1,1$ and $\gamma1,2$=.33. Functional dependence notes a small increase from the $\gamma1,1$=.31 in the Hypothesized model to γ=.33 in the Modified model.

In both models, the results confirm the positive effect of functional dependence on trust; therefore hypothesis 3a is confirmed. Contrary to the predictions, task ambiguity show to have a positive effect on trust. According to the correlation matrix obtained for the latent variables, both task ambiguity and functional dependence correlate positively with trust (r=.32 and r=.20, respectively) which is consistent with the direction of the relationships found in the models. This suggests that ambiguity of tasks is a condition to leads trust among members rather than a condition for opportunism and increase monitoring as often is proposed in the economic literature. Consequently, hypothesis 3b is not confirmed.
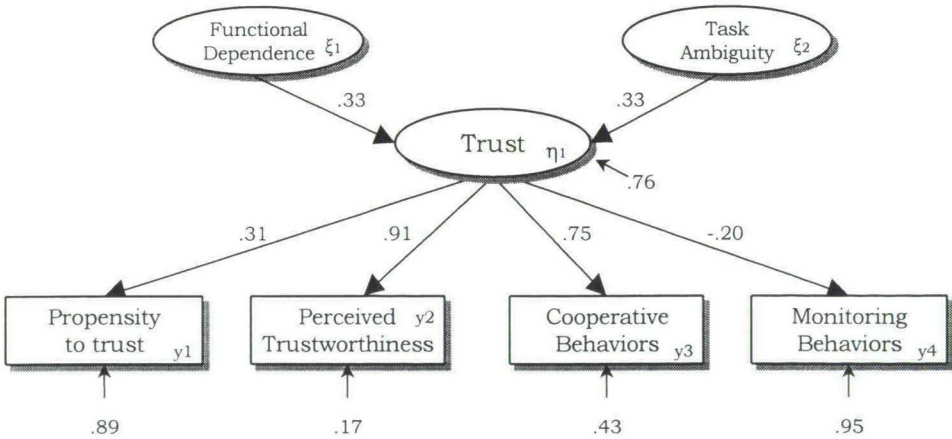
Figure 7.8: Modified model - Effects of work characteristics on Trust - (n=112); χ^2=73.28 (df=43; p=0.003); GFI=.90; AGFI=.85; PGFI=.59; PNFI=.64; CFI=.92; RMR=.08; RMSEA=.07 (.05 ; .10) (*p*=.11).

7.4   The effects of organizational context variables on trust

Organizational climate and members' overall influence are the two contextual variables hypothesized to have a positive effect on trust within teams (hypotheses 4a and 4b respectively). The results obtained for this model are described in Table 7.4 (single print), and illustrated in Figure 7.9.

The overall fit of the Hypothesized model is moderately adequate. The χ^2 is 132.71 (df=87; p=0.001). The GFI and AGFI are .87 and .83 respectively, both presenting a moderated fit. The parsimony fit is good, PGFI is .63 and for PNFI is .66. The CFI reaches the acceptance level (CFI=.92), indicating a good fit. The RMSEA suggests a reasonable fit (RMSEA=.08), for a 90% confidence interval between .04 to .09. However, the probability of closeness is .10, which is to small to be considered adequate. Finally, the RMR is .07, confirming the moderate fit of the Hypothesized model.

Based on the modification indices, two error correlations were introduced in order to provide a better fit to our data. One error correlation occurred between two items of the latent independent variable organizational climate (item x37 and x41). To add this correlation made sense, because item x37 indicates how supervisors deal with their subordinates, and item x38 indicates how tense the contacts with the supervisors are (see Appendix A for a complete description of these items). The second error correlation was added between item x46 and x47, both indicators of the latent independent variable members' overall influence. This error correlation also made sense, since item x46 refers to the influence of team members on their promotion, and item x47 refers to the members influence on their rewards (see Appendix A).
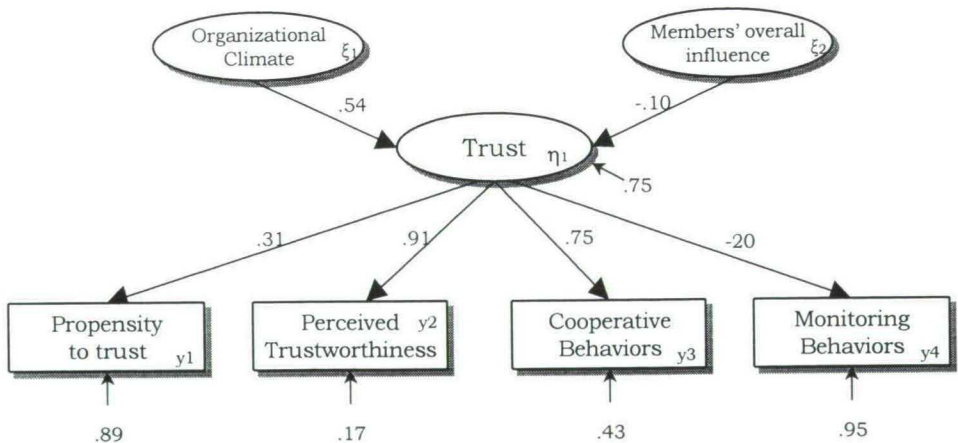
Figure 7.9: Hypothesized model - Effects of organizational context on trust - (n=112); χ^2=132.71 (df=87; p=0.001); GFI=.87; AGFI=.83; PGFI=.63; PNFI=.66; CFI=.92; RMR=.07; RMSEA =.07 (.04 ; .09) (*p*=.10).

Table 7.4: Lisrel estimates for the organizational context effects on trust

Paths	Hypothesized Model			Modified Model		
	Lisrel-SS	Errors (ε, ζ)	R^2	Lisrel-SS	Errors (ε, ζ)	R^2
Structural relationships(γ)						
$\gamma 1,1$	.54			.54		
$\gamma 2,1$	-.10			-.10		
Trust ($\eta 1$)		.75	.25		.75	.25
$\lambda 1$	.31	.89	.10	.31	.91	.10
$\lambda 2$	.91	.17	.83	.91	.17	.83
$\lambda 3$	.75	.43	.57	.75	.43	.57
$\lambda 4$	-.20	.95	.04	-.20	.95	.04
Organizational Climate ($\xi 1$)						
$\lambda 37,1$	.64	.59	.40	.59	.65(.23)Θ	.35
$\lambda 38,1$	.62	.62	.39	.63	.60	.40
$\lambda 39,1$	.65	.58	.42	.65	.57	.43
$\lambda 40,1$	.56	.68	.32	.57	.67	.33
$\lambda 41,1$	.58	.66	.34	.53	.72(.23)Θ	.28
$\lambda 42,1$	.66	.57	.43	.67	.55	.45
$\lambda 43,1$	.69	.52	.49	.70	.52	.48
Members' overall influence ($\xi 2$)						
$\lambda 44,2$	.67	.55	.45	.76	.43	.57
$\lambda 45,2$	.75	.44	.56	.84	.29	.71
$\lambda 46,2$	.84	.30	.70	.69	.53(.28)Θ	.47
$\lambda 47,2$	.82	.32	.68	.68	.54(.28)Θ	.46

. . . .

χ^2 = 132.71 (df=87; p=0.001)　　　　　　χ^2 **= 103.07 (df=85; p=0.09)**
GFI = .87; AGFI =.83　　　　　　　　　　**GFI = .90; AGFI = .86**
PGFI = .63; PNFI = .66　　　　　　　　　**PGFI = .64; PNFI = .68**
CFI = .92 RMR = .07　　　　　　　　　　**CFI = .97 RMR = .05**
RMSEA =.07(.04 ; .09) (*p*=.10)　　　　　**RMSEA =.04 (.00 ; .07) (*p*=.62)**

Θ *Error correlation*

   The results for the Modified model are reported in Table 7.4 (bold print) and illustrated in Figure 7.10. As shown, the overall fit for the Modified Model is adequate. The χ^2 is not significant (p=.09) and is equal to 103.07 with 85 degrees of freedom (df=85). The GFI is .90, showing a good fit of the model to the data. The AGFI, though, remains under the limits considered adequate for a good fit (AGFI=.86). The PGFI and PNFI are .64 and .68 respectively, which in combination of a non-significant χ^2 represent an adequate fit to the data (Byrne, 1998). The CFI is .97, indicating that the Modified Model has an adequate fit. The RMR indicates a mean square residual equal to .05, also pointing at a good model fit. Finally, and consistent with the previous indices, RMSEA is equal to .04, with a 90% confidence interval between .00 and .07, and a probability of closeness is .62.

   In the modified Model, no changes were found in the structural equations. The effect of organizational climate on trust is positive and equal to $\gamma 1,1$=.54 in both models, while the effect of members' overall influence remains negative and equal to $\gamma 2,1$=-.10. Also the percentage of trust explained and the error variance of trust remain equal to R^2=.25 and ζ=.75 respectively.
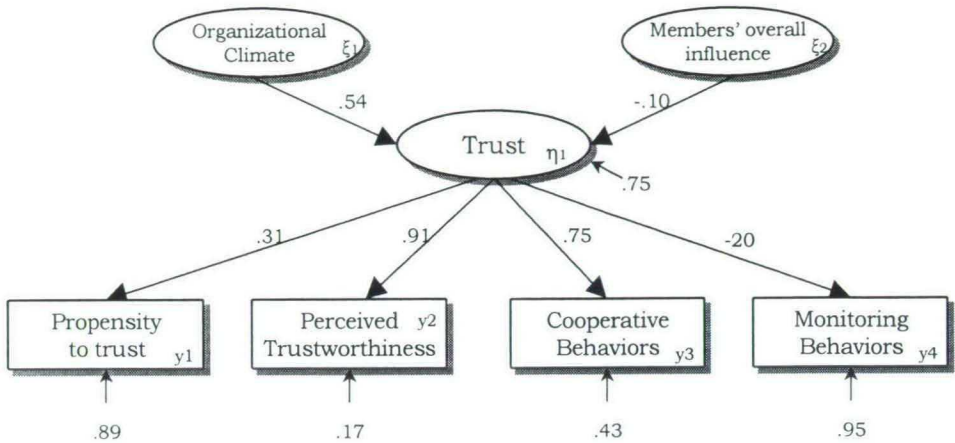
Figure 7.10: Modified model - Effects of organizational context on trust - (n=112); χ^2=103.07 (df=85; p=0.09); GFI=.90; AGFI=.86; PGFI=.64; PNFI=.68; CFI=.97; RMR=.05; RMSEA =.04 (.00 ; .07) (p=.62).

Considering our hypotheses, the results confirm the positive effect of organizational climate on trust presented in hypothesis 4a. However, they disconfirm hypothesis 4b on members' overall influence, since the structural regressions were negative. A more detailed analysis of this result, shows that the non-standardized scores for the effect between members' overall influence and trust indicates a non-significant regression equation (t-value <1.96). This could indicate that trust within teams is influenced mainly by organizational climate, rather then by low members' overall influence. Yet, from the correlation matrix of the latent variables included in these models, we learn that the correlation between member's overall influence with trust is positive (r=.18). This suggests the possibility of a suppressor effect, of the variable organizational climate, since the correlation with members' overall influence is very high (r=.58). On the other hand, the correlation between organizational climate and trust is r=.48, which confirms the direction of the relationship with trust, found in both models.

7.5   Discussion

With respect to the nature of trust, our results support the notion that trust is a multi-component construct. In section 7.1, we were able to obtain a second-order Modified model with a relative acceptable fit, which distinguished between the components propensity to trust, perceived trustworthiness, cooperative behaviors and monitoring behaviors. Yet, the hypothesis 1b testing the second-order structure was not confirmed, since it was necessary to introduce a constraint on the error variance of the factor perceived trustworthiness. In

samples with n<150, the risk that one factor becomes dominant, and alone is able to explain more of the second-order factor than the model can account for, is very high (Byrne, 1998). In order to simplify the structure and be able to examine trust in the other models we constructed a first-order model structure for trust, using the four trust components as observed variables. This simpler model obtained a good fit without the use of any attenuations or constraints. It confirmed the multi-component nature of trust and also the expected direction of the path relationships between the components and trust. Again the percentage of the total variance of trust explained by each component varied significantly between the components. The structure obtained with the first-order factor was maintained in the other models so, that comparisons between the effects of several factors could be made. Because of the limitations in the program LISREL 8.02, the path-relationship between monitoring activities and trust could not be fixed to its negative value. Instead it had to be introduced as a starting value. Yet, no significant variations in the weight of this path relationship occurred across the subsequent models. In general, our results suggest that individuals who trust their teams, have high propensity to trust others, strongly perceive team members as being trustworthy, often engage cooperative behaviors and do not monitor the work of their colleagues.

As in other studies (e.g. Smith & Barclay, 1997; Curral & Jeudge, 1995), several trust dimensions were identified, which suggests that trust is a complex variable with a number of component parts. Although our components cannot be directly compared with those found in other studies, our results support the distinction between propensity, trustworthiness and behaviors of trust often proposed in the literature as dimensions of the trust construct (e.g. Mayer, et al, 1995). Perceived trustworthiness was the component that explained more variance of trust, which provides support for the dominant conceptualization of trust as "trustworthiness" in the literature. From the behavior components, cooperative activities was the second variable to explain most variance of trust. Particularly, this results supports the incorporation of behaviors in models of trust. Monitoring activities explained the least variance of trust. However, the negative direction of the relationship was constant in all models. Propensity to trust explained only a small percentage of the total variance of trust.

Together monitoring behaviors and propensity to trust explain less than 15% of the total variance of trust with teams. However, we consider that both components still should be viewed as important aspects of trust. In the first place, since we were dealing with teams where individuals know each other already for some years, trust between members may be more based on attributions of trustworthiness made to one another than on general expectancies. As suggested by Bigley & Pearce (1998), different components may be more important in some contexts than others, depending on the degree of familiarity between individuals and the degree of dependence. Furthermore, the results of Confirmatory analysis described in chapter 6 favored a four-factor model structure for trust in comparison with one, two and three factor structures.

With regard to the factors affecting trust within teams, our results are consistent with the notion that trust is not only based on personal information but is also contingent on a certain context (e.g. Morris & Moberg, 1994). The results in sections 7.2 through 7.4, demonstrate that trust within teams is influenced by several factors, either related to the composition of teams, work characteristics or organization context. However, the relative importance of such factors for trust within teams varies considerably.

In the models examining the effects of team composition on trust, the total variance of trust explained was 52% for the Hypothesized model and 55% for the Modified model. Both models explained the highest percentage of trust compared to the other models examining the effects work characteristics and organizational context. For the effects of work characteristics the variance of trust explained was 25% for Hypothesized model and 24% for Modified model. For the effects of organizational context the variance of trust explained was 25% at both Hypothesized and Modified models. These results indicate that factors such team cohesion, preference for working in a team, and job adequate skills, are mainly responsible for the existence of trust between team members. Again these findings can be explained by the fact that we are dealing with work teams, consisting of individuals that are familiar with one another. Such individuals develop bonds, share experiences etc., upon which knowledge and expectations are developed, and attributions can be made (Lewicki & Bunker, 1996). As our results also demonstrate, factors such as organizational climate, functional dependence and task ambiguity also have a strong impact on trust. This is consistent with Zand (1972) who argues that trust is a "conscious regulation", and that the dependence on one another that can vary with the task and situation. Furthermore, it supports the point of view of trust being a concept that integrates microlevel psychological processes and group dynamics with macro level institutional arrangements (Rousseau et al. 1988). At the same time, our results validate the contingency approach to group behaviors in organizations (e.g. Hackman, 1987; Gladestein, 1984, etc).

Focusing on the results that contradicted our initial hypotheses, the most theoretically relevant is the positive effect found for task ambiguity on trust. Task ambiguity was expected to have a negative effect on trust, since in situations of ambiguity the members' vulnerability increases and risk for opportunism is high (Williamson, 1975). Our results disconfirm this transaction-costs proposition, and suggest on the contrary that ambiguous conditions leads to trust. This is consistent with the importance of risk as a condition to trust. As suggested by Rousseau et al (1998), risk creates the opportunity for risk taking. In Morris & Moberg (1994) argument task ambiguity increases the importance technical competence and responsibility as conditions to trust. Among the team composition effects, job adequate skills was found to be positively related to trust. If task ambiguity is able to increase the vulnerability of team members towards each other, in some contexts this vulnerability might create an opportunity for trust instead of opportunism. Further studies are necessary in order to arrive at consistent conclusions in relation to this matters.

Two other contradictory results found in our results are the negative and low effects of tenure and members' overall influence on trust. Tenure was expected to have a positive effect on trust, since it is expected that the longer individuals are a part of the team and the organization, the more they know each other, and the more they are involved with the team and the organization (Mowday et al, 1982). In the particular case of these teams, as more detailed results confirmed, tenure is also related to high continuance commitment to the organization. Roberts & Hunt (1991) argue that tenure in combination with age, may be associated with less alternatives of employment or fear to leave the organization. Earlier in chapter 6 we found a positive relation between cooperative behaviors and continuance commitment at Social Care-Zaandam. At Social Care-Purmerend this relation was negative but not significant. Given the fact that in both organizations the age average of the respondents was above 40, it may be indicative of a more calculative relation with the organization. On the other hand, in contexts of change tenure might operate as a negative factor in particular when there is knowledge and involvement with an organization and the individual expectations are not met (Shapiro, at al. 1995). Since the teams in both Social Care organizations were going through a reorganization process and the teams at Ribw-Twente had recently finished a similar process, feelings such as low affective commitment and high continuance commitment can account for the negative and low effect of tenure on trust.

The negative effect of members' overall influence on trust, is explained by organizational climate which operates as a suppressor of this relationship. The term suppression indicates that the relationship between independent variables is hiding or suppressing the real value of the relationship with the dependent variable (Cohen & Cohen, 1983). As we confirmed with analysis of the correlation matrix between latent constructs, members' overall influence and organizational climate are positively related with trust. On the other hand, the relation between members' overall influence and organizational climate is extremely strong. Because the relation between members' overall influence and trust is neither significant nor strong, organizational climate functions as a suppressor.

Chapter 8

Effects on team performance, effectiveness, and the total integrated model

Another aim of this study is to examine the effects of trust on the performance and effectiveness of teams. Figure 8.1. illustrates which sections in this chapter deal with different aspects of this question. In section 8.1, we examine the effects of trust on team performance while testing hypotheses 5a, 5b, and 5c. The effects of trust on team effectiveness are tested in section 8.2 (hypotheses 6a, 6b, 6c). In section 8.3. we discuss the effects of trust on general effectiveness criteria, such as general satisfaction and commitment to the organization (hypotheses 7a, 7b, 7c). As in the previous chapter, trust is assessed with one first-order factor and four trust components are fixed manifested variables. In addition, we examine the integrated model in section 8.4. This chapter ends with the discussion of the results.
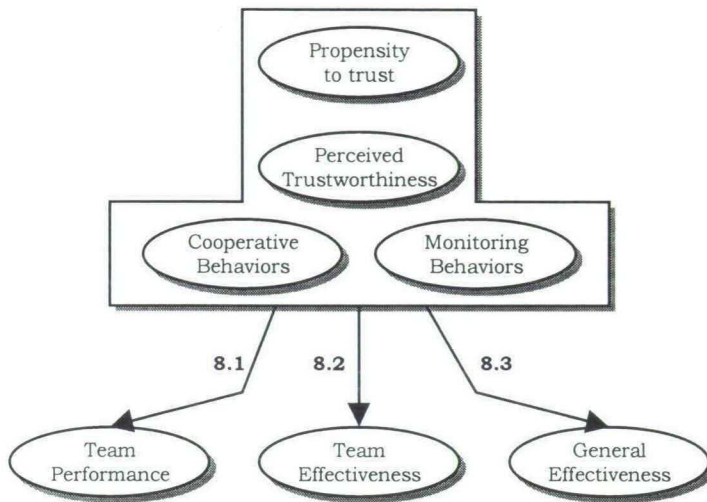
Figure 8.1: Aspects of the model examined with respect to the effects of trust

8.1   Effects of trust on team performance

Two types of team performance were considered, i.e. (a) the performance of tasks within teams (task performance), and (b) the performance that is expected by other teams (role performance). According to hypotheses 5a and 5b, trust is expected to have a positive influence on both task and role performance. The existence of common method variance in the measurements of these two scales is also tested. Hypothesis 5c proposes that the measurement errors of task performance and role performance correlate. Table 8.1 reports the standardized scores for the Hypothesized model, with and without the error correlation between task and role performance.

First we focus on the results for the Hypothesized model without any error attenuation or constraints (see Table 8.1 - single print). As shown, the overall model fit is poor and inadequate to fit our data. The χ^2 is 162.59, with 94 degrees of freedom and p=0.00. The Goodness of fit indices are GFI=.85 and AGFI=.81, both under the limits considered adequate for a good model fit. The parsimonious fit indices show considerable adequacy given the complexity of the model, PGFI is .67 and PNFI is .63. The comparative fit is <.90 (CFI=.84), which is consistent with the inadequacy of this model to the data. Further, the RMSEA is .08 and the RMR is .14, both far above >.05, the limits considered for a good model fit.

As expected, an analysis of the fitted residuals and the modifications indices suggest to add an error correlation between task and role performance to the Hypothesized model. In Table 8.1 (bold printed) also contains the standardized scores and fit obtained for the Hypothesized model with the error correlation between task performance and role performance.

Table 8.1: Lisrel-Standardized Scores for the Effects of Trust on Team Performance (Hypothesized Model)

Paths	Hypothesized Model			Hypothesized Model- ψ		
	Lisrel-SS	Errors (ε, ζ)	R²	**Lisrel-SS**	**Errors (ε, ζ)**	**R²**
Structural Relationships (γ)						
γ1,1	.33			.32		
γ2,1	.25			.17		
Trust (ξ1)						
λ1	.31	.89	.10	.31	.89	.10
λ2	.91	.17	.83	.91	.17	.83
λ3	.75	.43	.57	.75	.43	.57
λ4	-.20	.95	.04	-.20	.95	.04
Task performance (η1)		.88	.11		.89(.66)ψ	.10
λ30,1	.69	.53	.47	.69	.53	.47
λ31,1	.67	.55	.45	.68	.54	.46
λ32,1	.87	.25	.75	.86	.26	.75
λ33,1	.63	.61	.39	.63	.60	.40
λ34,1	.65	.58	.42	.65	.57	.42
λ35,1	.42	.82	.17	.41	.83	.16
Role Performance (η2)		.94	.06		.96(.66)ψ	.03
λ38,2	.38	.85	.15	.49	.76	.24
λ39,2	.57	.68	.32	.61	.63	.37
λ40,2	.71	.50	.50	.63	.60	.40
λ41,2	.67	.55	.45	.61	.62	.38
λ42,2	.36	.87	.13	.42	.82	.18

χ² = 162.59 (df=94; p=0.00)
GFI = .85; AGFI = .81
PGFI = .67; PNFI = .63
CFI=.84; RMR=.14
RMSEA =.08

χ² = 125.14 (df=93; p=0.01)
GFI = .87; AGFI = .84
PGFI = .68; PNFI = .68
CFI = .93 RMR = .08
RMSEA =.06 (.02 ; .08) (*p*=.33)

ψ error correlation between variables η1 and η2

The introduction of the error correlation (ψ) between task and role performance improves the overall fit of the Hypothesized in several respects. The χ² decreases to 125.14 (df=93, p=0.01). Both GFI and AGFI augment respectively to .87 and .84, although they remain under the acceptance limits for a good model fit. The CFI reaches the acceptance level (CFI=.93). The parsimony fit also improved to .68 for both PGFI and PNFI. The RMSEA decreases to .06, showing a 90% confidence interval between .04 and .09, and a probability of closeness equal to .18. Finally, the RMR decreases considerably, from RMR=.12 to RMR=.08. However, such value still indicates that a considerable amount of residual that is unexplainable within the model. Therefore we consider the Hypothesized model - ψ only to fit the data moderately.

For the error correlation between task and role performance, the standardized score obtained is ψ2,1=.60. This correlation is substantial and suggests the existence of common method variance between the measurements of performance in the two scales. A consequence of this correlation is the decrease in R² for both task and role performance in the model. The squared multiple correlation for task performance decreases only slightly from
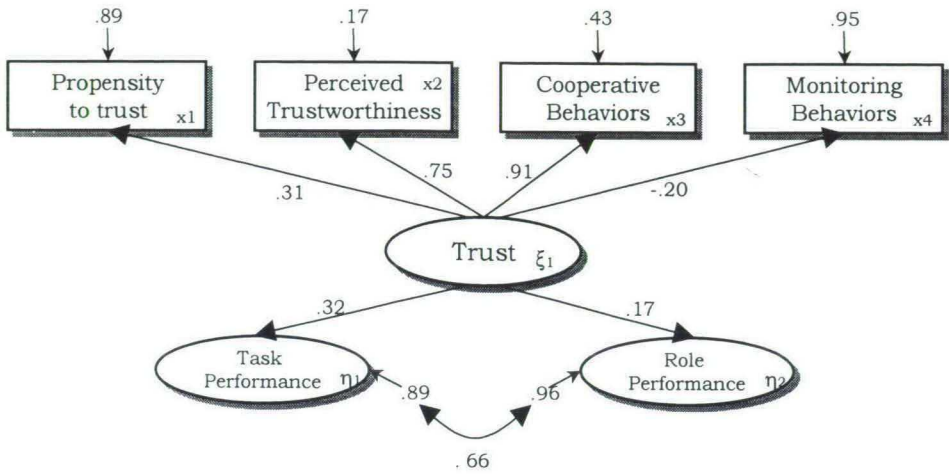
Figure 8.2: Hypothesized model ψ - Effects of Trust on Team Performance - (n=112); χ^2=125.14 (df=93; p=0.01); GFI=.87; AGFI=.84; PGFI=.68; PNFI=.68; CFI=.93; RMR=.08; RMSEA=.06 (.02; .08) (*p*=.33).

R^2=.11 to R^2=.10. For role performance the decrease is from R^2=.06 to R^2=.03. The structural equations also decrease, although the effect of trust on both performance measures remain positive and in the direction proposed by our hypotheses. The effect of trust on task performance diminishes from $\gamma 1,1$=.33 to $\gamma 1,1$=.32 (Modified model), and the effect on role performance also decreases from $\gamma 2,1$=.25 to $\gamma 2,1$=.17 in the Modified model. This suggests that perceptions of how well a team performs according to what is expected by the other teams (role performance), is more affected by perceptions of how well the team performs tasks (task performance) than by trust.

Although the error correlation improved the Hypothesized model, additional modifications are introduced in order to improve the model fit. These modifications exclude the items y35 and y42 which had significant fitted residuals. Furthermore, the modifications indices suggested to add a path between these items and the other latent dependent variable. An analysis of squared multiple correlations also indicates that the items y35 and y42 have a low reliability to their latent factors, $R^2$35=.17 and $R^2$42=.13 respectively (see Table 8.1).

The results for the Modified model with the error correlation (ψ) between task performance and role performance are printed bold in Table 8.2. As shown the overall fit of the model is adequate. χ^2 is non-significant (p=.42) and equal to 69.65, with 68 degrees of freedom. The GFI is .92, which indicates a good fit to the data. The AGFI, though, remains under the limit considered adequate for a good model fit (AGFI=.89). Consistent with the indication of a good model fit the CFI is .99. The RMSEA is .03, with a 90% confidence interval between 0.0 and

Table 8.2: Lisrel-Standardized Scores for the Effects of Trust on Team Performance (Modified Model)

Paths	Modified Model Lisrel-SS	Errors (ε, ζ)	R²	Modified Model- ψ Lisrel-SS	Errors (ε, ζ)	R²
Structural Relationships (γ)						
γ1,1	.36			.32		
γ2,1	.31			.23		
Trust (ξ1)						
λ1	.31	.89	.10	.31	.89	.10
λ2	.91	.17	.83	.91	.17	.83
λ3	.75	.43	.57	.75	.43	.57
λ4	-.20	.95	.04	-.20	.95	.04
Task performance (η1)		.87	.11		.89(.65)ψ	.10
λ30,1	.69	.53	.47	.69	.53	.47
λ31,1	.68	.54	.46	.68	.54	.46
λ32,1	.86	.26	.74	.86	.26	.74
λ33,1	.64	.60	.40	.64	.59	.41
λ34,1	.64	.58	.42	.65	.58	.42
λ35,1						
Role Performance (η2)		.91	.09		.94(.65)ψ	.05
λ38,2	.35	.88	.12	.46	.79	.21
λ39,2	.55	.70	.30	.60	.64	.36
λ40,2	.73	.46	.54	.66	.57	.43
λ41,2	.66	.57	.43	.62	.62	.39
λ42,2						

χ² = 103.75 (df=69; p=0.004)
GFI = .89; AGFI = .86
PGFI = .68; PNFI = .68
CFI=.91; RMR=.14
RMSEA =.07 (.04 ; .09) (p=.14)

χ² = 69.65 (df=68; p=0.42)
GFI = .92; AGFI = .89
PGFI = .69; PNFI = .74
CFI = .99; RMR = .07
RMSEA =.02 (.00 ; .07) (p=.89)

ψ *error correlation between variables* η

.06, and a probability of closeness equal to .75. Although the model is adequate, the RMR is still >.05 (RMR=.07). This suggests that there is still a considerable amount of residual variance left by the model. In order to justify the error correlation between task and role performance, we ran one analysis excluding this attenuation in the Modified model. These results are exposed in Table 8.2 - single print.

As expected the Modified model without the error correlation model did not fit the data so well. The χ² is significant for p=.004 (χ²=103.75; df=69). Except for the Comparative fit (CFI=.91), all the other indices indicate values under the limits considered for a good model fit. GFI and AGFI are moderate, .89 and .86 respectively. The parsimony fit also decreased to PGFI and PNFI equal to .68. The RMSEA is .07, with an acceptable 90% confidence interval between .04 and .09. However, the probability of closeness is significatively lower than .50 (p=.12). Most important, is that the the RMR increases to .11, an extremely high value to consider this model adequate. Therefore, we considered the error correlation between task performance and role performance to be essential to explain the effects of trust on team performance.
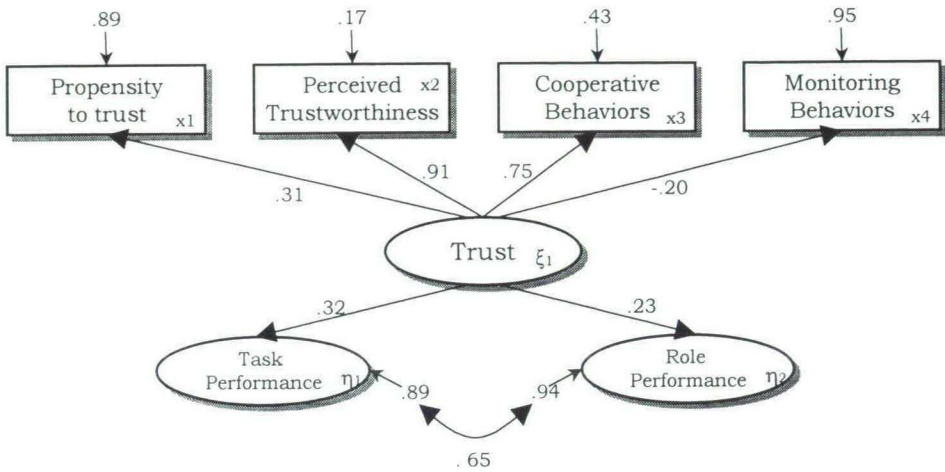
Figure 8.3: Modified model ψ - Effects of Trust on Team Performance - (n=112); χ^2=69.65 (df=68; p=0.42); GFI=.92; AGFI=.89; PGFI=.69; PNFI=.74; CFI=.99; RMR=.07; RMSEA=.02 (.00; .07) (p=.89).

Although the error correlation decreases in the Modified Model to $\psi 2,1$=.65, this value is still substantial which confirms the existence of common method variance in the measurements of team performance. Hypothesis 5c is thus confirmed.

With respect to the hypotheses 5a and 5b, the results of the Modified Model ψ, confirm the positive effect of trust on task and role performance (see Figure 8.3). The strength of the effects for task performance is equal to $\gamma 1,1$=.32, and for role performance equal to $\gamma 2,1$=.23. The squared multiple correlations obtained indicate that trust explains 10% of the total variance of task performance and 5% of the total variance of role performance. This confirms the importance of trust for the performance of teams.

8.2   Effects of trust on team effectiveness variables

The effectiveness of teams is assessed according to three different criteria: relationship commitment, team satisfaction and stress. According to hypotheses 6a and 6b, trust within teams is expected to have a positive effect on both team satisfaction and relationship commitment. Hypothesis 6c suggests a negative effect between trust within teams and the stress felt by the team members. The results for the hypothesized model are illustrated in Figure 8.4 and in more detail reported in Table 8.4. - single print.

The χ^2 for the hypothesized model is equal to is 490.47, with 233 degrees of freedom and p=0.00. This suggests that the hypothesized model is inadequate to fit our data. The GFI and AGFI are respectively .72 and .67, both considerably
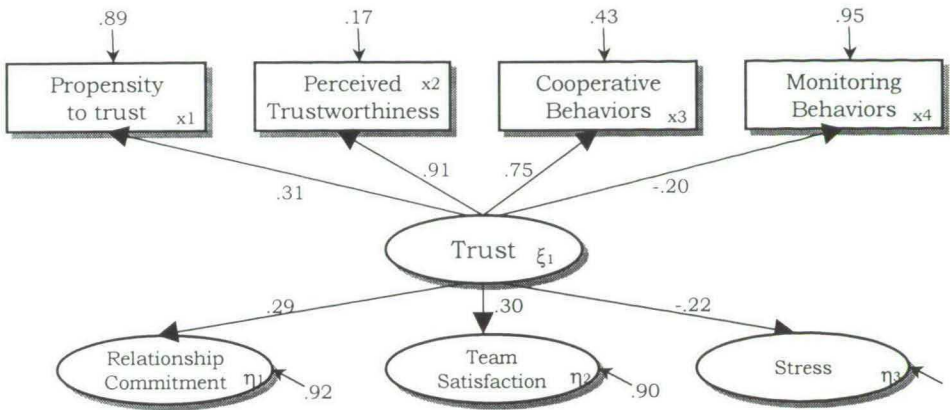
Figure 8.4: Hypothesized model - Effects of trust on team effectiveness - (n=112); χ^2=490.47 (df=233; p=0.00); GFI=.72; AGFI=.67; PGFI=.60; PNFI=.55; CFI=.74; RMR=.13; RMSEA=.10.

lower than the limits considered adequate for a good model fit. The parsimony fit indices are PGFI=.60 and PNFI=.55, both suggesting a good fit. However, the CFI is equal to .72, which confirms a poor model fit. Finally, the RMR is equal to .12 and RMSEA .10, both pointing at the inadequacy of the Hypothesized Model to the data.

A preliminary analysis of the effects of trust in the hypothesized model shows that all structural regressions are in the proposed direction of our hypotheses. The effects of trust on team satisfaction and relationship commitment are nearly equal. The effect of trust on relationships commitment is $\gamma 1,1=$ .29 and the effect of trust on team satisfaction is $\gamma 2,1$=.30. The effect of trust on stress has a negative weight ($\gamma 1,3$=-.22).

Several modifications were introduced into the hypothesized model in order to obtain a better fit for our data. These modifications exclude the items y52 and y53 from relationship commitment, item y58 from team satisfaction, and the items y62, y63 and y64 from stress. The exclusion of these items is based an analysis of the fitted residuals and the modification indices. Items excluded for which the fitted residuals were significantly high (fitted residuals >2.58) and a path to another factors or an error correlation with items from these factors was suggested by the LISREL. The exclusion of the items y52 and y53, is based on the low reliability suggested by the squared multiple correlations ($R^2$52=.07 and $R^2$53=.02) and the non-significant unstandardized value initially obtained.

As shown in Table 8.4 and illustrated by Figure 5.5, the overall fit improves considerably. The χ^2 for the Modified model is 172.81, with 115 degrees of freedom, although, this value remains significant with p=0.01. The Goodness of fit indices remain <.90, with GFI reaching .89. The parsimonious fit improve considerably from PGFI=.59 to PGFI=.66 in the Modified model, and from

Table 8.3: Lisrel Standardized Scores for the Effects of Trust on Team Effectiveness Criteria

Paths	Hypothesized Model			Modified Model		
	Lisrel-SS	Errors (ε, ζ)	R^2	Lisrel-SS	Errors (ε, ζ)	R^2
Structural relationships (γ)						
$\gamma 1,1$	.29			.27		
$\gamma 2,1$	.30			.30		
$\gamma 3,1$	-.22			-.30		
Trust ($\xi 1$)						
$\lambda 1$	.31	.89	.10	.31	.89	.10
$\lambda 2$	.91	.17	.83	.91	.17	.83
$\lambda 3$	.75	.43	.57	.75	.43	.57
$\lambda 4$	-.20	.95	.04	-.20	.95	.04
Relationship Commitment ($\eta 1$)		.92	.09		.93	.07
$\lambda 46,1$	.40	.84	.16	.38	.85	.15
$\lambda 47,1$	.71	.48	.51	.71	.49	.51
$\lambda 48,1$	.87	.25	.76	.89	.22	.78
$\lambda 49,1$	.73	.47	.53	.74	.46	.54
$\lambda 50,1$	.53	.72	.27	.52	.73	.27
$\lambda 51,1$	.78	.39	.60	.77	.41	.60
$\lambda 52,1$	.15	.95	.07			
$\lambda 53,1$	.26	.93	.02			
Team Satisfaction ($\eta 2$)		.90	.10		.90	.10
$\lambda 54,2$	.66	.55	.44	.65	.57	.42
$\lambda 55,2$	.83	.31	.69	.84	.29	.71
$\lambda 56,2$	.86	.26	.74	.88	.23	.77
$\lambda 57,2$	.68	.55	.46	.64	.59	.41
$\lambda 58,2$	.70	.51	.74			
Stress ($\eta 3$)		.95	.06		.91	.09
$\lambda 59,3$	.78	.39	.61	.81	.35	.65
$\lambda 60,3$	.68	.45	.54	.66	.57	.43
$\lambda 61,3$	.65	.57	.44	.69	.52	.48
$\lambda 62,3$	.53	.68	.32			
$\lambda 63,3$	.33	.89	.12			
$\lambda 64,3$	.44	.80	.20			

χ^2 = 490.47(df=233; p=0.00)
GFI =.72; AGFI =.67
PGFI =.60; PNFI =.55
CFI =.74; RMR =.13
RMSEA =.10

χ^2 = 172.18 (df=122; p=0.01)
GFI = .89; AGFI =.84
PGFI = .66; PNFI =.68
CFI = .93; RMR =.08
RMSEA =.05 (.02 ; .08) (p=.32)

PNFI=.55 to PNFI=.68 in the Modified model. The CFI increases to .93, indicating that the model fits the data adequately. The RMR equals .08, indicating a less good model fit. The RMSEA supports the good fit of the model RMSEA=.05, with a 90% confidence interval between .02 and .08. The probability test of closeness is .32.

The structural equations in the Modified model did not suffer major changes, and thus, hypotheses 6a, 6b and 6c are confirmed. The effect of trust on team satisfaction remains the same $\gamma 1,2$=.30. The total variance of team satisfaction explained by trust is R^2=.10. With respect to the effect of trust on relationship
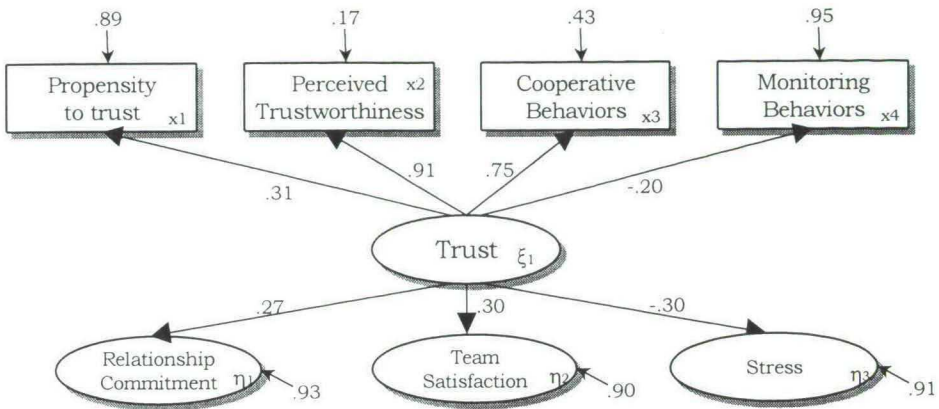
Figure 8.5: Modified model - Effects of trust on team effectiveness - (n=112); χ^2=172.18 (df=122; p=0.01); GFI=.89; AGFI=.84; PGFI=.66; PNFI=.68; CFI=.93; RMR=.08; RMSEA=.05 (.02 ; .08) (*p*=.32).

commitment, we note a slight decrease in the Modified model, i.e. from $\gamma1,1$=.29 (Hypothesized model) to $\gamma2,1$=.27 (Modified model). On the other hand, the effect of trust on stress increases from $\gamma3,1$=-.22 to $\gamma3,1$=-.30 in the Modified model. The total variance of stress explained by trust also increases, to R^2=.09 (see Table 8.4). Yet, the measurement errors associated with the dependent variables in both models are above >.90. Consequently, the variance explained by trust is inferior to 10% for each dependent variable, which is less than the variance of task performance explained trust.

8.3   Effects of trust on general effectiveness variables

The criterion variables used to assess general effectiveness are: general satisfaction, affective and continuance commitment. Trust is expected to have a positive effect on general satisfaction and affective commitment (hypotheses 7a and 7b), and to have a negative effect on continuance commitment (hypothesis 7c). The effects of trust on general effectiveness according to the Hypothesized model are presented in the Figure 8.6. Table 8.5 - single print - reports more detailed results for this model.

The overall fit obtained for the Hypothesized model is rather poor. With 173 degrees of freedom, the χ^2 is equal to 320.94, and p=0.00. The Goodness of fit amounts to GFI=.80, and AGFI=.75. Both indices display values <.90, which supports the inadequacy of the Hypothesized model. The parsimony fit shows PGFI=.65 and PNFI=.62, both reasonable values given the complexity of the model. However, the CFI is .80, which is too small to consider the model adequate. Furthermore, the RMR and the RMSEA confirm the inadequacy of this model by showing values >.05 (RMR=.12 and RMSEA=.09).
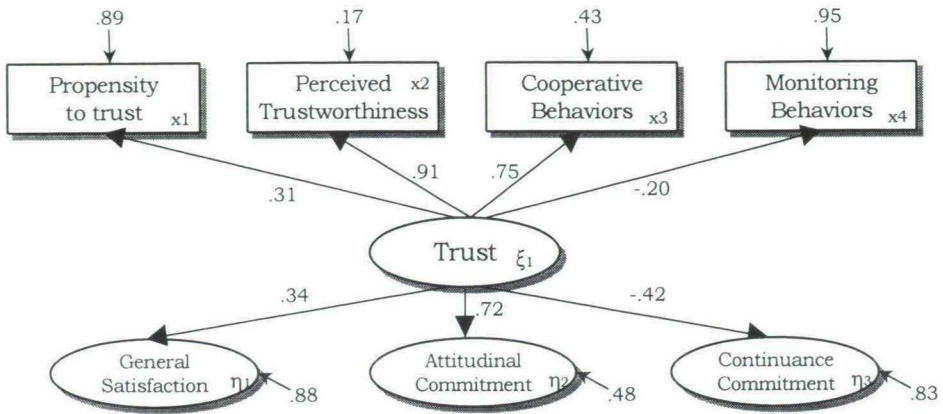
Figure 8.6: Hypothesized model - Effects of trust on general effectiveness criteria - (n=112); χ^2=320.94 (df=173; p=0.00); GFI=.80; AGFI=.75; CFI=.82; PGFI=.65; PNFI=.62; RMR=.12; RMSEA=.09.

A preliminary analysis of the structural equations show that all regression coefficients in the Hypothesized model are in the expected direction. The strongest effect of trust reported is on affective commitment ($\gamma 2,1$=.72). General satisfaction is also positively affected by trust, although this effect is considerably lower ($\gamma 1,1$=.34) Continuance commitment, as expected, is negatively influenced by trust ($\gamma 3,1$=-.42).

Given the poor fit obtained by the Hypothesized model, several improvements were introduced. Based on the analysis of the fitted residual and modification indices, we excluded in total of six items (y71, y72, y76, y77, y81 and y82. With the exception of item y71, all the excluded items shown low reliability to the latent factor. Although item y71 provided the highest reliability to the latent factor general satisfaction, the modification indices proposed to add a path to both affective and continuance commitment. This suggests that item y71 can not discriminate among the latent dependent constructs (see Appendix A for a complete description of the items).

The results for the Modified model show a considerable improvement of fit, as reported in Table 8.5- bold print and Figure 8.7. However, the χ^2 obtained remains significant (χ^2=139.91; df=107, p=0.03). The Goodness of fit indices improve to a moderate level (CFI=.88; AGFI=.84). The CFI is .95, demonstrating considerable adequacy of the model to the data. The parsimony indices also improved in relation to the Hypothesized model. PGFI is .69 and PNFI is .72. The RMR is .08 demonstrating a less good fit. However, the RMSEA is .05, with a 90% confidence interval between .02 and .07, and a probability of closeness almost acceptable (p=.47).

Table 8.4: Lisrel Standardized-Scores for the Effects trust on General Effectiveness Criteria

Paths	Hypothesized Model			Modified Model		
	Lisrel-SS	Errors (ε, ζ)	R²	Lisrel-SS	Errors (ε, ζ)	R²
Structural relationships (γ)						
$\gamma 1,1$	.34			.29		
$\gamma 2,1$	.72			.72		
$\gamma 3,1$	-.42			-.43		
Trust (ξ1)						
$\lambda 1$	.31	.89	.10	.31	.89	.10
$\lambda 2$	.91	.17	.83	.91	.17	.83
$\lambda 3$	.75	.43	.57	.75	.43	.57
$\lambda 4$	-.20	.95	.04	-.20	.95	.04
General Satisfaction (η1)		.88	.11		.91	.08
$\lambda 65,1$	.57	.68	.32	.59	.65	.35
$\lambda 66,1$	.70	.51	.48	.70	.51	.49
$\lambda 67,1$	.61	.63	.49	.61	.63	.37
$\lambda 68,1$	.80	.36	.36	.83	.32	.68
$\lambda 69,1$	.85	.28	.65	.81	.34	.66
$\lambda 70,1$	.68	.54	.46	.69	.52	.48
$\lambda 71,1$	.82	.34	.66			
$\lambda 72,1$	.40	.84	.16			
Attitudinal Commitment (η2)		.48	.52		.48	.52
$\lambda 73,2$	.48	.77	.23	.48	.77	.23
$\lambda 74,2$	.78	.39	.60	.81	.40	.66
$\lambda 75,2$	.74	.45	.55	.71	.49	.51
$\lambda 76,2$	.42	.83	.17			
$\lambda 77,2$	.24	.90	.10			
Continuance Commitment (η3)		.83	.17		.81	.18
$\lambda 78,3$	.65	.57	.43	.64	.59	.41
$\lambda 79,3$	.74	.45	.55	.70	.52	.48
$\lambda 80,3$	.79	.37	.63	.84	.29	.71
$\lambda 81,3$	.37	.86	.14			
$\lambda 82,2$	.30	.93	.07			

χ^2 = 320.94 (df=173; p=0.00)
GFI = .80; AGFI = .75
PGFI = .65; PNFI = .62
CFI = .82 RMR = .12
RMSEA =.09

χ^2 = 136.91 (df=107; p=0.03)
GFI = .88; AGFI = .84
PGFI = .69; PNFI = .72
CFI = .95 RMR = .08
RMSEA =.05 (.02 ; .07) (*p*=.47)

The structural equations in the Modified Model maintain the same pattern as in the Hypothesized model. The effect of trust on attitudinal commitment remains equal to $\gamma 2,1$=.72. Whereas the two other equations suffer slight decreases. The effect on general satisfaction diminishes to $\gamma 1,1$=.29 and the effect on continuance commitment notes a slight increase to $\gamma 3,1$=-.43. Hypotheses 7a, 7b and 7c are, thus, confirmed by these results. The effect of trust on affective commitment is the strongest effect across models. Consequently, affective commitment presents the highest variance explained by trust, R^2=.52 in both the Hypothesized and the Modified model. As for
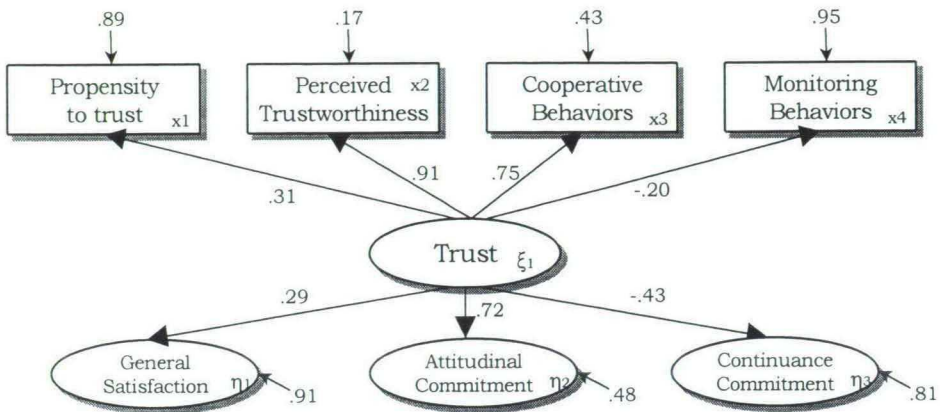
Figure 8.7: Modified model - Effects of trust on general effectiveness criteria - (n=112); χ^2=139.91 (df=107; p=0.03); GFI=.88; AGFI=.84; CFI=.95; PGFI=.69; PNFI=.62; RMR=.08; RMSEA=.05 (.02 ; .07) (p=.47).

general satisfaction, trust explains 8% of its total variance in the Modified model, which is less than the 11% of variance explained in the Hypothesized model. The variance of continuance commitment explained by trust increases to 18% (R^2=.18) in the Modified model.

8.4   Analysis of the integrated model

The integrated model was tested with the variables that obtained a significant relation with trust in the previous models. Tenure is the only variable excluded for this reason. Although no previous hypotheses were formulated with respect to the structure of the integrated model, we expect that the direction of the relationships obtained in the previous models will be maintained.

The Hypothesized model obtained a non convergent solution, which is a strong indicator of model inadequacy. The indicators of fit are therefore preliminary. However they show that the Hypothesized model is poor and incompetent to fit our data. The χ^2 is 394.69, with 145 degrees of freedom and p=0.00. The Goodness of fit indices are GFI=.74 and AGFI=.66, both far under the limits considered adequate for a good model fit. The parsimonious fit indices, PGFI=.57 and PNFI=.50, show considerable adequacy given the complexity of the model. The comparative fit is only .62, which is consistent with the inadequacy of this model to the data. Further, the RMSEA is .12 and the RMR is .11, both far above >.05.

Several modifications were introduced, in order to obtain a better structure and increase the fit of the model. Figure 8.8 portrays the structure of the Modified model and the results obtained. The major modifications concern
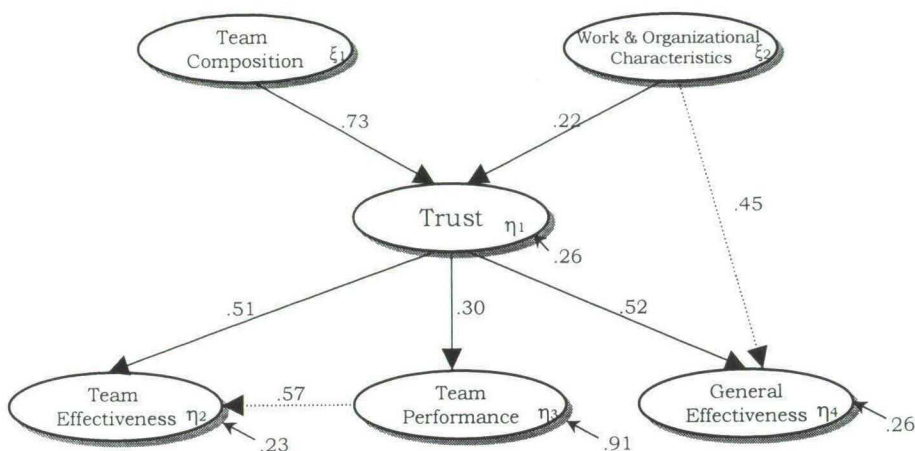
Figure 8.8: Modified model - Effects of trust on general effectiveness criteria - (n=112); χ^2=313.93 (df=145; p=0.00); GFI=.80; AGFI=.74; CFI=.72; PGFI=.61; PNFI=.52; RMR=.10; RMSEA=.10.

the creation of the variable "Work & Organization characteristics" and the two new structural relationships ($\gamma 3,2$) and ($\gamma 2,4$). The variable work and organizational characteristics was created based on the strong correlations between the indicators of the former variables work characteristics and organizational context. The two new structural relations resulted from the modifications indices and analysis of the fitted residuals. No further attenuations were introduced in the model.

The Modified model shows a considerable improvement of fit, as reported in Figure 8.7 and Table 8.6. However, the χ^2 obtained remains significant (χ^2=313.93; df=145, p=0.00). The Goodness of fit indices improve to a reasonable level, i.e. GFI is .80 and AGFI is .74. The CFI is .72, which indicates reasonable adequacy. The parsimony indices improve in relation to the Hypothesized model. PGFI is .69 and PNFI is .72. However, the residual fit is poor, RMR and RMSEA are equal to .10. Therefore we consider this model only to fit our data marginally.

The structural relations in the Modified model confirm the direction of the variables in the previous models presented in this chapter and in chapter 7. With respect to the input variables, team composition remains the strongest predictor of trust ($\gamma 1,1$=.73). The effect of work and organizational characteristics on trust is substantially inferior ($\gamma 2,1$=.22), also when compared with the effect on general effectiveness ($\gamma 3,4$=.45). However, our results support the notion that trust is contingent to a certain context, and that the work and organization factors influence the general effectiveness. The percentage of trust explained by both variables is considerable R^2=.74 for an error variance equal to ζ=.26.

Table 8.5: Lisrel Standardized-Scores for the role of trust in teams

Paths	Lisrel-SS	Modified Model Errors (ε, ζ)	R²
Structural relationships (γ)			
γ**1,1** (ξ1 ⟩ η1)	.73		
γ**2,1** (ξ2 ⟩ η1)	.22		
γ**1,2** (η1 ⟩ η2)	.51		
γ**1,3** (η1 ⟩ η3)	.30		
γ**1,4** (η1 ⟩ η4)	.52		
γ**3,2** (η3 ⟩ η2)	.58		
γ**3,4** (ξ3 ⟩ η4)	.45		
Trust (n1)		.26	.74
λ1	.31	.89	.10
λ2	.91	.17	.83
λ3	.75	.43	.57
λ4	-.20	.95	.04
Team Composition (ξ1)			
λ**1,1** (pref. work in a team)	.36	.87	.13
λ**2,1** (t. cohesion)	.63	.60	.40
λ**3,1** (job adeq. skills)	.65	.58	.42
Work & Organizational characteristics (ξ2)			
λ**4,2** (f. dependence)	.31	.90	.10
λ**5,2** (t. ambiguity)	.47	.77	.22
λ**6,2** (org. climate)	.69	.52	.48
λ**7,2** (memb. influence)	.53	.72	.28
Team Effectiveness (η2)		.23	.77
λ**2,5** (rel. commitment)	.37	.86	.13
λ**2,6** (t. satisfaction)	.60	.64	.36
λ**2,7** (stress)	-.31	.90	.10
Team Performance (η3)		.91	.09
λ**3,8** (task perf.)	.73	.44	.53
λ**3,9** (role perf.)	.70	.50	.46
General Effectiveness (η4)		.26	.74
λ**4,10** (general satisf.)	.46	.79	.48
λ**4,11** (affect. commitment)	.70	.51	.13
λ**4,12** (contin. commitment)	-.36	.87	.20

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χ^2 = 313.93 (df=145; p=0.00)
GFI = .80; AGFI = .74
PGFI = .61; PNFI = .52
CFI = .72 RMR = .10
RMSEA =.10

The effects of trust remain positive in all relationships. The strongest effect stays for general effectiveness (γ1,4=.52), although the effect on team effectiveness increases considerably (γ1,2=.51). The effect on team performance is γ1,3=.30. At the same time, a new effect is found for team performance on team effectiveness γ3,2=.58, which suggests that team effectiveness is more

dependent on the team performance than on trust. The percentage of the variance explained of team effectiveness is $R^2=.77$, of team performance is $R^2=.09$ and of general effectiveness is $R^2=.74$. These results suggests that trust is a better indicators of effectiveness than of performance.

Looking at the relations between the manifested variables and the latent factors, no changes of direction are found. Stress and continuance commitment were negatively predicted by trust, and in the integrated model they present negative relationships to the latent factor predicted by trust ($\lambda 2,7=-.31$ and $\lambda 4,12=-.36$ respectively). Monitoring behaviors also remains negative in relation to trust $\lambda 4=-.20$.

8.5   Discussion

In this chapter we have examined the effects of trust on the performance and effectiveness of teams. The overall fit obtained for each structural model was adequate and all hypotheses were confirmed by our results.

The positive effects of trust on performance, underline the importance of trust for the functioning of teams in organizations. Within our sample, trust explained 10% of the total variance of task performance. This provides a strong support for the argument that trust is imperative for organizations (Shaw, 1998). In studies examining trust in other contexts, similar results were found, particularly with respect to the effects of trust behaviors on performance. Within dyadic relationships, McAllister (1995) found a positive relation between the behavioral consequences of trust and the supervisor is assessment of performance. Smith & Barclay (1997) in buying and selling relationships, found a positive relation between trusting behaviors and perceived trustworthiness with task performance. The conceptualization of trust as a higher-order construct as we present here, provides a more clear picture in relation to these effects, since distinct components are included in one single variable.

The hypothesized effects of trust on effectiveness were also confirmed by our results, although the variance explained by these models was inferior to that of the models examining the effects of trust on performance. The results of the integrated model explain this findings by showing a positive relation between team performance and team effectiveness. With respect to team effectiveness, the strongest positive effect was between trust and team satisfaction. This is consistent with previous findings (e.g. Smith & Barclay, 1995), even though in their study this effect was stronger. The positive effects of trust on relationship commitment are in line with the findings of Smith & Barclay (1995). Yet in our study these effects are unexpectedly weak. The expected negative relationship between trust and stress was also confirmed by our results.

The strongest effects of trust, in this study, were visible on more general levels of effectiveness. General satisfaction, affective commitment with the organization, and lack of continuance commitment were strongly predicted by trust. The positive effect on affective commitment has been examined in a variety

of models and contexts (Morgan & Hunt, 1994). Our results demonstrate also the negative relationship between trust and continuance commitment, which reinforces the positive effect on affective commitment. The effect on general satisfaction was considerably weaker than these last effects. It had almost the same intensity as the effect of trust on team satisfaction in the previous model.

The results of the integrated model confirm the important role of trust in organizational behavior. Although we did not find the same hypothesized structure, the general suppositions of our framework are confirmed by our results. Trust within teams is mainly influenced by the composition of teams, but work and organizational conditions are also important predictors of trust, and at the same time of general effectiveness. These results are consistent with contingency approaches to group behaviors (e.g. Gladstein, 1984, Hackman, 1987). Trust is important for team performance, although it is more relevant for achieving general effectiveness. Team effectiveness is found to be strongly affected by team performance.

In general, our results are more consistent with the sociological and psychological approaches of trust in organizations than with the economic perspective, although no objective measures such as productivity, profit, costs, etc, were taken in consideration. Nevertheless, our results fully support the overall positive effect of trust on the functioning of teams in organizations. Accordingly, teams that function with trust among members are able to perform better than teams without trust. Trust in teams leads individuals to feel committed and be satisfied with their team and the organization, and feel less stressed in relation to their job.

Chapter 9

Conclusions, critical review and recommendations

The initial goal of this book was to contribute to theory building on trust in organizations. We started with a critical analysis of the concept followed by a discussion about the scope and importance of trust in organizations. Contingency approaches to group behavior helped us to develop a research framework, and theoretical contributions from sociology, economics and psychology were used to conceptualize trust. In this chapter we review first the aim and theoretical framework of this project. We draw conclusions with respect to the multi-component nature of trust, the effects of team composition, work and organizational factors on trust, and the relevance of trust for the performance and effectiveness of teams. In addition we review the adequacy of the generic model. Subsequently, we discuss the limitations of our study with regard to the sample, trust measures and models. This chapter ends with the practical implications of this research.

9.1   Review on the aim and theoretical framework

The decision to study trust in work teams resulted from the increased interest in this topic in organizational theory. Organizations have been considered important contexts to study trust because they create situations of uncertainty and opportunities for vulnerability. These conditions have been pointed out as crucial for the occurrence of trust (e.g. Morris & Moberg, 1994; Rousseau, et al., 1998). During the past decades, organizational scholars have described mechanisms to enhance flexibility by increasing the reliance on team based arrangements and on processes such as collaboration and cooperation. Theories of performance and effectiveness in organizations have been expanded to include the effects of interpersonal and group dynamics, where trust is central. While the theoretical developments around trust have been considerable, empirical research in organizations has been scarce, which increases the need for systematic information in order to confirm or reevaluate existent theories. Therefore, we considered the study of trust relevant for understanding performance and effectiveness of teams in organizations.

Contingency approaches to group behavior were used to organize our thinking about the possible antecedents and effects of trust in work teams. We offered a model in which trust plays a central role, and we posed three main questions. The first question concerned the multi-component nature of trust. The second question dealt with the factors relevant for trust within teams. The third question addressed whether trust was important for teams by examining the effects on team performance, team effectiveness and general effectiveness. An additional question referred to the adequacy of the integrated model. To answer these questions we formulated series of hypotheses and conducted five field studies. We developed first an instrument to measure the four trust components. The hypotheses and the integrated model were tested using a sample with the teams of our main studies. The aggregation of scores at team level for the trust measurements was supported by the high levels of agreement obtained within teams, and by the discriminant powers obtained between teams in each organization and in the team sample as a whole (see chapter 6, pag. 108-109).

9.1.1   Multi-component nature of trust

Since controversy appeared to exist concerning the definition and operationalization of trust, we did an extensive review of the literature. Three perspectives contributed to the development of our multi-component approach this concept. The sociological perspective, which has proposed a multifaceted conceptualization of trust based on a combination of cognitive, emotional and behavioral dimensions (e.g. Lewis & Weigert, 1985). The economic perspective (e.g. Cummings & Bromiley, 1996) which has related these dimensions to three important aspects of economic transactions, i.e. keeping commitments,

negotiating honestly, and not taking advantage. The psychological perspective that focus on interpersonal relationships, has extended the this conceptualization to include individual propensities as well as perceptions of trustworthiness (e.g. Mayer et al, 1995). Yet, most psychological models have excluded the behavioral component, considering it rather as an effect of trust.

Our conceptualization of trust has more in common with the psychological perspective, although we did not exclude trust behaviors from the multi-component structure. As we have argued in chapter 4, trust behaviors should be included as components, since they reflect the extent to which people trust or not. Exchange theories (e.g. Blau, 1964) have claimed that trust needs to be reciprocated for stable and ongoing relationships to develop. Therefore, we considered trust behaviors to be important components of trust, since it is through these behaviors that individuals are able to make inferences of trustworthiness and reciprocate. This argument was first supported by the interviews. In two samples 63% and 88% of the respondents affirmed to behave differently toward people that they trusted than towards people that they do not trust. The behaviors that discriminated the two groups were classified in cooperative behaviors, which reflect high trust between individuals, and monitoring behaviors which reflect low trust between individuals (see chapter 6 - section 6.1.1, pag. 100). A second confirmation resulted from the exploratory and confirmatory analyses of the trust measures, where the four components proposed were discriminated in one factor structure (see chapter 6 - section 6.3). *Therefore, we can conclude that the behaviors of cooperative and monitoring, together with propensity to trust and perceived trustworthiness, constitute distinct components of trust.* The multi-component nature of trust was confirmed by the adequate first-order structural model presented in section 7.1 (chapter 7, pag. 120), connecting all components to a latent factor trust. *Consequently, our research confirmed hat trust has a multi-component nature.*

Except for monitoring behaviors, all components were positively related with the trust factor. Consequently, high monitoring and low cooperative behaviors constitute an indicator of low trust, whereas high cooperative and low monitoring behaviors indicate high trust within teams. The positive relation found for monitoring behaviors and overall trust at the Social-Care Zaandam, although non significant (see pag. 112) appears in contradiction to what was found in the models. Beamish (1988) has argued that trust and control do not necessarily complement each other in a inverse manner. Ikpen & Curral (1997), for instance, found a positive relation between trust and control within joint ventures. Das & Teng (1998), on the other hand, regard trust and control as parallel phenomena, which contribute independently to the level of confidence needed in a relationship. Teams will demand different requirements of trust and control depending on various issues, such as objectives of the work relationship, risks involved, amount of resources committed, etc. On the other hand, these requirements may also be related to external factors to the team, such as the type of supervision and the degree of influence in the organization. Although

several explanations can be given with regard to the relationship between trust and control, further research on these issues is necessary in order to achieve a better understanding of this relationship.

Another important finding concerns the relative importance of each trust component. In our study, trust between members appeared to be explained essentially by perceptions of trustworthiness and cooperative behaviors. Propensity to trust and monitoring only explained a very small percentage of trust (less than 15% - see chapter 7, pag. 121). Yet, we did not exclude these components and maintained the structure of this concept, since dimensions may vary in their relative importance for trust depending on the type of relationships and context (Lewis & Weigert, 1985). It makes sense that in stable teams, where individuals are reasonably familiar with each other, trust is more based on perceptions of trustworthiness and on cooperative behaviors than on general propensities. Furthermore, the four components proposed were descriminated in a four-factor structure which was the best fitting model emerging from the comparison of concurrent factor models (see chapter 6, pag. 107). Again, more research is needed in this area in order to achieve firm conclusions on this issue.

9.1.2   Determinants of trust within teams

The general conclusion concerning the determinants of trust is that trust within teams can be influenced by factors related to the composition of teams as well as by work characteristics and organizational context.

In this study trust appeared to be mostly determined by the composition of the teams. Teams with a high level of cohesion, where members have a preference for teamwork and posses the adequate skills to perform tasks, have the best composition to enhance trust. These conditions reflect a high level interaction between members, strong identity, and are usually positively associated with social involvement (Cartwright & Zander, 1968). Although trust probably develops and changes over time, as a consequence of members having a history of interaction, in this study tenure did not show a significant effect on trust. Further analysis indicated that organizational and job tenure were positively related to continuance commitment and monitoring behaviors, and negatively to perceptions of trustworthiness within teams. In the first place, we think that the non-significant effect of tenure in the model resulted from the reduced variance of the combined team scores of organizational and job tenure. Furthermore, we feel that the reorganization process involving the teams at the Social Care organizations account for the direction of the correlations found. On the other hand, Roberts & Hunt (1991) have argued that tenure combined with age can generate a more calculative relation with the organization, which may justify the need to monitoring and diminish perceptions of trustworthiness in these teams. *Even when tenure might be an issue, trust is strongly dependent on the quality of the interactions between the members.*

Work and organizational factors showed less influence on trust than team composition. However, we learned that trust is not context free and that some situational conditions are more likely to enhance trust than others. How the contacts with the supervisors are experienced, and the level of members' influence in the organization contributed positively to trust within teams. *Management philosophies and practices that are based on collaborative approaches and that enhance participation and responsibility of the workers tend to create better conditions to develop trust.* When the contacts with supervisors are experienced as friendly, and there is an emphasis on openness and information sharing, trust between team members is likely to occur. In addition, the influence of members on the organization of tasks, evaluation of budgets and rewards systems, is strongly associated with how the contacts with supervision are experienced, and presumably enhance trust within teams. The importance of empowerment of individuals and teams in the development of trust at different organizational levels has been emphasized by recent economic theories. Trust based on the assumption that individuals are willing to produce a common good for the organization, increases the likelihood that workers will act in a trustworthy manner (Bromiley & Cummings, 1995). Furthermore, the more trust there is the more trust is likely to develop and generalize to different organizational levels (Dasgupta 1988).

Characteristics of the work such as the degree of functional dependence between team members and the level ambiguity of within tasks were found to be positively related to trust. In teams with high functional dependence, members need to cooperate more, and they must depend on one another to a certain degree (Morris & Moberg, 1994). Although trust does not necessarily lead to cooperation, functional dependence creates conditions for information exchange and proximity, which may give room for acceptance and increase vulnerability. The ambiguity of tasks does not only create vulnerability between members but uncertainty about how to perform tasks and how to go about the job (Morris & Moberg, 1994). The transaction costs point of view argues that ambiguity creates conditions for opportunism, which increases the need for monitoring or defensive behavior, and therefore will lead to less trust. Our research disconfirms this point of view. When tasks are ambiguous members do not necessarily take advantage on this conditions and do not act in an opportunistic matter vis-a-vis to their teams. On the contrary, ambiguity may reinforce interdependence and the need to collaborate, which promotes trust.

9.1.3   Relevance of trust for performance and effectiveness

The importance of trust for organizations has been associated with the ability to enhance collaboration and mutual learning between parties, which helps managing complexity and fosters the capacity for action and change (Shaw, 1997). In many cases, trust has become an imperative for the successful

development and survival of organizations. *This research does confirm the importance of trust in sustaining performance and effectiveness of work teams.* Yet, the extent to which trust within teams will affect the performance and effectiveness of the whole organization, remains inconclusive since we do not have the adequate information to make such conclusions. The teams in our studies came from semi-public organizations within the Health-Care sector in the Netherlands, which fall under the law of social provision of employment. Therefore, we do not expect that a lack of trust within these teams will have a direct effect on the survival of these organizations, since the powers to redraw or support are effectuated by national government. Nonetheless, this study shows that deficits of trust are associated with high stress, high continuance commitment, low satisfaction and affective commitment. In the long run, teams where individuals feel tense, unsatisfied and less emotionally committed, might become extremely unproductive. These conditions may also lead to a higher rate of absenteeism (Katz & Kahn, 1978), and at the end will be detrimental to the organization.

Important to realize is that trust is probably not the solution for all organizational problems, and that cannot be expected to remain stable during processes of change. Organizational theories have shown that processes of change that bring an increase of participation and responsibility of the workers, favor conditions to develop trust between members (e.g. Shaw, 1997). However, when accompanied by alterations in nature of the employment relationship, these processes create fear, instability and distrust between the individuals. Therefore, the study of trust in organizations needs to be placed in a broader perspective, including antecedents at different levels, in order to explain the existence of more or less trust in a particular context.

9.1.4   Adequacy of the integrated model

The initial integrated model of our research has proved not to be the best structure for our data. Limitations associated with input-process-output models are well known from the literature. They are associated with the mediating role of team processes, and the generability of such models to all work contexts (e.g. Hackman & Morris, 1975). More recent frameworks postulate a more direct effect of the context on the outcomes, and some kind of moderating role of tasks between processes and outcomes (e.g. Gladstein, 1984; Hackman, 1987). In spite of these limitations, we did choose for a simple input-process-output model because it allowed us examine the effects one at the time. Furthermore, it was possible to compare the input or output effects across models by fixing the trust parameters.

While testing the entire model we found an alternative structure that was more adequate to our data. Work and organizational characteristics became one factor with a direct positive effect on trust and on general effectiveness. An additional positive causality between outcomes was obtained for team performance and team effectiveness. With respect to the factors influencing

trust, team composition remained the strongest determinant. The effects of trust on team performance, team effectiveness and general effectiveness continued positive. This modified structure was more contingent and resembled generic models where part of the inputs has a direct effect on the outcomes (see chapter 4, pag. 43). Such frameworks place a heavy emphasis on the nature of the organizational context as determinants of group effectiveness. Among the organizational features that have been identified as relevant are rewards systems (Shea & Guzzo, 1987), organizational structure (Gladstein, 1984), leadership (Kiggundu, 1981), etc. Other perspectives attach importance to the degree to which groups control their environment as a determinant for effective performance (Hackman, 1987). Our modified integrated model is consistent with these frameworks. It combines in one single factor the effects of contacts of leadership, members' overall influence, the level of functional dependence among team members, and the ambiguity of tasks, on trust and general effectiveness. *Consequently, contingent frameworks can be considered adequate to study trust within work contexts.* A diagnosis of the contextual factors that facilitate or inhibit team performance and effectiveness, or any other factors here related may have practical implications for improving effectiveness (see section 9.3 in this chapter).

9.2   Limitations and future research

9.2.1   The sample

The foremost limitation of this study is the number of teams in our sample (n=112). Although we were able to obtain a sufficient number of teams to perform SEM analyses, the complexity of some models led to initial goodness of fit situated in the marginal acceptance zone. Therefore, our conclusions should be carefully interpreted. Another limitation of the sample refers to the fact the teams in this study came from organizations within a single sector of activity, which makes it inappropriate to generalize these conclusions to other sectors of activity. In addition, the use of standardized scores makes the results sample specific.

One variable that may have influenced our results, is the risk associated with poor performance. Creed & Miles (1996) have argued that organizations carry different requirements for trust, and failures in meeting those requirements brings different consequences. In some organizations deficits in trust reduce efficiency, in others it reduces effectiveness and increases costs, or even makes the organization to fail. Within contexts with relatively low risk of poor performance, we have seen that cooperative and monitoring behaviors operate as two opposite ends of the same continuum with respect to trust. However, in contexts where poor team performance may bring damaging effects for the organization, monitoring behaviors may be actually necessary in order to prevent destruction. The key issue is whether trust should be seen as static

phenomena. Organizations may demand different levels of cooperative and monitoring behaviors at different times. In the contexts of interfirm collaboration, Das & Teng (1998) have argued that control patterns and cooperative actions often develop and take form during processes of socialization, interaction or training. These processes provide a better understanding between parties about how and when to use them as well as the consequences associated with these behaviors.

Other important variables are related to the life cycle of the team and degree of familiarly between team members. For example, in teams that are created for a specific project and that exists for a fixed period of time (such as project teams), individual members will have the tendency to identify more with the product being performed, than with their colleagues. On the other hand, because the work is only temporary, they will probably invest less in knowing their peers and become less familiar with them. According to Rotter (1980) the influence of individual dispositions on behaviors grow in unfamiliar contexts, and trust will probably be more reflective of individual propensities than perceptions of trustworthiness. Further research on trust using other types of teams should be conducted in order to show light on these and other related topics.

9.2.2   The trust measures

In the first research phase of this study we developed four measures of trust according to our definition and components proposed. The measures were constructed on the basis of interviews and existing instruments. The measures presented satisfactory reliability in the team sample, and showed convergence with overall trust (see chapter 6 - section 6.4.2).

The discriminant validity of the trust scales was less conclusive. Contradictory findings were obtained and significant results were noted only in some samples. Propensity to trust discriminated positively for the demographic variable "educational level" and so did cooperative behaviors in two of the main samples. Research on demographic variables has shown that education level is associated with the ability to perform better, and to interact well with other members group members. Highly educated individuals tend to be more active in group activities, in general contribute more than low educated group members (Szilagyi, Wallace & Ivancenvich, 1980). Therefore, it is plausible that educational level positively influences the propensity to trust others as well as the engagement in cooperative behaviors. The trust scales could also be discriminated from affective and continuance commitment, although some contradictory but not significant findings were noted for propensity to trust and monitoring activities. In general, teams that are affectively committed to their organization reveal less monitoring behaviors and more cooperative behaviors, and members more often perceived colleagues as being trustworthy. Whereas teams that are more "continually committed" to the organization tend to monitor

their colleagues more often. Nevertheless, because of the inconsistencies found we think that the scales need some improvement. Therefore, future research is needed in this direction.

9.2.3   The models

Generally speaking, the Hypothesized models obtained a reasonable fit, although the acceptance level was in most cases marginal. Only one model was totally rejected (the second-order model testing the multi-component nature of trust), and the integrated model needed structural re-definition. Most models were improved to moderate levels of acceptance, and in some cases to an adequate level of acceptance, by introducing small modifications, such as detecting items or adding error correlations within the same latent construct.

The second-order model used for testing the multi-component nature of trust was the only model that was rejected in this study (see chapter 7 - section 7.1). Here, a negative error variance was obtained for one trust component (i.e. perceived trustworthiness) in the model. Negative error variances are incompatible with SME and often occur when samples with n<150 are used to test highly complex models such as second-order structures (Byrne, 1998). We obtained a moderate fit to our data with the Modified model, but we did rectify the negative error correlation to 0.01. Although the overall fit was acceptable, the second-order model was rejected. Instead, we decided to test the multi-component nature of trust with a first-order model. This structure obtained a good fit without any attenuation or constraints. The structural relations between trust and the four components were significant and maintained the same pattern as in the second-order model. Consequently, the first-order model is more adequate to explain the multi-component structure of trust in our study.

The hypothesized models testing the factors affecting trust within teams ranged from marginal to moderate levels of acceptance of fit (for the organizational context effects on trust). The Modified models showing the effects of team composition and work characteristics on trust improved to moderate levels of fit, while the model for the effects of organizational context obtained a good fit. With respect to the effects of team composition, the relationship pattern was maintained in both models. The structural equations for effects of work characteristics showed small changes from the Hypothesized to the Modified model. Although the effects remained positive, the effect of task ambiguity was stronger than functional dependence in the Hypothesized model, whereas in the Modified model both effects were equal. This also constitutes a limitation of our findings, even though we did not intend to explore the differences of these effects on trust. For the models showing the effects of organizational context another limitation occurred with regard to the effect of members overall influence on trust. In both the Hypothesized and Modified model this effect is negative (see pag. 138-140), but the correlation matrix suggests a positive relation with trust.

At the same time, the relation between members' overall influence and organizational climate is also positive a substantially superior to the one with trust. In this model organizational climate may therefore operate as a suppressor of the relation between members overall influence and trust. When testing the integrated model both organizational variables were positive related to the latent factor work and organizational characteristics which was found to have a positive effect on trust.

The models showing the effects of trust were initially weaker than the models of the determinants. The modifications introduced improved the models to reasonable levels of acceptance. In the models examining the effects of trust on team and general effectiveness, the direction and pattern of the structural relationships was maintained. In the case of the effects on team performance the Modified model obtained a good and adequate fit due to an error correlation between task and role performance. This error correlation also indicated the presence of a halo effect between these measurements which constitutes another limitation in this study.

In general, the structural equations remained with the same pattern as in the respective Hypothesized models. This leads us to conclude that the imperfections of our models were more related to the limitations of our sample than to the hypothesized structures. Only with respect to the integrated model structural modifications were introduced, since the hypothesized structure failed to converge. Work characteristics and organizational context became one predictor variable that was found to have a positive effect on trust within teams and on general effectiveness. Another structural relation was introduced explaining the effects on team performance and on team effectiveness. Although we obtained a convergent solution the overall fit of this model was still marginal. Therefore, conclusions with respect to the structure of this model may be difficult to support in other studies.

9.3   Practical implications

Two related implications result form this research. In the first place, recommendations can be made with respect to trust as a mean to increase performance and effectiveness of teams. Secondly, recommendations can be made about how trust can be created in team contexts.

9.3.1   Trust as a mean to increase performance and effectiveness

The positive effects of trust on several performance and effectiveness outcomes indicate that trust is an important condition for the functioning and well being of teams in organizations. The implications for high vs. low trust within teams are described in Table 9.1. Although the effects on team performance were not so

Table 9.1: Practical implications of high vs. low trust within teams

Outcomes	High ⇐ -- ⇒Low		
	Trust		
Team	⇑	Task performance	⇓
performance	⇑	Role performance	⇓
⇓			
Team	⇑	Relationship commitment	⇓
effectiveness	⇑	Team Satisfaction	⇓
	⇓	Stress	⇑
General	⇑	Gen. Satisfaction	⇓
effectiveness	⇑	Affective commitment	⇓
	⇓	Continuance commitment	⇑

strong as the effects on team effectiveness or on general effectiveness, our study clearly indicates that trust is positively related to task and role performance. Therefore if organizations want to improve the performance of teams, they might consider trust as one important facilitator. However, this implication needs to be carefully interpreted. First of all, trust cannot be seen as one of the main indicators of performance, since tasks require specific abilities and knowledge to be adequately performed. In situations where teams do not posses adequate skills and knowledge to successfully accomplish their tasks, trust probably will not improve performance. Secondly, performance has been found dependent of numerous determinants (e.g. Roe, 1999), which makes trust just one of these indicators. In certain conditions, though, trust may play an important role in facilitating communication and openness, which can lead to the exchange of important knowledge or generate critical discussions that may be beneficiary for the end product. The importance of such effects is again dependent on the trust requirements associated with the functioning of teams and organizations.

As for the other effects, trust seems partly responsible for team effectiveness, together with team performance, in terms of commitment to the team, satisfaction and low work stress. Stronger effects of trust are to be expected with regard to affective commitment, general satisfaction and low continuance commitment. Trust within teams strongly affects the extent to which teams are committed and satisfied with the organization. When trust is low, levels of affective commitment tend to decrease, and more calculative (continuance) forms of commitment tend to arise. Such implications can bring additional problems in contexts of change, particularly if additional levels of effort and involvement are needed to successfully implement those changes.

Generally speaking trust can be seen as one important mechanism to improve performance and effectiveness of teams. The practical implication of the effects of trust on outcomes 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. Another practical implication of this study emphasizes how trust can be created through different conditions.

9.3.2   Conditions that enhance trust within teams

Although we studied different factors affecting teams in organizations, we probably did not exhaust all possible determinants of trust. Based on the variables considered in this study, we identified three major conditions that influence the level of trust withing teams, i.e. the quality of interaction among team members, level of interdependence, and degree of participation and influence in the organization.

Trust within teams was found to be essentially created through positive interactions among members. Preference for working in a team can be a major determinant of interpersonal interaction within teams, since it brings people together that favor working in such contexts. Having the adequate skills to perform jobs provides a kind of equality in the work process. Members that consider their colleagues to have adequate skills are less afraid of having to cover up for someone that does not perform well, or have less tendency to monitor the work of others. Cohesiveness within a group not only provides interpersonal harmony but creates an common identity and commitment in relation to the tasks performed. Without considering these conditions as static, the quality of interaction within teams may improve social and work related aspects of the team and enhance trust.

More contextually related are the level of interdependence between members, and the degree of participation in decision making and influence on the organization. The extent to which these conditions affect trust, depends on the quality of the interaction developed upon these factors. Teams with highly interdependent or ambiguous tasks are more likely to enhance trust, since both conditions create the need for collaboration among members. In less interdependent teams, trust might also be achieved though reputations or past experiences (e.g. Hill, 1990). However, as members become more familiar with each other they will start comparing the reputations with present experiences. The degree of participation in work decisions and the influence on the organization in general (i.e. organization of work, rewards, etc.) generates trust by the sense of transparency and fairness in the relationship between the individuals and the organization.

Table 9.2: Practical implications of how to create trust within teams

Conditions	Trust High ⇐--⇒ Low		
Quality of interaction among team members	⇑ ⇑ ⇑	Team cohesion Pref. working in a team Job adequate skills	⇓ ⇓ ⇓
Interdependence	⇑ ⇑	Functional dependence Task ambiguity	⇓ ⇓
Participation	⇑ ⇑	Decision making Degree of influence	⇓ ⇓

Although many questions about trust in organizations remain unanswered, we consider this research to have contributed to diminishing the lack of empirical research on this area. One of the major contributions concerns the multi-component approach combining individuals propensities, perceptions of trustworthiness and trust behaviors. The respective trust measures constitute another contribution of this study, since they provided us with reliable tools to conduct research on trust within teams. The major practical implications concern the acknowledgment of the positive effects of trust on the performance and effectiveness of teams, and the identification of critical conditions to enhance trust within teams.

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Appendix A

Instruments

Appendix A1: Trust measures (items) using Likert scales[3]

Instructie: De volgende vragen gaan over de gang van zaken binnen de werkeenheid (team, of groep) waarin uw werkt. Geef aan in welke mate u het eens bent met iedere uitspraak door een kruis in het juiste hokje te zetten dat uw mening weergeeft.

Propensity to trust:

y1	De meeste mensen aarzelen niet om iemand in nood te helpen.
y2	'Behandel een ander zoals je zelf behandeld wilt worden' is een motto dat de meeste mensen volgen.
y3	De meeste mensen staan achter wat ze geloven.
y4	Mensen vertellen gewoonlijk de waarheid, ook als ze weten dat ze beter af zouden zijn door te liegen.
y5	De gemiddelde persoon is oprecht bezorgd over de problemen van anderen.
y6	De meeste mensen komen eerlijk voor hun mening uit.
y7[a]	De gemiddelde persoon blijft bij zijn mening als hij denkt dat hij gelijk heeft, ook wanneer anderen het niet met hem eens zijn.

Perceived trustworthiness:

y8*	Sommige mensen in mijn werkeenheid hebben succes ten koste van anderen.
y9*	Binnen mijn werkeenheid komt het voor dat de een profiteert van de problemen van een ander.
y10*	Binnen mijn werkeenheid komt het voor dat men elkaar misleidt.
y11*	Ik heb het gevoel dat sommige mensen in mijn werkeenheid onder hun verplichtingen uit proberen te komen.
y12*	Ik heb het gevoel dat sommige mensen in mijn werkeenheid proberen de baas te spelen over anderen.
y13	Ik heb het gevoel dat de mensen binnen mijn werkeenheid hun woord houden.
y14[a]	Ik heb het gevoel dat binnen mijn werkeenheid met ieder's belang eerlijk rekening wordt gehouden.
y15*[a]	Binnen mijn werkeenheid komt het voor dat misbruik wordt gemaakt van mensen in een kwetsbare positie.

Cooperative activities:

y16*	Binnen mijn werkeenheid vertellen mensen elkaar zo min mogelijk over zichzelf.
y17*	Er wordt nauwelijks gepraat over andere dingen dan het werk.
y18*	Bij het overleg in mijn werkeenheid zijn mensen terughoudend met het geven van hun mening.
y19*	Er wordt binnen mijn werkeenheid weinig gesproken over het werk.
y20*	In mijn werkeenheid laat men niet gauw het achterste van zijn tong zien
y21	De meeste mensen in mijn werkeenheid hebben geen boodschap aan de ideeën of suggesties van anderen.
y22*	Binnen mijn werkeenheid zijn er mensen die zich afsluiten, zodat anderen op hun werk weinig invloed hebben.
y23*[a]	We vertellen elkaar soms dingen waarvan wij niet willen dat anderen ze weten.
y24[a]	We houden rekening met elkaar's meningen als er beslissingen genomen moeten worden.

Monitoring activities:

y25	Binnen mijn werkeenheid houden de mensen elkaar goed in de gaten.
y26	Er wordt gecontroleerd of iedereen zijn verplichtingen wel nakomt.
y27	In mijn werkeenheid zijn er mensen die de neiging hebben het werk van de anderen te controleren.

---

[3] 1 = disagree completely, 2 = disagree, 3 = partly disagree, 4 = neither agree nor disagree, 5 = partly agree, 6 = agree, 7 = agree completely

* Item reversed

[a] Item only in EFA

[b] Item only in EFA and CFA

Appendix A2: Team composition measures (items) using Likert scales[3]

Instructie: De onderstaande beweringen hebben betrekking op uw werkeenheid. Geef voor iedere bewering aan hoe goed deze bij uw werkeenheid past?

Preference for working in a team: Van de Ven & Ferry (1980)

x1*	Als ik kon kiezen, zou ik liever alleen willen werken dan in een groep.
x2	Het samenwerken met teamgenoten vergroot mijn mogelijkheden om beter te presteren.
x3	Normaal gesproken werk ik liever als een onderdeel van een team.
x4*	Ik denk dat ik beter zou presteren als ik alleen zou werken.
x5*	Voor het werk dat ik doe, maakt het niet uit als ik alleen werk of in een team.

Team cohesion: Podsakoff, MacKenzie & Bommer (1996) - Adapted by De Vries (1997)

x6	De mensen van mijn werkeenheid werken samen als een echt team.
x7	Mijn teamgenoten weten dat ze op elkaar kunnen bouwen.
x8	Mijn teamgenoten komen voor elkaar op.
x9[b]	Mijn teamgenoten beschouwen elkaar als vrienden.
x10[b]	De mensen van mijn werkeenheid zijn altijd bereid om elkaar te helpen.

Job adequate skills: Van de Ven & Ferry (1980)

x11	De mensen binnen mijn werkeenheid hebben voldoende kennis om het werk goed te kunnen uitvoeren.
x12	Binnen mijn werkeenheid heeft men de juiste vaardigheden om het werk aan te kunnen.
x13	De meeste mensen binnen mijn werkeenheid weten genoeg van hun werk om problemen zelfstandig te kunnen oplossen.
x14	De mensen binnen mijn werkeenheid hebben genoeg scholing en training gehad voor het werk dat ze doen.
x15*[b]	Mijn werkeenheid zou beter functioneren als men meer ervaring had.
x16*[b]	Weinig mensen binnen mijn werkeenheid hebben een geschikte opleiding gevolgd voor dit werk.

---

[3] 1 = disagree completely, 2 = disagree, 3 = partly disagree, 4 = neither agree nor disagree, 5 = partly agree, 6 = agree, 7 = agree completely

* Item reversed

[a] Item only in EFA

[b] Item only in EFA and CFA

Appendix A3: Work characteristics measures (items) using Likert scales[4]

Instructie: Hieronder volgt een aantal uitspraken die kenmerkend kunnen zijn voor uw werkzaamheden. Wilt u bij iedere uitspraak aangeven in hoeverre die een juiste of een onjuiste omschrijving van uw werkzaamheden geeft? Probeer zo objectief mogelijk aan te geven hoe goed elke uitspraak uw werk beschrijft, los van de vraag of u uw werk prettig vindt of niet.

Functional dependence inside the team

x20	Om mijn werk te voltooien, ben ik afhankelijk van het werk van mijn teamgenoten.
x21	Steun van mijn teamgenoten is cruciaal voor het slagen van mijn werk.
x22	Mijn werk vereist veel samenwerking met andere mensen in mijn groep.
x23	In mijn werk is het contact met teamgenoten een absoluut essentieel en doorslaggevend deel van het werk.
x24	Om mijn werk af te krijgen, heb ik vaak informatie nodig van mijn teamgenoten.
x25*	Mijn werk kan naar behoren gedaan worden door iemand die alleen werkt, zonder te overlegen of iets na te vragen bij andere teamgenoten.

Task ambiguity

x26*	Als er een fout gemaakt wordt in dit werk, is het meteen duidelijk wat er veranderd moet worden.
x27*	Aan het resultaat van mijn werk kan ik zien of ik een taak correct heb uitgevoerd.
x28	Mijn werk kan maar op één manier goed gedaan worden.
x29*	Het werk dat ik doe, is vrij simpel en routinematig
x30	In mijn werk gebeuren er vaak dingen waarvan niet meteen duidelijk is wat ermee te doen.

---

[4] 1 = Totally incorrect, 2 = incorrect, 3 = partly incorrect, 4 = neither incorrect or correct, 5 = partly correct, 6 = correct, 7 = Totally correct
* Item reversed

Appendix A4: Organizational Climate measures - Roe, et al. (1997)

Instructie: De volgende vragen gaan over zaken die typisch zijn voor de organisatie waaru werkt.

x36   Hoe gaan chefs met hun ondergeschikten om?
       1=vijandig   2=grof   3=beleefd   4=vriendelijk

x37*   In hoeverre laten chefs zich in hun beslissingen beïnvloeden door hun medewerkers?
       1=bijna altijd   2=vrij vaak   3=soms   4=zelden of nooit

x38   Houden de chefs wat zij weten voor zichzelf of delen zij wat zij weten met hun medewerkers?
       1 =   Medewerkers krijgen alleen te horen wat ze moeten weten om hun werk te kunnen doen.
       2 =   Wat zij weten houden zij meestal voor zichzelf, maar zij zijn bereid antwoord te geven op vragen.
       3 =   Zij zijn meestal bereid te vertellen wat zij weten.
       4 =   Zij zijn steeds bereid te vertellen wat zij weten en nemen daar vaak zelf het initiatief toe.

x39   Houden medewerkers wat zij weten voor zichzelf of delen zij wat zij weten met de leiding?
       1=   Medewerkers houden wat zij weten voor zichzelf, tenzij de regels eisen dat het aan de chef of de hogere leiding moet worden gemeld.
       2=   Zij houden het liever voor zichzelf, maar willen wel antwoordgeven op vragen, ook als dat niet vereist is.
       3=   Zij zijn doorgaans best bereid te vertellen wat zij weten en antwoord te geven op vragen.
       4=   Zij zijn steeds bereid te vertellen wat zij weten, ook als dat niet gevraagd wordt.

x40*   Hoe zijn de contacten met de chef?
       1=ontspannen   2=een beetje gespannen   3=gespannen 4=zeer gespannen

x41   Voordat met het werk kan worden begonnen moeten er doorgaans eerst besluiten worden genomen over planning, werkmethoden en dergelijke. Hoeveel invloed hebben de medewerkers bij dergelijke besluiten?
       1=vrijwel geen   2=een beetje   3=vrij veel   4=zeer veel

x42*   Vraagt de chef de mening van zijn ondergeschikten alvorens beslissingen te nemen?
       1=altijd   2=meestal   3=zelden   4=nooit

x43*[a]   Hoe gedragen de chefs zich tegenover hun ondergeschikten?
       1=zeer behulpzaam   2=behulpzaam   3=kwaadwillend   4=zeer
                                                                                                    kwaadwillend

* Item reversed

[a] Item only in EFA

Appendix A5: Members' Overall Influence measures (items) using Likert scales[5]

Instructie: Over het geheel genomen, hoeveel invloed hebt uw team op de volgende zaken in deze organisatie?

x44   Toewijzing van taken
x45   Vaststellen en beoordelen van budgetten
x46   Bevordering en overplaatsing
x47   Beloning
x48[a]   Werkplek, verlichting, lawaai, ventilatie

[5] 1 = erg weinig invloed, 2 = weinig invloed, 3 = enige invloed, 4 = nogal wat invloed, 5 = erg veel invloed

[a] Item only in EFA

Appendix A6: Performance and Team effectiveness measures using Likert scales[3]

Instructie: In dit gedeelte van de vragenlijst staat een aantal beweringen. Geef aan in welke mate u het eens bent met deze bewering.

Task Performance: Roe, et al. (1997)

y30	Wij staan bekend als een team die beter presteert dan andere teams.
y31	Ik denk dat ons team een heel goede beoordeling van onze manager verdient.
y32	Vergeleken met de gestelde eisen, behalen wij gewoonlijk goede resultaten.
y33	Onze prestaties zijn meestal beter dan die van andere teams.
y34*	Er zijn weinig of geen klachten over de kwaliteit van ons werk.
y35*	Onze prestaties zijn vaak minder goed dan vereist is.
y36*[a]	Meestal presteren andere teams beter dan wij.
y37[a]	Soms presteert ons team heel goed, soms helemaal niet.
y38[a]	De resultaten van ons werk zouden beter kunnen zijn dan ze op dit moment zijn.

Role Performance: Roe, et al. (1997)

y39	Soms laten andere teams ons een deel van hun werk doen, omdat zij zeggen dat wij het beter weten hoe het moet.
y40	In ons team wordt het werk onderbroken om een collega uit een ander team te helpen met het oplossen van een probleem.
y41	Ons bedrijf kan altijd op ons team rekenen.
y42*	Er wordt op ons team gerekend, niet alleen wat het werk betreft.
y43	Mensen uit andere teams vragen ons advies bij moeilijkheden in hun werk.
y44*[a]	Als er moeilijke opdrachten zijn, worden die meestal aan mijn werkeenheid gegeven.
y45*[a]	Wij nemen meer werk op ons dan andere teams.

Relationship Commitment

y46	Ik geef erom wat er in de toekomst met ons team gebeurt.
y47	Als team zullen wij altijd in staat zijn samen te werken bij het bereiken van onze doelen.
y48	Ik ben heel blij dat ik ervoor gekozen heb om in dit team te gaan werken.
y49	Het zou mij veel moeite kosten om dit team te verlaten.
y50	Ik vind dat mijn persoonlijke normen en waarden sterk overeen komen met wat men in mijn werkeenheid belangrijk vindt.
y51	Ik voel me thuis binnen deze werkeenheid.
y52	*Het maakt me weinig uit wat er in de toekomst met het team gaat gebeuren.
y53	*Het is niet duidelijk of wij als team lang kunnen blijven werken.

[3] 1 = disagree completely, 2 = disagree, 3 = partly disagree, 4 = neither agree nor disagree, 5 = partly agree, 6 = agree, 7 = agree completely

* Item reversed

[a] Item excluded in CFA

Appendix A6: Continued

Team satisfaction: Smith & Barclay (1995)

y54   Over het geheel genomen zijn we tevreden met onze werkrelatie.
y55   Ik ben blij in deze groep te kunnen werken.
y56   Wij zijn blij met elkaars bijdrage aan het werk.
y57   Ik denk dat mijn collega's tevreden zijn over mijn bijdrage.
y58   In vergelijking met andere groepen zijn de verhoudingen binnen onze groep vrij goed.

Stress: De Vries (1997)

y59   Er is zoveel te doen dat het me vaak boven het hoofd groeit.
y60   Het werk vraagt een grote inspanning en inzet.
y61   In dit werk is er vaak sprake van een grote druk.
y62   Ik moet me vaak haasten om op tijd met mijn werk klaar te zijn.
y63   Dit werk eist een grote tol van mij gezondheid.
y64   Ik heb vaak het gevoel dat ik constant moet blijven presteren.

5 1 = disagree completely, 2 = disagree, 3 = partly disagree, 4 = neither agree nor disagree, 5 = partly agree, 6 = agree, 7 = agree completely
* Item reversed

Appendix A7: General effectiveness measures(items) using Likert scales[3]

Instructie: Hieronder willen we graag weten hoe u denkt over een paar meer algemene zaken in uw werk. Geef aan in welke mate u het eens bent met deze bewering.

General satisfaction: De Vries (1997)

y65	Ik ben tevreden met mijn leidinggevende.
y66	Ik ben tevreden over de mate waarin ik het werk zelf kan indelen.
y67	Ik ben tevreden over de mate van verantwoordelijkheid in mijn werk.
y68	Ik ben tevreden over de mate waarin ik mijn kennis en capaciteiten kan benutten in dit werk.
y69	Ik ben tevreden met het type werk dat ik doe.
y70	Ik ben tevreden met mijn werkgever.
y71	Ik ben tevreden met de afwisseling die het werk me biedt.
y72	Ik ben tevreden met de hoogte van mijn salaris.

Attitudinal commitment: Freese & Schalk (1996)

y73	Wat er met deze organisatie gebeurt, trek ik me aan.
y74*	Ik voel me nauwelijks verbonden met de organisatie.
y75*	Ik voel me niet thuis bij de organisatie.
y76	Ik ben heel blij dat ik voor deze organisatie werk.
y77	Ik vind dat mijn persoonlijke normen en waarden sterk overeen komen met wat de organisatie belangrijk vindt.

Continuance commitment: Freese & Schalk (1996)

y78	Mijn leven zou te veel overhoop raken als ik nu besloot de organisatie te verlaten.
y79*	Ik denk dat ik snel weer een baan zou hebben als ik nu mijn baan op zou geven.
y80	Ik heb te weinig alternatieven om deze organisatie te verlaten.
y81*	Ik zou me geen zorgen maken als ik nu mijn baan had opgezegd, zonder dat ik al een nieuwe baan had.
y82	Het zou mij veel moeite kosten om deze organisatie te verlaten, zelfs als ik dit zou willen.

[3] 1 = disagree completely, 2 = disagree, 3 = partly disagree, 4 = neither agree nor disagree, 5 = partly agree, 6 = agree, 7 = agree completely

* Item reversed

Appendix B

Exploratory factor analyses

Appendix B1: Exploratory factor analysis for work characteristics (belonging to Table 5.12)

			Factors	
Items	m	sd	I	II
Functional				
Dependence				
x20	4.7	1.7	**.51**	.00
x21	5.6	1.2	**.53**	.00
x22	4.9	1.5	**.73**	.00
x23	5.6	1.2	**.82**	.00
x24	5.1	1.6	**.44**	.00
x25	5.7	1.3	**.75**	.00
Task				
Ambiguity				
x26	4.8	1.3	-.11	**.60**
x27	3.8	1.6	.10	**.70**
x28	4.1	1.7	.18	**.72**
x29	6.1	1.2	.12	**.49**
x30	4.0	1.6	.00	**.50**

Appendix B2: Exploratory factor analysis for team performance (belonging to Table 5.14)

			Factors	
Items	m	sd	I	II
Task				
performance				
y30	5.4	1.1	**.81**	.17
y31	5.1	1.1	**.76**	.23
y32	4.7	1.2	**.69**	.19
y33	3.6	1.5	**.49**	.12
y34	4.6	1.3	**.58**	.24
y35	5.3	1.4	**.77**	.20
Role				
Performance				
y38	4.8	1.7	.19	**.83**
y39	4.3	1.9	.23	**.60**
y40	3.7	1.9	.12	**.62**
y41	4.7	1.8	.25	**.80**
y42	4.5	1.7	.16	**.70**

Appendix B3: Exploratory factor analysis for affective and continuance commitment (belonging to Table 5.16)

Items	m	sd	Factors	
			I	II
Attitudinal Commitment				
y73	5.7	1.0	**.77**	.00
y74	6.0	1.1	**.70**	.12
y75	5.2	1.3	**.62**	.00
y76	5.9	1.3	**.70**	-.21
y76	5.7	.9	**.61**	-.23
Continuance Commitment				
y78	5.3	1.9	.00	**.52**
y79	4.3	1.8	.44	**.56**
y80	3.2	1.9	.00	**.75**
y81	2.9	1.5	-.21	**.76**
y82	2.4	1.4	-.26	**.76**

Appendix B3: Exploratory factor analysis for team and general satisfaction

Items	m	sd	Factors	
			I	II
Team Satisfaction				
y54	3.0	1.8	.17	**.54**
y55	5.6	1.1	.29	**.68**
y56	6.0	1.2	.00	**.84**
y57	5.8	.8	.25	**.59**
y58	5.8	.9	.16	**.52**
General Satisfaction				
y65	5.8	1.0	**.65**	.23
y66	5.5	1.0	**.48**	.25
y67	5.8	1.1	**.52**	.19
y68	5.6	1.3	**.69**	.12
y69	5.3	1.0	**.82**	.20
y70	5.7	1.1	**.72**	.31
y71	5.0	1.8	**.67**	.37
y72	4.3	2.1	**.57**	.29

Appendix C

Correlation matrices

In the following matrices are presented correlations with two numbers behind the decimal point. In the strutural analyses conducted in this book we used correlation with four number behind the decimal-point. Therefore, small differences may occur when using these matrices.

Appendix C1: Correlation matrix belonging to Table 7.1: the second-order model

	y1	y2	y3	y4	y5	y6	y7	y8	y9	y10	y11	y12
y1	1.00											
y2	.08	1.00										
y3	.18	.57	1.00									
y4	.23	.63	.71	1.00								
y5	.38	.48	.52	.63	1.00							
y6	.43	.10	.08	.16	.13	1.00						
y7	.55	.07	.20	.27	.45	.50	1.00					
y8	.17	.24	.27	.34	.31	.05	.09	1.00				
y9	.04	.07	.22	.19	.18	-.11	.04	.40	1.00			
y10	-.03	.24	.28	.26	.21	-.03	-.06	.17	.57	1.00		
y11	.07	.03	.22	.09	.19	-.04	.07	.26	.56	.46	1.00	
y12	.09	.24	.29	.37	.33	-.10	.03	.45	.56	.28	.32	1.00
y13	.03	.26	.30	.31	.34	-.04	.17	.34	.54	.56	.47	.50
y14	.01	.14	.28	.23	.29	-.14	.01	.37	.67	.55	.55	.54
y16	-.09	.11	.17	.05	.13	-.28	.01	.40	.46	.29	.31	.32
y17	-.14	.06	.07	.09	.15	-.17	-.08	.25	.32	.28	.36	.18
y19	.05	.17	.39	.17	.15	-.11	.04	.23	.35	.37	.31	.39
y20	-.15	.12	.20	.04	.05	-.12	-.05	.26	.32	.30	.37	.23
y21	-.06	.17	.21	.14	.07	-.06	.01	.29	.42	.31	.35	.31
y22	.01	.12	.10	.15	-.33	-.11	.27	.50	.39	.35	.40	.54
y25	-.06	.06	.02	.04	-.09	.07	.05	.26	-.20	-.25	.01	-.07
y26	.19	.14	.09	.12	-.01	.24	.29	.15	-.04	-.23	-.15	-.08
y27	.12	-.05	.02	.05	.03	.19	.17	.07	-.12	-.27	-.04	.02

Appendix C1: (continued)

	y13	y14	y16	y17	y19	y20	y21	y22	y25	y26	y27
y13	1.00										
y14	.62	1.00									
y16	.31	.54	1.00								
y17	.33	.52	.47	1.00							
y19	.46	.40	.25	.57	1.00						
y20	.24	.53	.28	-.04	.57	1.00					
y21	.36	.36	.30	.46	.25	.33	1.00				
y22	.52	.37	.32	.42	.37	.32	.31	1.00			
y25	-.17	.04	-.08	-.11	-.03	-.01	-.22	-.18	1.00		
y26	-.22	-.04	-.14	-.15	-.06	-.10	-.37	-.11	.49	1.00	
y27	-.05	-.01	-.22	-.08	-.08	-.19	-.08	.09	.29	.34	1.00

Appendix C2: Correlation matrix belonging to Table 7.1: the latent variables in the Hypothesized and Modified models

Variables	Hypothesized model					Modified model				
	1	2	3	4	5	1	2	3	4	5
1. Trust	1.00					1.00				
2. T.prop	.34	1.00				.36	1.00			
3. P.trustw	1.33	.40	1.00			.99	.33	1.00		
4. Cooperative b.	.81	.28	.91	1.00		.90	.32	.90	1.00	
5. Monitorng b.	-.18	-.06	-.21	-.15	1.00	-.24	-.09	.23	-.21	1.00

Appendix C3: Correlation matrix belonging to the first-order model

	1.	2.	3.	4.
1. Propensity t.	1.00			
2. P.trustw	.30	1.00		
3. Cooperative b.	.23	.68	1.00	
4. Monotoring b.	.05	-.18	-.19	1.00

For a beter comprehension of the matrices, the following models the numbers 1, 2, 3 and 4 correspond respectively to propensity to trust, perceived trustworthiness, cooperative behaviors, and monitoring behaviors.

Appendix C4: Correlation matrix belonging to Table 7.2: effects of team composition on trust

	1.	2.	3.	4.	x1	x2	x3	x4	x5	x6	x7	x8
1.	1.00											
2.	.23	1.00										
3.	.23	.69	1.00									
4.	.07	-.18	-.19	1.00								
x1	.20	.38	.37	.12	1.00							
x2	.18	.22	.23	.05	.31	1.00						
x3	.11	.37	.39	.05	.64	.35	1.00					
x4	.03	.11	.13	.17	.40	.48	.49	1.00				
x5	-.04	.23	.26	-.08	.50	.29	.63	.49	1.00			
x6	.29	.30	.27	.15	.04	.06	.05	-.10	-.17	1.00		
x7	.20	.44	.34	.05	.26	.09	.25	.08	.03	.54	1.00	
x8	.36	.45	.46	.13	.15	.17	.19	-.03	-.03	.72	.62	1.00
x9	.25	.45	.32	.12	.18	.10	.16	.03	-.01	.61	.63	.64
x11	.14	.32	.23	-.29	.08	.11	.14	.10	.24	.17	.37	.25
x12	.20	.42	.23	-.06	.14	.09	.13	.04	.06	.42	.50	.46
x13	.35	.44	.41	-.18	.18	.13	.25	.04	.06	.32	.55	.43
x14	.14	.36	.20	-.08	.14	.07	.24	.08	.28	.17	.42	.25
otnr	.18	-.21	-.08	.22	-.05	-.14	-.16	-.18	-.38	.10	-.04	.03
jtrn	.06	-.20	-.03	.18	.02	.02	.02	-.03	-.06	.01	-.09	-.01

Appendix C4: (continued)

x9	1.00					
x11	.36	1.00				
x12	.36	.58	1.00			
x13	.41	.58	.64	1.00		
x14	.33	.44	.52	.44	1.00	
otnr	-.11	-.22	-.07	-.11	-.35	1.00	
jtnr	-.10	-.16	-.09	-.13	-.28	.60	1.00
	x9	x11	x12	x13	x14	otnr	jtnr

Appendix C5: Correlation matrix belonging to Table 7.2: the latent variables of team composition and trust

Variables	Hypothesized model					Modified model				
	1	2	3	4	5	1	2	3	4	5
1. Trust	1.00					1.00				
2. Pref.	.46	1.00				.50	1.00			
3. T.Cohe	.58	.16	1.00			.56	.18	1.00		
4. J.ski	.57	.26	.63	1.00		.57	.26	.56	1.00	
5. Tenure	-.20	-.25	.00	-.20	1.00	-.22	-.16	.02	-.23	1.00

Appendix C6: Correlation matrix belonging to Table 7.3: effects of work characteristics on trust

	1.	2.	3.	4.	x26	x27	x28	x29	x30	x20	x21	x22
1.	1.00											
2.	.30	1.00										
3.	.23	.68	1.00									
4.	.06	-.18	-.19	1.00								
x26	-.03	.42	.47	-.20	1.00							
x27	-.26	.12	.13	-.21	.47	1.00						
x28	-.14	.31	.20	-.21	.52	.61	1.00					
x29	-.06	.01	.06	.02	.16	.27	.24	1.00				
x30	-.15	.30	.20	-.13	.62	.64	.60	.20	1.00			
x20	.10	.03	.03	.16	-.04	-.11	-.04	.16	-.13	1.00		
x21	.31	.30	.35	.21	.07	-.06	-.06	.08	.02	.43	1.00	
x22	.20	.21	.17	-.07	.27	.19	.21	.36	.26	.29	.34	1.00
x23	.18	.23	.23	.25	.10	-.05	.04	.21	.03	.45	.46	.42
x24	-.03	.21	.30	-.15	.56	.33	.37	.20	.36	-.08	-.01	.35
x25	.09	.15	.12	.23	.04	-.05	.06	.16	-.01	.40	.44	.26
	1.	2.	3.	4.	x26	x27	x28	x29	x30	x20	x21	x22

Appendix C6: (continued)

	x23	x24	x25
x23	1.00		
x24	.10	1.00	
x25	.53	.12	1.00
	x23	x24	x25

Appendix C7: Correlation matrix belonging to Table 7.3: the latent variables work characteristics and trust

	Hypothesized model			Modified model		
Variables	1	2	3	1	2	3
1. Trust	1.00			1.00		
2. F.dep	.32	1.00		.31	1.00	
3. T.amb	.38	.00	1.00	.32	-.05	1.00

Appendix C8: Correlation matrix belonging to Table 7.4: effects of organizational context on trust

	1.	2.	3.	4.	x36	x37	x39	x40	x41	x42	x43	x44
1.	1.00											
2.	.28	1.00										
3.	.21	.69	1.00									
4.	.06	-.18	-.19	1.00								
x36	.12	.34	.26	-.02	1.00							
x37	.10	.35	.17	-.18	.32	1.00						
x39	-.04	.26	.16	.01	.36	.34	1.00					
x40	.09	.23	.21	.09	.29	.32	.50	1.00				
x41	.10	.32	.33	-.01	.54	.27	.40	.36	1.00			
x42	.19	.31	.29	-.02	.42	.52	.42	.38	.28	1.00		
x43	.12	.23	.31	.16	.37	.17	.25	.30	.37	.34	1.00	
x44	.06	.23	.27	-.07	.49	.46	.48	.37	.37	.41	.23	1.00
x45	-.04	.09	.19	.16	.27	.25	.33	.19	.24	.33	-.02	.34
x46	.05	.17	.14	.06	.18	.31	.26	.25	.21	.32	-.01	.28
x47	.05	.05	.08	.06	.06	.25	.15	.11	.17	.20	.05	.23

Appendix C8: (continued)

	x45	x46	x47
x45	1.00		
x46	.63	1.00	
x47	.46	.54	1.00

Appendix C9: Correlation matrix belonging to Table 7.4: the latent variables of organization context and trust

	Hypothesized model			Modified model		
Variables	1	2	3	1	2	3
1. Trust	1.00			1.00		
2. OClimate	.50	1.00		.48	1.00	
3. M.influence	.14	.44	1.00	.18	.52	1.00

Appendix C10: Correlation matrix belonging to Table 8.1 and Table 8.2: effects of trust on team performance

	y30	y31	y32	y33	y34	y35	y39	y40	y41	y42	y43
y30	1.00										
y31	.45	1.00									
y32	.60	.58	1.00								
y33	.43	.38	.57	1.00							
y34	.38	.51	.56	.38	1.00						
y35	.30	.22	.40	.16	.32	1.00					
y39	.20	.33	.21	.27	.18	-.18	1.00				
y40	.36	.30	.33	.37	.23	-.18	.33	1.00			
y41	.26	.33	.39	.29	.29	.18	.25	.31	1.00		
y42	.29	.28	.35	.32	.31	.23	.20	.28	.39	1.00	
y43	.35	.26	.39	.23	.29	.25	.26	.20	.35	.48	1.00
1.	.17	.20	.10	.11	.17	.15	-.01	-.02	.11	.20	.24
2.	.28	.20	.19	.18	.18	.17	-.10	-.11	.04	.21	.19
3.	.28	.21	.18	.20	.17	.16	-.07	-.10	.14	.22	.22
4.	-.15	-.20	-.09	-.12	-.10	-.11	.15	.16	.12	.15	.08

Appendix C10: (continued)

	1.	2.	3.	4.
1.	1.00			
2.	.30	1.00		
3.	.23	.69	1.00	
4.	-.06	-.18	-.18	1.00

Appendix C11: Correlation matrix belonging to Table 8.1 and table 8.2: the latent variables of team performance and trust

	Hypothesized model			Hypothesized model ψ		
Variables	1	2	3	1	2	3
1. Trust	1.00			1.00		
2. Task perf.	.10	1.00		.72	1.00	
3. Role perf.	.33	.25	1.00	.33	.18	1.00
	Modified model			Modified model ψ		
Variables	1	2	3	1	2	3
1. Trust	1.00			1.00		
2. Task perf.	.10	1.00		.72	1.00	
3. Role perf.	.34	.29	1.00	.32	.23	1.00

Appendix C12: Correlation matrix belonging to Table 8.3: effects of trust on team effectiveness

	y54	y55	y56	y57	y58	y46	y47	y48	y49	y50	y51	y52
y54	1.00											
y55	.56	1.00										
y56	.50	.56	1.00									
y57	.55	.74	.58	1.00								
y58	.42	.50	.59	.60	1.00							
y46	.05	.22	-.03	.13	.11	1.00						
y47	-.05	.02	-.11	.05	-.13	.02	1.00					
y48	-.01	.22	-.07	.05	-.07	.50	.25	1.00				
y49	.15	.26	.23	.14	.10	.22	.10	.19	1.00			
y50	.07	.25	.12	.14	.07	.34	.09	.12	.62	1.00		
y51	.11	.23	.24	.13	.13	.26	.01	.16	.55	.67	1.00	
y52	.15	.17	.18	.09	.23	.18	.30	.12	.42	.43	.40	1.00
y53	.13	.28	.02	.21	.13	.36	.19	.25	.55	.69	.52	.42
y59	.02	-.16	-.09	-.08	-.09	-.02	-.07	.06	-.40	-.23	-.20	-.04
y60	.10	-.02	.01	.01	.02	-.03	-.13	-.11	-.15	-.14	-.10	.03
y61	-.29	-.40	-.15	-.23	-.23	-.23	-.05	-.26	-.28	-.16	-.24	-.12
y62	-.03	.19	.13	.18	.10	.19	.14	.13	-.18	-.01	-.02	-.08
y63	.01	.05	-.07	-.01	-.04	.13	.05	.14	-.13	-.02	-.16	.01
y64	.17	.07	.03	.10	.08	.05	.02	-.07	.06	-.05	-.06	.09
1.	.22	.35	.29	.34	.24	.16	.10	.16	.24	.11	.11	.19
2.	.29	.30	.15	.21	.09	.20	.24	.35	.17	.21	.11	.16
3.	.08	.21	.15	.12	.05	.12	.27	.39	.06	.18	.05	.15
4.	.10	.30	.32	.32	.27	.03	-.09	-.10	.01	-.08	-.01	.02

Appendix C12: (continued)

	y53	y59	y60	y61	y62	y63	y64	1.	2.	3.	4.
y53	1.00										
y59	-.25	1.00									
y60	-.07	.44	1.00								
y61	-.14	.13	.36	1.00							
y62	-.01	.31	.29	-.06	1.00						
y63	-.10	.52	.54	.13	.46	1.00					
y64	-.01	.27	.55	.26	.25	.46	1.00				
1.	.17	-.05	-.20	-.24	-.02	-.21	-.11	1.00			
2.	.22	.09	-.26	-.51	.10	.09	-.35	.29	1.00		
3.	.11	.12	-.15	-.29	.24	.10	-.28	.23	.68	1.00	
4.	-.09	-.02	.11	-.04	.20	-.07	.12	.05	-.19	-.20	1.00

Appendix C13: Correlation matrix belonging to Table 8.3: the latent variables of team effectiveness and trust

	Hypothesized model				Modified model			
Variables	1	2	3	4	1	2	3	4
1. Trust	1.00				1.00			
2. Rel. comm.	.29	1.00			.27	1.00		
3. Team satis.	.30	.08	1.00		.30	.08	1.00	
4. Stress	-.22	-.06	-.07	1.00	-.30	-.08	-.09	1.00

Appendix C14: Correlation matrix belonging to Table 8.4: effects of trust on general effectiveness

	y73	y74	y75	y76	y77	y78	y79	y80	y81	y82
y73	1.00									
y74	.37	1.00								
y75	.48	.23	1.00							
y76	.32	.40	.25	1.00						
y77	.33	.37	.36	.57	1.00					
y78	-.11	.02	.01	.13	.12	1.00				
y79	.34	.13	.23	.03	.07	.08	1.00			
y80	.07	.11	.07	-.10	-.16	.24	.56	1.00		
y81	-.07	.01	-.21	-.07	-.17	.37	.19	.48	1.00	
y82	-.03	-.04	-.12	-.33	-.27	.23	.28	.53	.58	1.00
y65	.45	-.01	.54	.15	.32	.03	.23	.15	-.02	.08
y66	.67	.15	.55	.38	.36	.03	.21	-.03	-.16	-.10
y67	.55	.22	.58	.22	.34	-.01	.21	-.04	-.15	-.12
y68	.58	.27	.41	.10	.10	-.08	.31	.16	-.02	.05
y69	.51	.09	.51	.10	.19	-.07	.19	.04	-.14	-.02
y70	.64	.27	.54	.19	.23	-.06	.30	.11	-.09	.06
y71	.61	.07	.37	.19	.21	-.09	.23	-.01	-.15	-.18
y72	.31	.09	.24	-.01	.08	-.02	.20	.02	-.11	.07
1.	.33	.13	.23	.19	.29	-.18	.08	-.13	-.19	-.11
2.	.21	.26	.25	.50	.46	-.15	-.05	-.17	-.26	-.36
3.	.11	.24	.24	.52	.40	-.10	-.07	-.17	-.17	-.28
4.	.27	-.16	.18	-.02	.01	.09	.19	.14	.15	.20

Appendix C14: (continued)

	y65	y66	y67	y68	y69	y70	y71	y72	1.	2.	3.	4.
y65	1.00											
y66	.41	1.00										
y67	.44	.57	1.00									
y68	.40	.47	.43	1.00								
y69	.47	.62	.55	.50	1.00							
y70	.42	.76	.58	.51	.69	1.00						
y71	.49	.49	.48	.37	.59	.54	1.00					
y72	.32	.27	.27	.30	.37	.26	.46	1.00				
1.	.26	.34	.16	.24	.14	.24	.18	.10	1.00			
2.	.23	.31	.21	.24	.15	.15	.16	.04	.26	1.00		
3.	.13	.35	.25	.23	.14	.14	.10	-.04	.29	.67	1.00	
4.	.10	.14	.02	.03	.01	.01	.05	.14	-.09	-.19	-.20	1.00

Appendix C15: Correlation matrix belonging to Table 8.4: the latent variables of general effectiveness and trust

	Hypothesized model				Modified model			
Variables	1	2	3	4	1	2	3	4
1. Trust	1.00				1.00			
2. Gen. Satis	.35	1.00			.29	1.00		
3. Affective C.	.70	.24	1.00		.72	.21	1.00	
4. Contin. C.	-.39	-.13	-.27	1.00	-.13	-.12	-.30	1.00

Appendix C16: Correlation matrix belonging to Table 8.5: the integrated model

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.	1.00									
2.	.30	1.00								
3.	.23	.67	1.00							
4.	.06	-.18	-.19	1.00						
5. Task perfm.	.22	.12	.16	-.11	1.00					
6. Role perfm.	.21	.15	.17	-.10	.52	1.00				
7. R. commit.	.24	.25	.16	-.06	.28	.14	1.00			
8. T. satisf.	.32	.27	.14	-.09	.44	.44	.29	1.00		
9. Stress	-.22	-.23	-.15	.10	-.10	-.10	-.11	-.12	1.00	
10.Affct. commit.	.27	.51	.47	.02	.20	.22	.17	.16	-.13	1.00´
11.Cont. Commit	.01	-.31	-.24	.17	-.07	.11	-.02	.12	-.10	-.21
12. Gen. sat.	.32	.22	.16	.11	.31	.29	.27	.68	.12	.27
13. Preference wt	.18	.29	.31	.12	-.01	.26	.13	.30	-.09	.26
14. T. cohesion	.34	.45	.40	.14	.21	.28	.16	.44	-.10	.23
15. Job adq.skil	.26	.48	.33	-.19	.11	.19	.11	.29	-.20	.35
16. F.dep.	.11	.22	.22	-.14	.13	.30	.19	.28	-.06	.27
17. T. amb	.11	.29	.21	-.10	-.09	-.11	-.15	-.15	.15	.20
18. Org.climate	.12	.38	.19	.10	.10	.05	.16	.29	.08	.30
19. Ov. Infl	.11	.30	.26	-.12	.15	.12	.12	.15	.17	.33

Appendix C16: (continued)

	11.	12.	13.	14.	15.	16.	17.	18.	19.
11.Cont. Commit	1.00								
12. Gen. sat.	-.04	1.00							
13. Preference wt	-.08	.29	1.00						
14. T. cohesion	.01	.29	.17	1.00					
15. Job adq.skil	-.10	.21	.17	.45	1.00				
16. F.dep.	.08	.21	.20	.27	.16	1.00			
17. T. amb	-.16	-.10	.22	.17	.15	.14	1.00		
18. Org.climate	-.33	.41	.22	.19	.30	.19	.35	1.00	
19. Ov. Infl	-.03	.30	.18	.03	.01	.12	.30	.36	1.00

Appendix C17: Correlation matrix belonging to Table 8.5: the latent variables in the integrated model

	1.	2.	3.	4.	5.	6.
1. Trust	1.00					
2. T.perfm	.30	1.00				
3. T.eff	.68	.73	1.00			
4. G.eff	.78	.23	.53	1.00		
5. T.comp	.84	.28	.57	.66	1.00	
6. Workorg	.59	.17	.40	.75	.51	1.00

Summary

In this research we have studied the nature, causes and consequences of trust in work teams. Trust a complex concept that knows many definitions and it has been studied in various contexts. Macro level theories have studied trust with regard to social relations, economic transactions, and institutions. Micro level approaches, on the other hand, have focused on forms of personalized trust such as interpersonal and intergroup trust. In recent years, organizational scholars have contributed to this research by giving a particular emphasis on the importance of trust for the functioning and survival of organizations. As traditional bureaucratic structures fade away, forms of personalized trust become more important for the functioning and effectiveness of organizations. This so called "trust imperative" has been referred to as a consequence of political, social or economic developments, which have influence the way of thinking and structuring of organizations. Probably as a result of these developments, organizational theories have started to focus on processes of collaboration and cooperation inside and outside firms, and accentuate the interpersonal and intergroup dynamics at the work place. An important question has become whether trust is relevant to these dynamics. Our research focused on the following general questions: What is trust, which factors affect trust within work teams, and what are the effects of trust in those teams?

In chapter 2 we described various conceptualizations of trust that most contributed to its study in organizations. These conceptualizations were grouped according to their theoretical perspectives. In the sociological approaches, trust is viewed as a collective phenomena. The function of trust consists of stabilizing social interaction through the institutionalization of norms and values of what is "fair" and "right". Conceptually, trust is defined as an attitude towards others (i.e. individuals, groups or institutions) and is described as a complex interaction of cognitive, emotional and behavioral aspects. These aspects reflect different experiences of trust depending of the type of relationship, situation or system under consideration. More calculative oriented, the economic approaches assume that trust is a rational choice. This choice is based on the expectation that economic actors will act and take decisions in a non-opportunist manner. Moreover, it is expected that the choice to trust will be beneficial or at least not detrimental to any of the parties involved. Some approaches focus on the risks associated with trust in transactions and emphasize the importance of contracts and regulating procedures in protecting investments (e.g. Williamson, 1975). The psychological approaches concentrate on the individual decision to trust and attempt to explain the causes and effects of this decision in different contexts. Here, the accent is on the dynamics of trust between individuals or groups, and involve considerations about individual, relational and situational contingencies.

The acknowledgment that trust is applicable to different contexts and levels of analysis, involves different relationships, and performs multiple functions, has led scholars to recognize the multi-complex character of this concept. The relevance of sociological, economic, and psychological approaches for our research is explained by the research domain of work teams. Work teams are groups where "work" is the occasion for the team to work together and "working" is the main activity connecting the individuals together and the team with the environment. Consequently, an analysis of trust at this level needs not only a reflection on the psychological and group processes that take place inside the team, but also on the organizational and work context involving the teams.

In chapter 3 we discussed the domain of trust in organizational research and distinguished three levels upon which trust has been studied. This discussion is preceded by an analysis of the most relevant developments that have led to the trust imperative for organizations. The organizational change literature has stressed the transformations that result from the establishment of interorganizational forms of collaboration, the redesign or reengeneering of structures and processes, the implementation of work teams, or the flexibilization of the work processes and employment contracting. The success of these transformations depends on the extent to which organizations are able to coordinate and act effectively at different levels. Trust is necessary in the extent to which it facilitates communication and acceptance of change, which is reflected in the decisions taken and the resources committed to move forwards with a particular strategy or course of action. This does not necessary mean that

before these developments trust was absent from organizations. Only that, in traditional organizations, formal rules and standard procedures were able to guarantee the trust necessary to an effective functioning. In modern organizations, the flexibilization of the work procedures has made trust necessary not only with regard to formal mechanisms, but also trust with respect to interpersonal relationships. This is called the "trust imperative" (Shaw, 1997)

Organizational theories have approached trust essentially at three levels. The 'interorganizational' level, which refers to the climate of trust ingrained in the contact between organizations that enhances mutual learning. At this level trust is often supported by the a common belief in and a commitment to mutual collaboration (Dogdson, 1993). The 'organizational' level, which is based on institutional arrangements and professional practices that support the organization as a whole. Finally, the 'interpersonal' level, which refers to the established relationships between organizational members which can be dyadic, group or intergroup based. Although the processes involved in each of these forms have been theoretically distinguished, there is a lack of evidence to corroborate these suppositions. Rousseau, et al. (1998) argued that a phenomena such as trust should be provided with a theory and research methodology that reflects its many facets and levels. However, conceptual diversity can be difficult handle in particular when it fails to address context specific research problems (Bigley & Pearce, 1998). A meaningful framework for the study of trust in work teams needs to reflect considerations about group processes as well as the conditions and the effects of these specific contexts. Therefore, we needed to considered necessary to address specific issues related to group behavior in organizations.

In chapter 4 the theoretical framework for the study of trust in work teams was described. Based on the contingency approaches to group behavior, work teams were defined as performing organizational units. That is, work teams are real organizational groups that can be identified by type of task(s) performed, degree of interdependence among members in performing these tasks, and the final outcome produced by the team. Until recently little research has been conducted on the effects of trust between team members in real organizational settings.

In this study *trust* is defined as "*a psychological state that manifests itself in the behaviors towards others, is based on the expectations made upon the behaviors of these others, and on the perceived motives and intentions in situations entailing risk for the work relationship with those others.*" In this definition trust is viewed as an attitude held by an individual in relation to other individuals in the context of work teams. This definition distinguishes between the individual state, the expectations and the behavior towards each other, which are conceptualized as distinct but related components of trust. This is consistent with previous conceptualizations where trust is defined as a multidimensional or multifaceted construct. (e.g. Mayer et al., 1995; Cummings

& Bromiley, 1996; Smith & Barclay, 1997). Contrary to some other definitions we considered the behaviors as components of trust and not as an effect of trust it self. We argued that behaviors are an important component of trust, since they reflect the significance of the decision about trusting or not. We distinguished also two behavioral components, i.e. cooperative behaviors and lack of monitoring behaviors.

Based on a simple input-process-output contingency framework, an integrated model was developed in which trust is presented as a process variable. In this model, team composition, work characteristics and organizational variables are linked with trust to explain team performance, team effectiveness and general effectiveness. The model assumed that:
1. Trust within work teams is a multi-component construct composed of four components, i.e. propensity to trust, perceived trustworthiness, cooperative behaviors and lack of monitoring behaviors.
2. Trust is affected by factors related to the composition of teams, work characteristics and organizational context.
3. Trust affects team performance and effectiveness as well as more general levels of effectiveness.

Based on this model we formulated several hypotheses concerning the relationship between the trust components and trust, the effects of team composition work characteristics and organizational variables (input) on trust (process), and the effects of trust on team performance, team effectiveness and general effectiveness (output).

In chapter 5 the research model was operationalized, and the method of research was described. This research consisted of two phases, i.e. the development of the trust measures (1st research phase), and the test of the model and hypotheses (2nd research phase). The empirical research consisted of several field studies in different health care organizations in the Netherlands. The teams in our studies contained between three and six members.

The development of the trust measures involved different stages. First, the meaning of trust was explored through the interview study. Secondly, a comparison was made between the existing measures of trust and the content of trust components. Based on these results four scales were developed. The scales were judged by experts and analyzed with regard to their internal structure using exploratory and confirmatory procedures with independent samples. The validation tested the convergent and discriminant validity of the measures. The results of these procedures were presented and discussed in chapter 6.

In the second research phase, three main studies were conducted. The test of the model and the hypotheses formulated in chapter 4 was conducted with structural equation model (SEM) procedures. Given the high number of variables, the integrated model was divided into different sections. For each section various models were hypothesized. The results of these models were presented and discussed in chapters 7 & 8.

In chapter 6 we discussed the results of the first research phase. The interview study clearly indicated that people behave differently towards colleagues that they trust and towards colleagues that they do not trust. This confirms to a certain extent the importance of considering cooperative and monitoring behaviors as measures of trust. For these behaviors two scales were constructed based on the interview study. For the components propensity to trust and perceived trustworthiness scales were adapted from existing measures. The final instrument included 10 items measuring propensity to trust, 12 items measuring perceived trustworthiness, 18 items measuring cooperative behaviors and 14 item measuring monitoring behaviors. Both exploratory (EFA) and confirmatory analysis (CFA) confirmed the proposed four-factor structure for trust.

The validation results supported the convergent and discriminant power of the scales within and between teams. The intra-rater reliability indicated a high level of agreement between team members in relation to the trust measurements, which justified the aggregation of data at the team level. At the same time, teams showed an adequate level of variation in relation to the trust components in each organization and in the team sample, which indicates that the scales have power to discriminate between teams. Using external criterion validation procedures, the scales converged as expected to overall trust. However, the discriminant powers of these scales in relation to several other criterion variables are somewhat less consistent across samples.

The hypotheses that dealt with the nature of trust and the factors affecting trust within teams were discussed in chapter 7. Our results supported the multi-component nature of trust in a simple first-order structure, using the four trust components as observed indicators. Accordingly, trust was considered as a latent construct. The results indicated that individuals who trust their teams, have high propensity to trust others, strongly perceive team members as being trustworthy, often engage cooperative behaviors and do not monitor the work of their colleagues. One particularity of these results is that the percentage of the total variance of trust explained by each component varied considerably. Perceived trustworthiness was the component that explained more variance of trust (83%), cooperative behaviors explained 57%, propensity to trust explained only a small percentage (10%), and monitoring behaviors explained only 4% of that variance.

It has been suggested that different components may be more important in some contexts than others, depending on the degree of familiarity and interdependence between individuals. We argued that the components explaining less percentage of trust still should be viewed as important elements, since the results of CFA in chapter 6 favored a four-factor model structure. Furthermore, the teams in this study were constituted by individuals who know each other for some years. Consequently, it makes sense that trust between members may be more based on attributions of trustworthiness made to one another than on general expectancies.

With respect to the factors affecting trust within teams, our findings are consistent with the notion that trust is not only based on personal information but is contingent to the context. The results indicated that trust within teams is influenced by composition of teams, and also by work characteristics and organizational context. Based on the percentage of variance explained in each model, these results indicated that factors such as team cohesion, preference for working in a team, and job adequate skills, are mainly responsible for the existence of trust between team members. These variables explain 52% of the total variance of trust. Organizational climate, functional dependence and task ambiguity had a less strong effect on trust, and explained only 25% of the total variance of trust.

Our results contradicted the hypotheses referring to the effects of task ambiguity and tenure on trust. Task ambiguity was positively related to trust, which contradicted the transaction-costs point of view (Williamson, 1975). Instead the results supported the argument that task ambiguity is able to increase the vulnerability of team members towards each other, and that might create an opportunity for trust instead of opportunism (Morris & Moberg, 1994). Further studies are necessary, though, in order to arrive at consistent conclusions in relation to this matters. With respect to the hypothesized effect of tenure, the results toned a negative effect on trust. More detailed analyses suggested that tenure was associated with high continuance commitment. One explanation may concern the fact that in two of the organizations studied, the teams were going through a reorganization process, and in the other organization teams had recently finished a similar process. Therefore, feelings such as low affective commitment and high continuance commitment can account for the negative and low effect of tenure on trust within the teams studied. Another explanation may concern that fact in two of the organizations the age average of the respondents was above 40. In some cases this may be an indicative of a more calculative relation with the organization (Roberts & Hunt, 1991).

In chapter 8 were examined the effects of trust and the adequacy of total integrated model. The results confirmed all hypotheses formulated for the effects of trust. Trust explained 10% of the total variance of task performance, which provided strong support for the argument that trust is imperative for organizations (Shaw, 1998). The effects of trust on team effectiveness were also confirmed by our results, although the variance explained by trust was small than by team performance and general effectiveness. Trust explained 5% of the variance of relationship commitment, 10% of the variance of team satisfaction, and 6% of the variance of stress. The effect of trust on stress was negative. The strongest effects of trust were visible on general levels of effectiveness. Trust explained 9% of general satisfaction, 52% of the affective commitment with the organization, and 18% of continuance commitment. The effect of trust on continuance commitment was negative.

The results of the integrated model confirmed the important role of trust in organizational behavior, although disconfirm the input-process-output structure proposed. Work and organizational conditions had a direct effect on general effectiveness. Trust within teams was mainly influenced by the composition of teams. Work and organizational conditions had a positive effect on trust but their effect on general effectiveness was stronger. Trust was positively related to team performance, although the relation to general effectiveness was stronger. Team effectiveness was strongly affected by team performance.

In general, the results of our research are more consistent with the sociological and psychological perspectives than with the economic approaches. Although no objective measures were taken in consideration in this research, our results fully support with the overall positive effect of trust on the functioning of teams in organizations. Accordingly, teams that function with trust among members are able to perform better than teams without trust. Trust in teams leads individuals to feel committed and be satisfied with their team and the organization, and feel less stressed in relation to their job.

In chapter 9 some conclusions and recommendations for future research were presented. In addition the methods and results were discussed. One limitation in our research is the fact that the conclusions can only be generalized to similar social care population in the Netherlands. In second place, we may wonder if with a larger sample the results of our effects would remain the same, given the fact that some of our models presented initial goodness of fit in the marginal acceptance zone. Another concern is related to the applicability of the trust measures to other teams. Although the trust scales converged to overall trust, some inconsistencies were found concerning the discriminate powers of these scales concerning other criterion variables. This suggests that the scales need improvement.

Chapter 9 ends with some practical advice. When trust is high teams perform better, become more satisfied and committed to their members, and individuals will feel less stressed. High trust in teams leads also to more satisfaction and affective committed to the organization. The practical implication of these effects 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 the necessary trust for high performance. Another practical implication of this study emphasizes how trust can be created through different conditions. Three major conditions can be identified as sources to develop and maintain trust within teams, i.e. the quality of interaction among team members, level of interdependence, organizational climate and degree of participation in the organization.

Samenvatting

In deze studie doen we onderzoek naar de aard, determinanten en effecten van vertrouwen in teams. Vertrouwen is een complex concept dat veel definities kent en onderzocht is binnen verschillende contexten. Op macroniveau is het onderzocht als belangrijk proces binnen organisaties, sociale relaties en economische transacties. Op microniveau staan vormen van persoonlijk vertrouwen, zoals interpersoonlijk vertrouwen en vertrouwen binnen groepen, centraal. De laatste jaren hebben onderzoekers een bijdrage geleverd aan het inzicht dat vertrouwen belangrijk is voor het functioneren en overleven van organisaties. Met het wegvallen van traditionele structuren in organisaties wordt vertrouwen steeds belangrijker geacht voor de effectiviteit van organisaties en het gedrag van haar leden. Deze zogenaamde "trust imperative" wordt in het algemeen beschouwd als een gevolg van politieke, sociale en economische ontwikkelingen, die de manier van denken en de structuur van organisaties beïnvloed hebben. Waarschijnlijk als gevolg van deze ontwikkelingen wordt er vanuit organisatietheorieën steeds meer nadruk gelegd op samenwerkingsprocessen binnen en buiten organisaties en is er meer aandacht voor interpersoonlijke en intergroepsprocessen in de werkomgeving. Een relevante vraag is of vertrouwen belangrijk voor deze processen is. Deze onderwerpen worden in dit boek behandeld binnen de context van teams. In ons onderzoek wordt daarom ingegaan op de volgende algemene vragen: wat is vertrouwen, welke factoren beïnvloeden vertrouwen binnen teams en wat zijn de effecten van vertrouwen binnen dergelijke teams?

In hoofdstuk 2 hebben we verschillende opvattingen van vertrouwen beschreven die het meest hebben bijgedragen aan de studie ervan in organisaties. Deze opvattingen zijn ingedeeld op basis van theoretische kaders. In de sociologische benaderingen wordt vertrouwen gezien als een collectief fenomeen, dat als functie het stabiliseren van sociale interacties heeft. Dit vindt plaats door middel van het vaststellen van normen en waarden over wat "eerlijk" en " juist" is. Conceptueel wordt vertrouwen gedefinieerd als een houding ten opzichte van anderen (te weten individuen, groepen of instituten) en wordt het omschreven als een complexe interactie tussen cognitieve, emotionele en gedragsmatige aspecten. Deze aspecten weerspiegelen verschillende ervaringen van vertrouwen die afhankelijk zijn van het soort relatie dat men heeft en de situatie of het systeem waarin men zich bevindt. Vanuit de economische benaderingen wordt vertrouwen beschouwd als een rationele keuze. Deze keuze is gebaseerd op de verwachting dat economische actoren op een niet-opportunistische manier zullen handelen en beslissen. Bovendien wordt verwacht dat deze beslissingen voordelig, of tenminste niet nadelig, zullen zijn voor alle betrokken partijen. De nadruk ligt op de risico's die verbonden zijn aan het vertrouwen bij transacties en op het belang van contracten en procedures ter bescherming van investeringen (bijv. Williamson, 1975). De psychologische benaderingen, tenslotte, concentreren zich op de individuele beslissing anderen te vertrouwen en proberen oorzaken en gevolgen van dergelijke beslissingen in verschillende contexten te verklaren. Het accent ligt hierbij op de dynamiek van vertrouwensrelaties tussen individuen onderling of tussen (leden van) teams. De assumpties van de psychologische benadering omvatten individuele, relationele en situationele omstandigheden.

Het inzicht dat vertrouwen toepasbaar is binnen verschillende contexten en op diverse analyseniveaus en dat het betrekking heeft op verschillende soorten relaties, heeft ertoe geleid dat onderzoekers de complexiteit van het concept zijn gaan erkennen. In dit onderzoek bestuderen we vertrouwen op teamniveau en hebben we zowel de sociologische, economische, psychologische benaderingen van vertrouwen nodig. Teams zijn groepen waarvoor "het werk" de aanleiding is om als team samen te komen en waarbij "werken" de hoofdactiviteit is die de individuen met elkaar en met de omgeving verbindt. Dat is de reden waarom een analyse van vertrouwen op teamniveau niet alleen kan bestaan uit een reflectie op individuele psychologische en groepsprocessen, maar ook uit een reflectie op de omgeving in bredere zin, in dit geval de organisatie.

Het onderzoeksdomein van vertrouwen in organisaties wordt behandeld in hoofdstuk 3, aan de hand van een analyse van de relevantie van dit domein en een overzicht van de drie niveaus waarop vertrouwen kan worden bestudeerd. Literatuur op het gebied van organisatieverandering heeft zich met name gericht op transformaties die het gevolg zijn van samenwerkingsverbanden tussen organisaties, het herontwerp van structuren en processen, de implementatie van teams, of de flexibilisering van de werkprocessen en arbeidsrelaties. Het succes

van deze transformaties hangt af van de mate waarin organisaties in staat zijn effectief te handelen en te coördineren op verschillende niveaus. Deze coördinatie vond in traditionele organisaties voornamelijk plaats via het hanteren van formele regels en gestandaardiseerde procedures, die een voor het functioneren noodzakelijke vertrouwen garanderen. Een bepaalde mate van vertrouwen is noodzakelijk omdat het de communicatie en acceptatie van veranderingen vergemakkelijkt. In moderne organisaties daarentegen heeft flexibilisering van de werkprocedures ertoe geleid dat vertouwen niet alleen noodzakelijk is met betrekking tot formele mechanismen maar ook in interpersoonlijke relaties. Dit wordt de "trust imperative" genoemd (Shaw, 1997).

Binnen organisatietheorieën wordt vertrouwen op drie niveaus beschreven. Het interorganisatie niveau van vertrouwen heeft betrekking op een vertrouwensklimaat tussen organisaties dat wederzijdse ontwikkeling stimuleert. In veel gevallen wordt dit ondersteund door een gezamenlijk geloof in en een betrokkenheid bij de samenwerking (Dogdson, 1993). Vertrouwen op het niveau van de organisatie is gebaseerd op institutionele en professionele gebruiken die de organisatie als geheel ondersteunen. Het interpersoonlijke niveau van vertrouwen, tenslotte, heeft betrekking op de relaties tussen leden van de organisatie, zowel tussen twee of meer individuen als tussen groepen. Hoewel de processen behorend bij elk van deze vormen van vertrouwen theoretisch kunnen worden onderscheiden, is er een gebrek aan empirisch onderzoek dat deze drie vormen van vertrouwen eenduidig vast kan stellen. Rousseau et al. (1998) stelt dat een begrip als vertrouwen voorzien moet worden van een theorie en onderzoeksmethodologie die de verschillende niveaus en facetten van vertrouwen weerspiegelen. Conceptuele diversiteit kan echter moeilijk te hanteren zijn, vooral wanneer bijbehorende specifieke onderzoeksproblemen niet worden erkend (Bigley & Pearce, 1998). Een bruikbaar kader voor het bestuderen van vertrouwen in teams dient rekening te houden met groepsprocessen alsmede met de condities en effecten van de context waarbinnen de groep functioneert. Vandaar dat specifieke kwesties in relatie tot groepsgedrag in organisaties aan de orde komen.

In hoofdstuk 4 is het theoretisch kader voor het bestuderen van vertrouwen in teams beschreven. Gebaseerd op de contingentiebenaderingen van groepsgedrag worden teams gedefinieerd als uitvoerende organisatie-eenheden. Met andere woorden teams zijn bestaande groepen in de organisatie die onderscheiden kunnen worden op basis van het soort taken dat ze uitvoeren, de onderlinge afhankelijkheid van de leden en het eindprodukt waar ze verantwoordelijk voor zijn. Tot nu toe is er weinig onderzoek gedaan naar de gevolgen van vertrouwen tussen teamleden binnen bestaande organisaties.

In deze studie wordt *vertrouwen* gedefinieerd als: *"Een psychologische toestand die zich manifesteert in het gedrag ten opzichte van anderen, die is gebaseerd op verwachtingen die zijn ontstaan op grond van het gedrag van deze anderen, en op grond van waargenomen motieven en intenties in situaties die een risico voor de werkrelatie met deze anderen inhouden."* In deze definitie wordt vertrouwen gezien als een houding van het individu ten opzichte van andere individuen in de context van teams. De definitie maakt onderscheid tussen de individuele toestand, de verwachtingen en het gedrag naar elkaar toe. Deze aspecten worden opgevat als aparte maar gerelateerde componenten van vertrouwen. Dit stemt overeen met eerdere opvattingen waarin vertrouwen is gedefinieerd als een construct met meerdere dimensies of facetten (bijv. Mayer et al., 1995; Cummings & Bromiley, 1996; Smith & Barclay, 1997). In tegenstelling tot andere definities wordt gedrag in onze definitie opgevat als component van vertrouwen en niet als een gevolg ervan. Bovendien onderscheiden wij twee vormen van gedrag die vertrouwen weerspiegelen, namelijk coöperatief gedrag en het ontbreken van onderlinge controle.

Gebaseerd op een eenvoudig input-proces-output contingentieraamwerk, werd een geïntegreerd model ontwikkeld waarbinnen vertrouwen onderzocht wordt als een procesvariabele. De aannamen van het model zijn:
1. Vertrouwen binnen teams is een construct opgebouwd uit vier componenten, namelijk de 'geneigdheid tot vertrouwen', 'waargenomen betrouwbaarheid', 'coöperatief gedrag' en de 'ontbreken van controlerend gedrag'.
2. Vertrouwen wordt beïnvloed door de samenstelling van teams, kenmerken van het werk en de organisatiecontext.
3. Vertrouwen beïnvloedt de prestaties en de effectiviteit van het team alsmede van de organisatie.
Op basis van dit model zijn diversen hypotheses geformuleerd omtrent de relaties tussen de afzonderlijke componenten van vertrouwen, de effecten van de samenstelling van het team, kenmerken van het werk en organisatie variabelen (input) op vertrouwen (proces), en de effecten van vertrouwen op de prestaties en de effectiviteit van het team (output).

In hoofdstuk 5 wordt het onderzoeksmodel geoperationaliseerd en wordt de onderzoeksmethode van de gehele studie beschreven. Het onderzoek bestaat uit twee fasen, te weten de ontwikkeling van het instrument waarmee vertrouwen gemeten kan worden (1ste onderzoeksfase) en het toetsen van het onderzoeksmodel, inclusief de hypothesen (2de onderzoeksfase). Al het empirisch materiaal is verkregen middels diverse veldonderzoeken in verschillende gezondheidszorginstellingen in Nederland. We hanteerden daarbij een teamgrootte van drie tot en met zes personen.

Het ontwikkelen van een meetinstrument voor vertrouwen bestond uit verschillende fasen. In eerste instantie werd de betekenis van vertrouwen onderzocht middels interviews. Vervolgens werd een vergelijking gemaakt tussen

de bestaande maten van vertrouwen en de inhoud van de verschillende componenten van vertrouwen. Op basis hiervan werden vier schalen ontwikkeld. Deze zijn beoordeeld door deskundigen en de interne structuur is onderzocht door middel van verkennende en bevestigende procedures met onafhankelijke steekproeven. Tijdens de validatie is de convergente en discriminante validiteit onderzocht. De resultaten van deze procedures worden beschreven en bediscussieerd in hoofdstuk 6.

Vervolgens werden drie hoofdstudies uitgevoerd om het model en de hypothesen, zoals geformuleerd in hoofdstuk 4, te toetsen. Deze toetsing is uitgevoerd met zogenaamde "structureel equation model" procedures (SEM). Vanwege het grote aantal variabelen werd het geïntegreerde model opgedeeld in twee verschillende secties. Voor elke sectie werden verschillende modellen voorgesteld. De resultaten van deze modellen worden gepresenteerd en bediscussieerd in de hoofdstukken 7 en 8.

In hoofdstuk 6 wordt de eerste ondezoeksfase behandeld (ontwikkeling van het meetinstrument). De interviewstudie toonde duidelijk aan dat mensen zich anders gedragen ten opzichte van collega's die ze vertrouwen dan collega's die ze niet vertrouwen. Dit bevestigt tot op zekere hoogte de relevatie van het in overweging nemen van coöperatieve en controlerende gedragingen als maten van vertrouwen. Op basis van de interviews werden voor deze gedragingen twee schalen geconstrueerd. Voor de componenten geneigdheid tot vertrouwen en waargenomen betrouwbaarheid werden schalen gevormd op basis van bestaande maten. Het uiteindelijke instrument bestond uit 10 items om geneigdheid tot vertouwen te meten, 12 items om waargenomen betrouwbaarheid te meten, 18 items voor coöperatief gedrag en 14 items voor controlerend gedrag. Zowel verkennende (EFA) als bevestigende analyses (CFA) onderschreven de vier-factor structuur van vertrouwen.

De validatieprocedure onderstreepte de convergente en discriminante power van de vier schalen, zowel binnen als tussen de teams. De intrabeoordelaars betrouwbaarheid toonde aan dat er een grote mate van overeenstemming bestond tussen de scores van teamleden op de vier vertouwensmaten, waarmee de samenvoeging van data op teamniveau gerechtvaardigd werd. Tegelijkertijd bleek dat er in elke organisatie tussen alle teams voldoende variantie bestond binnen de verschillende componenten van vertrouwen, waarmee aangetoond werd dat de schalen voldoende power hebben om te discrimineren tussen teams. Door middel van het gebruik van een extern criterium is vastgesteld dat de vier schalen convergeren naar algemeen vertrouwen (een item). Echter het onderscheidend vermogen van de vier schalen ten opzichte van enkele andere criteriumvariabelen is minder consistent.

De hypothesen die betrekking hebben op de aard van vertrouwen en de factoren die vertrouwen binnen teams beïnvloeden werden besproken in hoofdstuk 7. Het bestaan van meerdere componenten van vertrouwen werd door onze resultaten bevestigd. Vertrouwen werd hierbij methodisch behandeld als een latent

construct. De resultaten toonden aan dat individuen die hun eigen team vertrouwen, een hoge geneigdheid hebben om anderen te vertrouwen, andere teamleden als betrouwbaar waarnemen, zich vaak coöperatief opstellen en het werk van hun collega's niet controleren. Opvallend is dat de bijdrage van de vier verschillende componenten aan de totale variantie van vertrouwen grote verschillen vertoont. Het component waargenomen betrouwbaarheid verklaarde het grootste gedeelte van de totale variantie (83%), coöperatief gedrag verklaarde 57%, terwijl geneigdheid tot vertrouwen slechts een klein percentage (10%) van de variantie verklaarde. Controlerend gedrag, tenslotte, droeg met 4% het minst bij aan de verklaarde variantie.

De mogelijkheid bestaat dat sommige componenten belangrijker zijn in bepaalde situaties dan andere, afhankelijk van de mate van vertrouwdheid en onderlinge afhankelijkheid van de individuen. Volgens ons zijn de componenten die een klein gedeelte van de variantie verklaarden wel belangrijk, aangezien de resultaten van de CFA, zoals besproken in hoofdstuk 6, wezen op een vier-factor structuur. Bovendien bestonden de teams in ons onderzoek uit personen die elkaar al een aantal jaar kenden, waardoor het aannemelijk lijkt dat vertrouwen tussen de leden eerder gebaseerd is op attributies over betrouwbaarheid dan op algemene verwachtingen.

Met betrekking tot de factoren die vertrouwen binnen teams beïnvloeden, komen onze resultaten overeen met de opvatting dat vertrouwen niet alleen gebaseerd is op persoonlijke informatie, maar ook afhangt van een bepaalde context. Vertrouwen wordt beïnvloed door verschillende factoren, te weten: de samenstelling van de teams, kenmerken van het werk (bijv. onderlinge afhankelijkheid en taakambiguïteit) en de organisatorische context (bijv. klimaat en participatiegraad). Gebaseerd op het percentage verklaarde variantie, toonden de resultaten aan dat factoren als teamcohesie, voorkeur voor werken in een team en werk dat aansluit op de vaardigheden, voor het grootste gedeelte verantwoordelijk zijn voor het bestaan van vertrouwen tussen teamleden. Deze variabelen verklaren 52% van de totale variantie van vertrouwen. Organisatiecontext, functionele afhankelijkheid en taakambiguïteit hadden een minder sterk effect en verklaarden slechts 25% van de totale variantie.

Onze resultaten waren strijdig met de hypothesen over het effect van taakambiguïteit en het aantal jaren in dienst (tenure) op vertrouwen. Taakambiguïteit bleek een positief effect te hebben op vertrouwen, hetgeen strijdig is met de zogenaamde transactie-kosten opvatting (Williamson, 1975). In plaats daarvan werd het argument van Morris & Moberg (1994) bevestigd dat taakambiguïteit de kwetsbaarheid van teamleden ten opzichte van elkaar kan vergroten, hetgeen de mogelijkheid tot vertrouwen in plaats van opportunisme kan creëren. Verder onderzoek is echter noodzakelijk om tot consistente conclusies op dit gebied te komen. Tenure heeft daarentegen een negatief effect op vertrouwen. Meer gedetailleerde analyses suggereerden dat tenure geassocieerd was met calculatieve organisatorische betrokkenheid (continuance commitment). Een mogelijke verklaring kan gelegen zijn in de reorganisaties die

plaatsvonden in twee van de onderzochte organisaties en kortgeleden beëindigd was in een derde organisatie. Gevoelens van een lage affectieve betrokkenheid en hoge calculatieve betrokkenheid kunnen gezien worden als verklaring voor het kleine en negatieve effect van tenure op vertrouwen binnen de onderzochte teams. Een andere mogelijke verklaring heeft betrekking op de gemiddelde leeftijd van de respondenten die in twee organisaties boven de 40 lag. Soms kan dit een indicatie zijn van een meer calculatieve instelling met betrekking tot de organisatie (Roberts & Hunt, 1991).

In hoofdstuk 8 werden de effecten van vertrouwen op drie modellen getoetst, namelijk teamprestatie, teameffectiviteit, en algehele organisatorische effectiviteit. Bovendien werd de adequaatheid van het totale geïntegreerde model bekeken. Vertrouwen verklaarde 10% van de totale variantie in teamprestaties. Dit kan gezien worden als een sterke onderbouwing voor het argument dat vertrouwen noodzakelijk is voor organisaties (Shaw, 1998). De effecten van vertrouwen op de effectiviteit van het team werden eveneens bevestigd door onze resultaten, hoewel het percentage verklaarde variantie kleiner was dan bij de prestaties van het team en de algemene effectiviteit. Vertrouwen verklaarde 5% van de variantie van betrokkenheid bij het team, 10% van de variantie van tevredenheid met het team, en 6% van de variantie van stress. De relatie tussen vertrouwen en stress was negatief. De sterkste effecten van vertrouwen werden gevonden bij de maten van algehele effectiviteit van de organisatie. Vertrouwen verklaarde 52% van de affectieve betrokkenheid met de organisatie, 18% van calculatieve betrokkenheid en 9% van de algemene tevredenheid. De relatie tussen vertrouwen en calculatieve betrokkenheid was negatief.

De resultaten van het geïntegreerde model onderschrijven de belangrijke rol van vertrouwen in organisaties, hoewel ze strijdig zijn met de voorgestelde input-proces-output structuur. De kenmerken van het werk en de organisatie bleken een direct effect te hebben op algehele organisatorische effectiviteit. Vertrouwen binnen teams werd vooral beïnvloed door de samenstelling ervan, zoals teamcohesie en vaardigheden. De kenmerken van het werk en de organisatie bleken ook belangrijke voorspellers van vertrouwen, maar het effect op de algehele effectiviteit was groter. De resultaten toonden tevens aan dat vertrouwen een positieve invloed heeft op de prestaties van het team, hoewel deze invloed nog groter is voor de algehele effectiviteit. De teameffectiviteit bleek sterk beïnvloed te worden door de prestaties van het team.

Algemeen kan worden gesteld dat onze resultaten meer op een lijn liggen met de sociologische en psychologische benaderingen dan met de economische. Hoewel geen objectieve maten zijn gebruikt, onderschrijven onze resultaten volledig het belang van vertrouwen voor het functioneren van teams binnen organisaties. Dienovereenkomstig zijn teams waar vertrouwen bestaat beter in staat te functioneren dan teams waar dat niet het geval is. Vertrouwen in teams leidt ertoe dat individuen zich tevreden voelen met en betrokken zijn bij de organisatie en minder last hebben van stress in het werk.

In hoofdstuk 9 werd een aantal conclusies en aanbevelingen voor verder onderzoek gepresenteerd. Tevens werden de gebruikte methoden en resultaten bediscussieerd. Een van de beperkingen van ons onderzoek is het feit dat de conclusies slechts gegeneraliseerd kunnen worden naar een vergelijkbare populatie van medewerkers van zorginstellingen in Nederland. Daarnaast kunnen wij ons afvragen of bij een grotere steekproef de resultaten gelijk zouden blijven, aangezien van sommige modellen de initiële "goodness of fit" zich in de marginale acceptatiezone bevond. Een andere overweging betreft de toepasbaarheid van de maten van vertrouwen op andere teams. Het feit dat afwijkingen werden gevonden van de interne consistentie en validiteit van de vertrouwensmaten over de verschillende steekproeven wijst er op dat de schalen aangepast dienen te worden.

Hoofdstuk 9 eindigt met enkele praktische adviezen. Als er veel vertrouwen is, presteren teams beter, is er meer tevredenheid en betrokkenheid en hebben de individuen minder last van stress. Groot vertrouwen binnen teams resulteert ook in grotere tevredenheid met en betrokkenheid bij de organisatie. De praktische implicatie van deze effecten is dat managers vertrouwen kunnen herkennen aan deze indicatoren en, indien nodig, kunnen interveniëren om het noodzakelijke vertrouwen te behouden of te herstellen. Een andere praktische implicatie van dit onderzoek heeft betrekking op het creëren van vertrouwen in verschillende condities. Er kunnen in hoofdlijnen drie condities worden aangewezen van waaruit vertrouwen binnen teams kan worden ontwikkeld of onderhouden. Dit zijn: de kwaliteit van de interactie tussen teamleden, de mate van onderlinge afhankelijkheid en de mate van participatie en invloed in de organisatie.

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A matter of trust is a ref[...]
trust in organizations wi[...]
teams. It reviews sociolo[...]
approaches, which seek to explain the nature, causes, and
consequences of trust in organizations. To overcome the
theoretical controversy and the shortcomings of research
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What is the nature of trust?

Which factors related to the composition of teams, work
characteristics and organizational context affect trust within
teams?

What are the effects of high vs. low trust on the performance
and effectiveness of teams?