



Toward Understanding and Measuring Conditions of Trust: Evolution of a Conditions of Trust Inventory

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Ten conditions of trust were suggested by 84 interviews of managers, and two previous studies of managerial trust. Statements made in the interviews and the studies were used to develop a content theory of trust conditions and derive scales measuring them. The scales were generated with an iterative procedure using a total of 1531 management students. The scales were assessed for homogeneity, reliability, and validity with several samples: 180 managers and 173 of their subordinates, 111 machine operators, and four different samples of management students (n = 380, n = 129, n = 290, and n = 132). Construct validity was supported by showing that the scale measures behaved as hypothesized with respect to measures of other variables, a manipulation of expectations, and the reciprocity of trust in vertical dyads.

Introduction

Recent studies of trust in organizations have emphasized two characteristics of trust. The first of these relates to the salience of a specific other to be trusted or mistrusted. Driscoll (1978) and C. L. Scott (1980) divided trust into two subconstructs: a global (attitudinal / affective) component and a specific (situational / cognitive) component. They found that only the specific component predicted organizational outcomes. This finding is consistent with research indicating that specific attitudes, but not general attitudes, tended to be related to specific outcomes (Fisher, 1980; Heberlein & Black, 1976). Several researchers have advocated the relevance of situational trust in specific others as opposed to global trust in generalized others (e.g., Butler, 1983, 1986; Butler & Cantrell, 1984; Earley, 1986; Fulk, Brief, & Barr, 1985; Johnson-George & Swap, 1982; Larzelere, 1984; Larzelere & Huston, 1980; Rempel & Holmes, 1986; D. Scott, 1980, 1981, 1983).

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The second characteristic of trust relates to its multidimensional nature. Trust has been found to be multidimensional as a construct as well as being activated and sustained by a multidimensional set of conditions. Several dimensions of trust and antecedent conditions of trust have been identified and studied by different researchers with different methods. Some researchers have used exploratory factor analyses of survey data, drawn from various populations, to isolate dimensions of the construct of trust. Others have determined from clinical interviews or decision-modeling experiments that certain conditions are necessary to establish and sustain trust.

The present study had two purposes that focused on understanding and measuring conditions that lead to trust in a specific person. The first was to begin the development of a content theory consisting of a multidimensional set of conditions that activate and sustain trust in a specific person. The second purpose was to construct a set of scales that were derived from the content theory and could be used to measure the specified trust conditions.

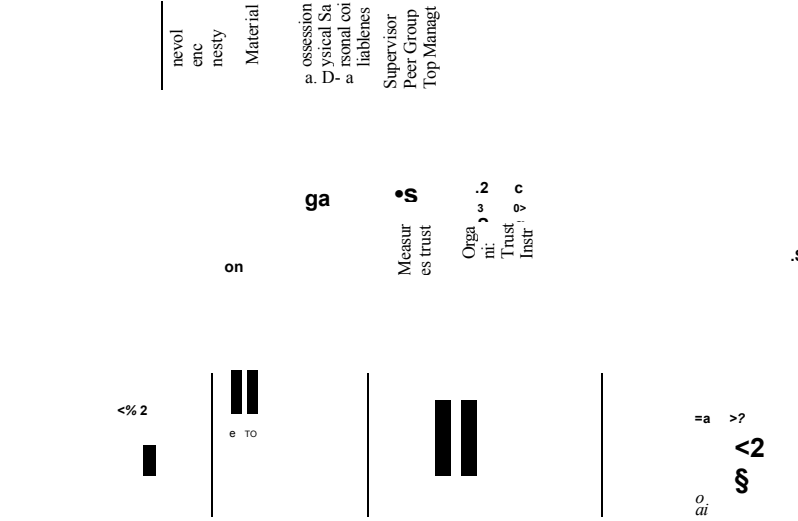
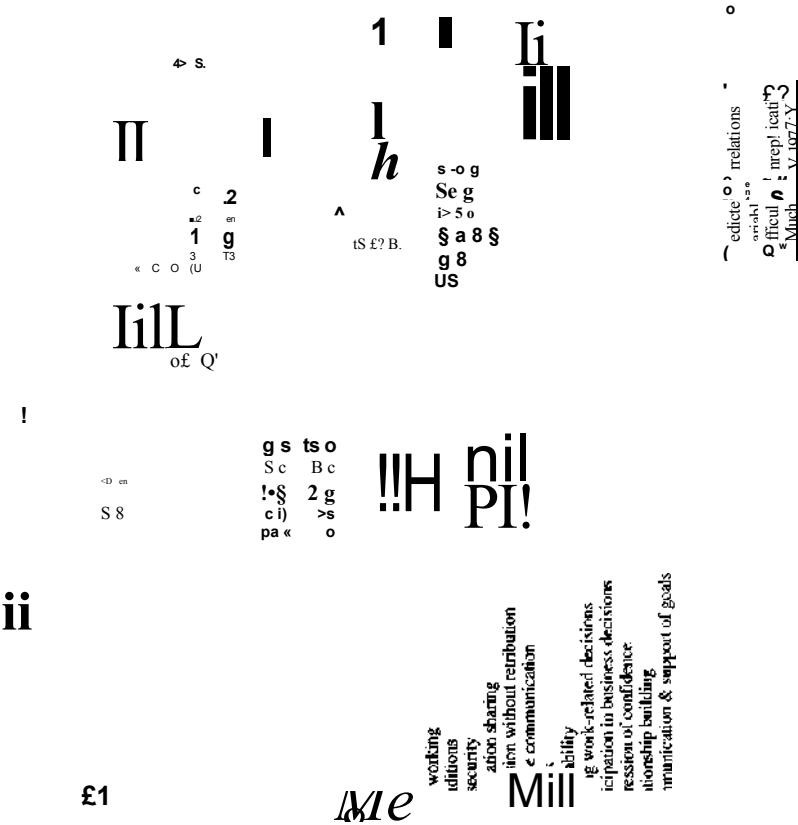
Factors of Trust

Several factor analytic studies have focused on measures of trust in a specific person. Five such studies are summarized in Table 1.

The five trust instruments described in Table 1 appear to have two major limitations. First, although most of them were well validated, none of them attempts to measure a complete and exhaustive set of the concepts representing the *conditions* leading to trust. For example, the Johnson-George and Swap (1982) instrument measures dimensions of the *construct* of trust and the Scott (1981) instrument focuses on trust in four specific target groups. Preceding researchers (e.g., Gabarro, 1978; Jennings, 1971) identified as many as 10 trust conditions, which can be useful to those more interested in building trust than in understanding the construct of trust. Second, it is difficult to evaluate the five instruments because many of their psychometric properties have not been reported. The only psychometrics reported by Hart et al. were the factor analysis of the items and the reliabilities (alphas?) of each of their three scales. Some aspects of convergent and discriminant validity were assessed for three of the other instruments. Johnson-George and Swap (1982) showed that their measures were discriminable from measures of liking and loving. Larzelere and Huston (1980) discriminated their measures from those of self-disclosure, social desirability, love, and generalized trust. Roberts and O'Reilly (1974) found the predicted correlations of trust with several organizational variables. Convergent and discriminant validity were not assessed by Hart et al. (1986) or Scott (1981). No test-retest reliability coefficients were reported, except for the Scott (1981) and Roberts-O'Reilly (1974) scales.

Clinical and Experimental Findings

Jennings (1971) used clinical interviews of executives to identify conditions of trust and to synthesize a career life-cycle theory of executive advancement. According to Jennings' theory, the career growth process of successful executives follows a series of six stages: entry, manager of non-managers, manager of managers, arrival, tip, and decline. He argued that, of all the stages, the manager-of-



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managers stage is accompanied by the highest rate of increase in status and power, but also the highest degree of risk and the greatest rate of failure. No manager of managers can progress to the arrival stage without a sponsor, an executive with the power to develop and promote the manager and to provide the manager with hierarchical and geographical mobility (Jennings, 1967, 1971). One proposition of Jennings' theory states that trust is a necessary and sufficient condition of sponsorship and, therefore, mobility.

Jennings' interviewees identified *loyalty* more frequently than any other condition of trust. The typical executive accepted the minimum definition of loyalty, an implicit promise from a subordinate not to bring harm to the executive. However, Jennings found that, though immobile executives tended to equate loyalty with trust, mobile executives conceptualized trust in a more complex manner, with loyalty as only one of four conditions. The three other conditions were *accessibility* (i.e., being mentally open and receptive to the giving and accepting of ideas), *availability* (i.e., being physically present when needed), and *predictability* (i.e., acting and making decisions consistently, in such a way as to prevent others' anxiety caused by the unexpected).

Also using clinical interviews, Gabarro (1978) developed a theory of the formation and evolution of effective relationships between corporation presidents and their vice presidents. According to Gabarro's theory, the process of building such relationships has four stages. Stage 1 consists of mutual impression making and orientation. Stage 2 follows with further learning and exploration. In Stage 3, the two executives test the limits of trust and influence, and develop a mutual set of expectations. Finally, in Stage 4, they arrive at a stable interpersonal contract, which forms the foundation of a high-quality relationship and future effectiveness. Stage 4 is characterized by realistic expectations, mutual influence, and reciprocal trust.

Gabarro's interviewees identified nine "bases" of trust. These include *integrity* (honesty and moral character), *motives* (intentions and agenda, close to Jennings' concept of loyalty), *consistency of behavior* (reliability, related to Jennings' concept of predictability), *openness* (leveling and expressing ideas freely, one aspect of Jennings' concept of accessibility), *discreetness* (keeping confidences), *functional/specific competence* (knowledge and skills related to a specific task), *interpersonal competence* (people skills), *business sense* (common sense and wisdom about how a business works), and *judgment* (ability to make good decisions, inclusive of the other eight bases of trust).

Few researchers have investigated conditions of managerial trust experimentally. However, Butler and Cantrell (1984) manipulated trust conditions in a decision-modeling experiment in order to rank the importance of five of the trust conditions identified by Jennings (1971) and Gabarro (1978). The relative importance of the conditions were investigated for both downward trust of managers in their subordinates and upward trust of the subordinates in their managers. For both directions, the conditions were ranked in the following order of importance: *competence* (technical and interpersonal skills required for one's job), *integrity* (honesty and truthfulness), *consistency* (reliability, predictability, and good

judgment), *loyalty* (having motives for protecting and making the target person look good), and *openness* (freely sharing ideas and information).

Conclusions

The multiconditional and situational nature of trust suggests a complexity and specificity that a measure of global (general/nonspecific), attitudinal trust cannot tap. There are several hypotheses that could not be tested at all with a global measure. For example, Gabarro's interviews suggested, that integrity, competence, and consistency were the most salient conditions of a superior's downward trust in a subordinate; but that integrity, motives (loyalty), and openness were most salient to a subordinate's upward trust in a superior. Butler and Cantrell (1984) found support for the downward hypothesis, but not the upward one.

The conditionality of trust also suggests measuring the conditions leading to trust in addition to the dimensions of the trust construct itself. Although a measure of trust *dimensions* could focus on a specific other and could reflect the complexity of the construct, it would be unable to pinpoint specific *causes* of trust or mistrust that needed attention in a given organization or relationship.

In short, the literature on trust has converged on the beliefs that (a) trust is an important aspect of interpersonal relationships, (b) trust is essential to the development of managerial careers, (c) trust in a specific person is more relevant in terms of predicting outcomes than is the global attitude of trust in generalized others, and (d) a useful approach to studying trust consists of defining and investigating a number of conditions (determinants) of trust. Currently, there is no agreement as to what these trust conditions are, and there is no instrument for measuring an exhaustive set of them. Following is a description of an attempt to identify a comprehensive *a priori* set of conditions of trust in a specific person (Study 1), and an attempt to develop and validate an instrument for measuring those conditions (Studies 2, 3, and 4).

Study 1: Identification of Conditions of Trust and Items

Method

Interviews were conducted with 84 managers employed by diverse firms, mostly in the eastern U.S.A. These managers were primarily in middle levels of their organizations. Twenty-one of them were women. Ten of them were entrepreneurs running their own businesses. Nine were chief executives, one of whom had been the CEO of a Fortune 500 firm for 23 years. The author conducted 18 of the interviews. Graduate students conducted the rest of them as an assignment for a major paper in an organizational behavior course.

The interviews were semi-structured in that every interviewer asked the same open-ended questions. The interviewers received explicit written instructions. In an attempt to identify conditions of trust, each interview elicited (a) personal characteristics of two *specific* people, one trusted and the other mistrusted; (b) critical incidents that led to the building of trust; and (c) critical incidents that led to the destruction of trust. The critical incident method was consistent with Buss and Craik's (1983) "act frequency analysis" approach to construct validity in that it

asked people to nominate acts, specific intentional behaviors, related to the operation of trust and mistrust. Every interviewer completed a report summarizing the content of his or her interview.

A content analysis of ideas from the 84 interviews was conducted in order to identify conditions of trust perceived by the interviewees. The analysis focused on stated characteristics of trusted and mistrusted people as well as on trust-building and trust-destroying critical incidents. The procedure involved three steps. First, the researcher isolated all clauses that pertained to trust in the interview report summaries. Second, three graduate assistants, working independently from one another, used those clauses to identify categories that represented conditions of trust (Krippendorff, 1980; Weber, 1985). Although these raters were familiar with some of the literature on trust, they had no preconceptions concerning what the categories should be. They were told to "identify as many categories, representing conditions of trust, as necessary to classify the clauses." Third, the raters assigned every clause to a category and continued that process until every clause either had been used to identify a new category, or had been assigned to a category already identified.

Results

The researcher isolated 280 separate clauses concerning trust and 174 concerning mistrust. Every rater identified 10 categories from those clauses. The categories were conceptually identical for all three raters in terms of the clauses assigned to them. The coefficients of interrater consistency (kappas) for the assignment of clauses to categories (Cohen, 1960) for all three pairs of the three raters were .78 .83 and .85.

From the 10 categories identified by the content analysis, the researcher was able to infer (Krippendorff, 1980; Weber, 1985) 10 conditions of trust. These 10 conditions were *availability*, *competence*, *consistency*, *discreetness*, *fairness*, *integrity*, *loyalty*, *openness*, *promise fulfillment*, and *receptivity*. The inferred conditions were conceptually similar to most of the trust conditions identified by Jennings (1971) and Gabarro (1978). Although *promise fulfillment* was not listed specifically by either Jennings or Gabarro, the condition was implicit in a comment made by one of Gabarro's interviewees, "When we agree on something, I know he'll stay to his word" (1978: 294). Also, *fairness* was not specified by either Jennings or Gabarro, but *fairness* was included in the present study because it was mentioned by 36 of the 84 interviewees. Further, *receptivity* was not listed by either author, but it refers to the accepting of ideas in Jennings' concept of accessibility, and *openness* refers to the giving of ideas.

Four items were written for each one of 10 scales corresponding to the 10 conditions. These items were adapted from both the literature and the interviews discussed above. An 11th scale, *overall trust*, was also included to enable researchers to test relationships between the conditions and overall trust in an individual. Each scale had one mistrust item, whose purpose was to break up acquiescence response sets. All other items were positively worded. Responses were made on a 5-point Likert-type scale anchored by "Strongly agree" (5) to "Strongly disagree"

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(1). The 11 scales were included in an instrument called the Conditions of Trust Inventory (CTI).¹

Study 2: Selection and Validation of Items with Jackson's Principles

Method

Items for the scales were assessed and selected with an iterative series of confirmatory analyses, guided by Jackson's four principles for scale construction and validation (1984: 30): (a) a theoretically-based definition, (b) reliability and homogeneity, (c) suppression of response bias, and (d) convergent and discriminant validity. The definitions of trust conditions were developed from the interviews and literature search of Study 1 and were consistent with Zand's (1972) theory of trust. Reliability and homogeneity (Cronbach's alpha, test-retest, and factor structure) were assessed with a series of nine subsamples from student populations as described below. Response bias was assessed with a sample of 180 managers and 173 of their subordinates. Convergent and discriminant validity were assessed with two subsamples ($n = 129$ and $n = 290$) of management students, 111 machine operators, and the 180 managers and 173 subordinates. These participants completed the current form of the CTI along with measures of other constructs hypothesized to be related or unrelated to trust conditions.

Eleven semesters and four summer sessions of graduate and undergraduate management classes provided nine separate subsamples, a total of 1531 students. Students were asked to report their trust in specific target persons on sequential, provisional forms of the CTI. Sometimes these targets were people the students knew well and either liked or disliked, with the liking condition assigned randomly to the students. Sometimes the target persons were professors or classmates of the students' choice or members of groups in which the students worked on course assignments. The current form was assessed with the ninth and final subsample of 380 management students (which was included in the sample of 1531 students). The nine iterations converged on 11 acceptable scales for the CTI.

Although the iterative procedure was arduous, the time spent seemed worthwhile because statistics were being used to confirm the previously-specified conditions of trust rather than to develop or suggest them. The procedure was not likely to capitalize on chance, which can play a capricious role in a purely empirical/exploratory approach to scale construction (Hogan & Nicholson, 1988). In a large number of statistics, some of them will indicate significance by chance alone, despite the lack of any true relationships or effects.

Jackson's principles are discussed next, in the context of this study.

Jackson's First Principle: Theoretically-based Definition

Jackson's first principle deals with content and construct validity. Content theories of trust, addressing its conditions and how these conditions are ranked, are useful for developing measures of trust. To the extent that the theories are *complete* in encompassing "substantive components" (Loevinger, 1957) that are sufficiently representative of all conditions of trust, this principle refers to *content va-*

¹A copy of the CTI will be provided by the author on request.

lidity (Helmstadter, 1964). To the extent that the theories are *correct* in specifying a nomological net that interrelates trust with specified observable behaviors and theoretical constructs, this principle represents *construct validity* (Cronbach & Meehl, 1955; Nunnally, 1970; Schwab, 1980).

Although there are process theories addressing the dynamics of trust (Gabarro, 1978; Jennings, 1970; Zand, 1972) there are no content theories specifying the conditions that activate and sustain trust. Therefore, to achieve *content validity* of an instrument purporting to measure all the conditions of trust, an attempt was made to define the conditions in terms of as complete a domain as possible (Nunnally, 1970; Schwab, 1980). The items of the instrument were based primarily on the definitions of trust conditions held in the minds of the 84 interviewed managers. Each condition addresses a different aspect of Zand's definition (1972), which focuses on one's willingness to "increase one's vulnerability to another whose behavior is not under one's control" (230). Each condition tends to complement the other conditions and reflects an affective response of one individual to another. The stability of each condition depends on one's perceptions of the other's behavior and intentions concerning that condition.

Supporting the *construct validity* of the set of trust conditions requires developing a theory linking the conditions within a network of other constructs (Cronbach & Meehl, 1955; Nunnally, 1970). Such a network has not yet been specified completely. Nor is it likely to be specified completely before a comprehensive measure has been developed and tested (Schwab, 1980). However, trust conditions have been theoretically and empirically connected with a number of other constructs. Consistent with Nunnally and Schwab, the following sections describe a confirmatory factor analysis and other statistics supporting convergent and discriminant validities of many of the CTI scales. Studies 3 and 4, below, also provide evidence of construct validity by showing that the measures "act as though they measured the construct" (Nunnally, 1970: 141). That is, the data confirmed hypothesized correlations (high, moderate, low, or zero; either positive or negative) between the measures being validated and accepted measures of other constructs.

Jackson's Second Principle: Reliability and Homogeneity

The scales were assessed for test-retest reliability, internal consistency, and factorial homogeneity using an iterative procedure over a period of 6 years. Any scale was revised if it did not have both an acceptable Cronbach's alpha and an acceptable test-retest correlation (.80 minimum for both, Nunnally, 1970). Also, a factor analysis of all items had to yield a clean non-overlapping factor pattern with the expected number of dimensions representing the conditions of trust.

The factor analyses were conducted by specifying a number of factors equal to the number of conceptual dimensions (Krippendorff, 1980; Schwab, 1980). This confirmatory approach was used because the purpose was to determine if the hypothesized number of "structural components" (Loevinger, 1957) existed in the data. The purpose was not to reduce the data to the minimum number of feasible dimensions in an exploratory fashion, but rather to "suggest ways to revise the instrument for the better" (Nunnally, 1970: 151). Oblique rotation (promax) was

used in order to confirm distinctions among non-orthogonal conditions. Because the factorial dimensions represented the conditions of trust, which were components of a composite construct, any attempt to force them to be mutually orthogonal would have been artificial (Yaeger, 1978). Any item that loaded on several factors or did not load on a factor together with its intended scale mates was revised or replaced.

Jackson's Third Principle: Suppression of Response Bias

There was no attempt to eliminate social desirability response bias from the individual items because Rotter (1967) suggested that excluding items with social desirability content would remove relevant variance from trust. Rotter argued that trust was a socially desirable construct. This argument can be extended to conditions of trust; and it seems particularly feasible for the situations addressed in this study, assessing conditions of people's trust in their managers, subordinates, friends, and spouses. In this context, a shared variance of 5 or 10 % between trust and social desirability would not be bothersome, even though the correlation might be statistically significant. A moderate correlation between the two constructs can be interpreted as support for convergent validity of either or both instruments (Zerbe & Paulhus, 1987). However, a shared variance of much more than that might raise questions about the discriminant validity of the two instruments.

Jackson's Fourth Principle: Convergent and Discriminant Validity

Discriminant validity was assessed by correlating CTI trust *condition* scores with measures of different characteristics that have been shown to be theoretically and empirically unrelated, weakly related, or negatively related to the trust *construct*.² Previous studies (Butler, 1983, 1986; Frost, Stimpson, & Maughan, 1978; Heretick, 1984; Rotter, 1966, 1967; Wrightsman, 1964) supported theoretical rationales by finding weakly positive correlations of trust with six variables: *self-esteem*, *social desirability*, *expressed affection*, *wanted affection*, *expressed inclusion*, and *wanted inclusion*. Those researchers also found moderately negative correlations between trust and *external locus of control*, *expressed control*, and *wanted control*; and strongly negative correlations between trust and *Machiavellianism*. *Dogmatism* was added to the list of constructs with moderately negative relationships with trust because of its high correlation with Machiavellianism (Hunter, Gerbing, & Boster, 1982) and Stack's (1978) observation that Machiavellianism, with its factors of duplicity and mistrust of others, is almost the polar opposite of global trust.

Locus of control was measured with the abbreviated 11-item Rotter IE scale (Valecha, 1972). Self-esteem was measured with Rosenberg's (1965) self-esteem scale. Machiavellianism was measured with five items from the Mach scale

²Little existing theory and no previous correlational research has addressed conditions of trust in terms of their relationships with other constructs. Therefore, it was proposed that the perception of a given *condition* of trust would lead to a corresponding *dimension* of the construct of trust. Conditions of trust produce trust. This proposition permitted the use of existing theory and previous correlational research on some of the *dimensions* of trust for the purpose of assessing convergent and discriminant validities of the CTI *condition* scales.

(Christie & Geis, 1970). Social desirability was measured with the seven Marlowe-Crowne scale items (Crowne & Marlowe, 1964) that were found to represent social desirability consistently, across four different methods (Ballard, Crino, & Rubenfeld, 1988). Expressed and wanted control, affection, and inclusion were measured with five items from each of the six FIRO-B scales (Schutz, 1958). Dogmatism was measured with the five items from Troidahl and Powell's scale (1965) that had the highest item-total correlations (Robinson & Shaver, 1973).

Assessing convergent validity of the CTT scales posed a problem because there were no previously validated scales for many conditions measured by the CTT. However, *loyalty* (CTI) was considered conceptually similar to the single benevolence factor of the DTS (Larzelere & Huston, 1980; Schumm et al., 1985), and to the emotional trust factor of the SITS (Johnson-George & Swap, 1982). *Discreetness* (CTI) also seemed similar to the emotional trust factor of the SITS. *Overall trust and promise fulfillment* (CTI) seemed to correspond to the overall trust and reliability factors, respectively, of the SITS. *Receptivity* (CTI) was considered similar to the communication responsiveness factor of Hawkins, Penley, and Peterson (1981). Convergent validities of those five CTI scales were assessed with the five indicated correlations, obtained from samples other than the one used for the factor analysis.

Results

The CTI was completed by 380 students enrolled in graduate and undergraduate management courses. The confirmatory factor pattern matrix in Table 2 ($n = 380$), for which 10 factors were specified *a priori*, showed strong evidence of factorial homogeneity and separation for the CTI scales. Nearly all items loaded with their conceptual scale mates as expected. Table 2 shows that the 10 scales tapped 9 different conditions of trust, and that the *a priori* scales had high alphas and test-retest reliabilities. Factor 10 reflected *mistrust* and was relatively trivial. The nine factors accounted for 73.5% of the total variance in the item scores. The overall trust items (constituting the 11th scale, which was not considered a separate condition) loaded together with integrity on factor 3. These common loadings indicate that the attribution of integrity was the closest condition to the construct of overall trust in a specific person. The fairness and loyalty items loaded together on factor 4, indicating a conceptual similarity between fairness and loyalty. This similarity suggested that either the loyalty scale or the fairness scale could be excluded because of redundancy. However, both scales were retained, tentatively, because loyalty represents a condition found in nearly all the literature and the interviews described above, and fairness was mentioned by 43% of the interviewees. The two conditions are conceptually similar in that they both refer to one's perception of another's concern for one's welfare. However, fairness refers to perceived equity; loyalty, to perceived benevolence.

The factor pattern supported content and construct validity by confirming the conditions identified by the interviews and the previous studies. The post-rotation eigenvalues of the first 9 factors did not differ dramatically, ranging from 20.8 to 10.0. However, the 10th post-rotation eigenvalue was 6.4 and the 10th factor represented a dimension of *mistrust* with only 2 salient loadings, each from a differ-

Table 2 Confirmatory Factor
Pattern Matrix" for Items of the CTI

Scale and Reliability ^b	Item	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Availability	1	-6	0	14	18	0	9	9	57*	2	-4
	2	8	4	8	3	6	-4	5	64*	4	8
.85,.87	3	-3	-14	10	11	-3	-1	1	-61*	-9	10
	4	0	1	6	23*	-1	1	9	49*	11	-5
Competence	5	81*	5	-2	1	0	7	2	-7	13	2
	6	-72*	-1	1	-2	-7	6	8	-16	1	17
.91,.89	7	77*	-5	16	0	-2	-3	17	-4	-5	3
	8	82*	1	1	11	-4	5	3	2	-1	-1
Consistency	9	4	-7	2	-4	0	81*	7	1	9	4
	10	-6	1	-1	2	0	80*	1	0	-12	5
.87,.81	11	7	10	3	5	5	61*	-9	-1	0	-13
	12	-3	-4	-1	4	-2	-61*	-3	-1	-4	21
Discreetness	13	-7	68*	16	-3	3	2	5	5	0	-6
	14	-2	-50*	-13	2	5	-2	-4	-17	17	38*
.93,.90	15	4	81*	-3	9	5	0	0	3	2	-4
	16	5	79*	1	-2	3	2	1	3	8	-1
Fairness	17	11	6	12	51*	4	6	7	7	3	4
	18	-9	3	-3	-75*	-10	10	3	2	5	4
.93,.88	19	0	4	17	69*	-2	11	1	0	7	8
	20	7	0	-9	82*	-1	3	2	9	-7	7
Integrity	21	7	3	84*	-3	5	3	0	-1	0	3
	22	1	6	85*	-3	3	-3	7	1	-2	5
.92,.90	23	9	4	76*	0	6	1	0	4	3	1
	24	-10	-4	-49*	-11	2	-8	9	3	-2	20
Loyalty	25	-6	14	14	35*	1	3	26*	-9	8	-16
	26	-3	-19	-12	-28*	0	1	-4	-10	-5	28*
.92,.90	27	-2	10	4	37*	2	2	28*	-14	11	-22
	28	-2	24*	12	29*	8	-1	18	-9	12	-16
Openness	29	4	2	0	1	92*	1	-1	2	0	2
	30	0	2	0	4	95*	1	1	0	-1	6
.92,.84	31	-6	-1	8	1	80*	3	7	4	5	-3
	32	-1	-2	-31*	-24*	-25*	2	-3	4	-5	7
Overall Trust	33	3	-13	-41*	-20	1	-4	2	-5	-15	12
	34	7	20	37*	10	0	-3	8	8	13	-8
.97,.91	35	12	19	38*	21	-1	0	-1	1	14	-7
	36	2	19	38*	24*	-1	-1	4	6	13	-9
Promise	37	2	7	1	13	1	-1	2	8	76*	9
Fulfillment	38	-12	-8	-13	7	0	-1	1	-10	-59*	5
.96,.89	39	2	0	14	-4	3	-2	4	8	80*	3
	40	4	1	9	1	4	0	1	10	76*	5
Receptivity	41	7	-4	-2	8	11	-2	70*	8	-9	-8
	42	7	3	0	-2	4	5	79*	8	0	-1
.94,.92	43	-5	-6	-1	-5	1	-2	-69*	2	-6	-1
	44	8	14	7	5	-1	-1	64*	4	6	7
Eigenvalues ⁰		13.4	17.5	20.8	20.0	12.4	10.0	17.8	14.0	19.3	6.4

Note, n = 380 students in undergraduate and graduate management courses. Factor loadings are multiplied by 100 and rounded to the nearest integer. Asterisks designate loadings greater than the root mean square (RMS) of all the loadings in the matrix. RMS = .23.

^aPromax oblique rotation with varimax prerotation. ^bScale reliabilities: alpha, test-retest (subsample with n = 147). ^cEigenvalues after rotation.

ent scale (mistrust items from the discreetness and loyalty scales). Thus, the 9-factor solution confirmed the hypothesized number of 10 conditions, with 2 conditions loading on 1 factor. The intercorrelations for the CTI factors are shown in Table 3.

Table 3 Inter-factor
Correlations for CTI Factors

	F1	F2	F3	F4	F5
F2 Discreetness	.47				
F3 Integrity & Overall Trust	.59	.69			
F4 Fairness & Loyalty	.56	.65	.75		
F5 Openness	.33	.48	.56	.55	
F6 Consistency	.42	.44	.47	.49	.37
F7 Receptivity	.56	.64	.66	.72	.54
F8 Availability	.51	.58	.60	.57	.47
F9 Promise Fulfillment	.57	.69	.76	.71	.53
F10 Relatively trivial factor	-.20	-.34	-.42	-.45	-.29

Convergent and discriminant validity were supported with several samples. To assess the convergent validity of the CTI, 129 management students (included in the 380 used for the factor analysis) were asked to complete three trust instruments: the CTI, the SITS, and the DTS. They indicated their trust in others they knew well and either liked or disliked, with the liking condition assigned randomly. The sums of the items in each of the factors of the SITS were correlated with their corresponding CTI scores, which were calculated as the sums of the four items in each of the CTI scales with the mistrust items reverse-scored. Overall trust (SITS, $n = 77$, males only) correlated at .88 with overall trust (CTI). Reliability (SITS) correlated at .73 with promise fulfillment (CTI). Emotional trust (SITS) correlated at .71 with discreetness (CTI) and .75 with loyalty (CTI). Also, the sum of all the item scores of the DTS (benevolence) correlated at .80 with the loyalty score (CTI). In addition, the sample of 111 machine operators, in the textile fibers manufacturing plant mentioned above, completed the CTI and five scales measuring interpersonal communication (Hawkins, et al., 1981) to indicate trust in and quality of communications from their supervisors. The receptivity score (CTI) correlated at .74 with the sum of the scores on Hawkins et al.'s communication responsiveness scale. These high correlations represent some evidence of convergent validity for the five CTI scales that were conceptually similar to scales in other instruments.

Discriminant validity was supported with a sample of management students ($n = 290$, included in the sample of 380 used for the factor analysis), who completed the CTI to express trust in their peer group representatives. The correlations of 10 of the CTI scores (discreetness was not included in this data set) with locus of control and dogmatism were all trivial and nonsignificant, with the exception of the correlation of consistency with dogmatism ($r = .16, p < .05$), which was expected by chance in the set of 20 correlations.

Table 4 shows correlations of the CTI scale scores that have been shown to be weakly related, unrelated, or negatively related to trust. Data for this table were gathered from managers and their subordinates, working for firms in the southeastern United States. Although some of the correlations of self-esteem and social desirability with trust conditions were significant, their triviality suggests little common variance. The small amount of shared variance was expected, but it is clear that the CTI measured something other than self-esteem and social desir-

Table 4
Convergent and Discriminant Validity of the CTI: Correlations of CTI Scores
with Scores from other Instruments

Other Score	CTI Score ^a										
	Av	Cm	Cn	Di ^b	Fa	In	Lo	Op	Pf	Re	OT
Selfesteem (n = 119)	17	12	00		17	18	14	11	16	00	19
Social desirability (n = 353)	09	12	-04		12	09	17	15	07	06	14
Machiavellianism ⁰					■2	-23	-24	-22	-24	-27	-27
Attributed to self (n = 219)	-26	-18	-28		2						
Attributed to other (« = 219)	-49	-38	-39		■5	-57	-41	-43	-50	-43	-53
Expressed control ⁰					0						
Attributed to self (n = 353)	11	06	14		00	03	-07	01	07	05	-04
Attributed to other (n = 353)	-23	-11	-21		■2	-32	-38	-24	-26	-23	-34
Wanted control ⁰					8						
Attributed to self (« = 353)	-19	-04	-04		■1	-13	-14	-12	-05	-17	-13
Attributed to other (n = 353)	-04	-19	03		3	-10	-05	-06	-11	-15	-10
Expressed affection ⁰											
Attributed to self (n = 119)	14	26	30		27	21	18	19	12	16	17
Attributed to other (n = 119)	19	28	24		41	21	33	39	36	45	28
Wanted affection ⁰											
Attributed to self (n = 119)	00	18	18		20	10	10	02	02	18	09
Attributed to other (n = 119)	16	15	27		33	18	27	34	26	43	20
Expressed inclusion ⁰											
Attributed to self (n = 353)	07	11	-01		02	13	07	13	06	07	03
Attributed to other (« = 353)	19	28	15		18	21	27	35	29	32	28
Wanted inclusion ⁰											
Attributed to self (n = 119)	09	18	-02		16	17	08	05	05	20	11
Attributed to other (n = 119)	20	23	08		30	23	23	24	29	35	24

Note. Participants were managers and their subordinates. Correlations were multiplied by 100. Av = availability,

Cm = competence, Cn = consistency, Di = discreetness, Fa = fairness, In = integrity, Lo = loyalty, Op = openness, Pf = promise fulfillment, Re = receptivity, OT = overall trust.

Form = 119: $r > .19, p < .05$; $r > .24, p < .01$; $r > .30, p < .001$.

Form = 219: $r > .14, p < .05$; $r > .17, p < .01$; $r > .23, p < .001$.

Form = 353: $r > .11, p < .05$; $r > .13, p < .01$; $r > .18, p < .001$.

Sample sizes vary because some variables were not measured in some administrations of the questionnaire.

^aSum of the four items in each scale. ^bNew scale in the CTI. No data are yet available for this table.

^cMachiavellianism and FIRO-B measures were obtained for attributions of the characteristics to the other as well as to the respondents themselves.

ability. For Machiavellianism and the FIRO-B scales, measures were taken for respondents' attributions of the *others'* characteristics, as well as for the respondents' reports of their *own* characteristics. Correlations of CTI scale scores with characteristics attributed to the other were generally higher than were the correlations with the participants' reports of their own characteristics. This finding is consistent with the current thinking that trust is a situational cognition developed from characteristics attributed to a specific other, rather than a global attitude of trustingness toward generalized others. Thus, Table 4 offers some evidence of not only discriminant validity, but also convergent validity of the CTI scales.

Study 3: Construct Validation with Role Playing Task and Observers' Ratings

Method

The Ugli Orange role play (Lewicki, Bowen, Hall, & Hall, 1988) was conducted. This exercise was designed primarily to demonstrate bilateral conflict in a

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bargaining situation. Participants were students in undergraduate and graduate management courses at a southeastern university. The scenario called for two individuals, who worked for competing firms, to bargain with each other for a perceived scarce resource. There was a collaborative solution in that the two bargainers needed different parts of the resource. One needed the juice; the other, the rind of a certain rare orange — both for noble purposes. However, the bargainers had to share certain information with each other in order to become aware that there was a win-win solution.

Following Zand (1972), trust was manipulated in the instructions to the role play. High-trust dyads were told of inter-firm cooperation, personal trust, and a high level of give and take between the two firms. Low-trust dyads were briefed that there had been patent infringements, lawsuits, lack of trust, mutual suspicion, and a low level of give and take between the two firms. High and low trust conditions were assigned randomly to bargaining dyads. Both players in any given dyad were assigned the same trust condition.

After reading the instructions, but before beginning the exercise, the role players completed the CTI indicating the levels of the conditions of trust in their partners/opponents at that time. Each role play was observed by a third student. The observers were briefed about the nature of the exercise (that there was a win-win solution) and were given an "Observer's Report Form" for them to complete. This form asked a series of open-ended questions including: "Do they trust each other?" and "How much disclosure is there?" The observers' responses to these two questions were coded, according to the judgment of a research assistant, 5 = "very much" to 1 = "very little."

Construct validation, "nothing more nor less than hypothesis testing" (Hogan & Nicholson, 1988: 622), was accomplished for the CTI by testing the hypotheses that every one of the scale scores of the CTI would correlate positively with both the observers' ratings of trust and the observers' ratings of disclosure. The relationship between trust and disclosure was predicted by Zand's model of trust (1972), which specifies that trust leads to the disclosure of information. In addition, the mean of every CTI score under the high trust condition was contrasted with the corresponding mean under the low trust condition. The experiment was double-blind in that neither the role players nor the observers knew that trust had been manipulated.

Results

Only 10 of the 11 CTI scales were used for the role play because the discreetness scale had not been developed at that time. The correlations of the 10 CTI scores with the observers' ratings concerning the amount of trust between the two role players ranged from .31 to .51 ($n = 132$ individuals). All were significant at the .001 level. Likewise, the correlations of the ten CTI scores with the observers' ratings concerning the amount of disclosure ranged from .16 to .28 ($n = 132$ individuals). All were significant at the .05 level. The means of all 10 of the CTI scores for the high-trust condition differed from the means of the corresponding scores for the low-trust condition at the .0001 level of significance, with t ranging

Table 5
CTI Scale Scores: Correlations with Observers' Reports: Means and Standard Deviations
for Low and High Trust

CTI Scale	< Correlations		M (SD) ^a	
	Mutual trust	Disclosure (n= 132)	Low trust (n= 76)	High trust (n=86)
Availability	.42*	.24*	9.0(3.1)	15.4(2.6)
Competence	.37*	.15	13.9(3.6)	17.9(2.6)
Consistency	.31*	.17*	10.7(3.3)	14.9(2.7)
Fairness	.51*	.28*	7.5 (3.0)	16.8(2.3)
Integrity	.51*	.21*	7.3(2.6)	16.3(2.3)
Loyalty	.49*	.26*	5.9(2.2)	14.4(3.0)
Openness	.47*	.21*	7.3(2.5)	15.3(2.5)
Overall trust	.53*	.27*	6.2(2.6)	16.5(2.7)
Promise fulfillment	.44*	.25*	8.4(3.4)	16.4(2.4)
Receptivity	.44*	.20*	10.2(4.0)	17.0(2.1)

^aStudents' *ts* for differences in means ranged from 7.8 to 24.6 ($p < .0001$).

* $p < .05$.

from 7.8 to 24.6.³ Table 5 shows these correlations, means, and standard deviations.

Study 4: Construct Validation with Vertical Dyads

Method

The specific (dyadic) nature of trust is consistent with Graen's vertical dyad linkage model (Dansereau, Graen, & Hage, 1975; Graen, Lilen, & Hoel, 1982; Graen & Schiemann, 1978; Scandura, Graen, & Novak, 1986). Trust is an essential component of the dyadic leader-member exchange (LMX). The reciprocal reinforcement in the high-quality LMX promotes stability and predictability over time (Graen & Cashman, 1975). These characteristics are similar to Gabarro's (1978) Stage 4. Many of the organizationally-relevant hypotheses supported by Graen and his colleagues (concerning relations of LMX with job satisfaction, productivity, decision influence, and employee turnover) have also been supported for trust (Gabarro, 1978; Zand, 1972). However, trust can apply to interindividual and intergroup bilateral relationships as well as to vertical dyads.

Larzelere and Huston (1980) and Butler (1983, 1986) found that trust was reciprocal, as predicted by Zand's dynamic model of trust (1972). This model proposes that trust between two individuals develops through a circular, mutually-reinforcing process that begins with one's expectations about another's behavior. If one expects that the other is trustworthy, then one will disclose information, accept influence, and relax controls. Consequently, the other will perceive one's be-

³Demand characteristics could account for some of the differences between high and low trust groups as captured by the CTI mean scores. If demand characteristics were part of the "treatment," then the participants in the high and low trust groups still perceived the two desired levels of trust — even though some of this "trust" and "mistrust" may have resulted from their desire to cooperate with the experimenter. However, for purposes of assessing the construct validity of the scales, it does not matter whether the differences came from the manipulation, the demand characteristics, or both — as long as the two effects were in the same direction. That is, construct validity was not threatened in this case because it does not matter what the "treatment" was. What does matter is that the scales acted as though they measured conditions of trust.

havior as trusting and will tend to treat one with similar trusting behavior (disclosing information, etc.). In turn, this behavior reinforces one's initial trusting expectations and the interpersonal trust continues to build. In contrast, the opposite circular process can produce mistrust. Expectations that the other is untrustworthy lead one to withhold information, reject influence, and tighten controls. Consequently the other perceives one's mistrust in the other, and so forth. If, as the model suggests, one's trust in another tends to reinforce the other's trust in one, then trust is reciprocal.

If trust is reciprocal, it is reasonable to propose that the conditions leading to trust would also be reciprocal. To test whether the CTI scales performed as expected (Nunnally, 1970) under the hypothesis of reciprocity of trust conditions within vertical dyads, 180 managers and 173 subordinates completed the CTI. The sample was reduced to 166 vertical dyads because some of the data could not be paired into manager-subordinate dyads. The respondents were employed by 24 highly diverse organizations in the southeastern United States. The managers and their subordinates responded independently and confidentially from each other. Managers' scores on each CTI scale were correlated with the corresponding scores for their subordinates. It was also hypothesized that managers would express higher levels of trust conditions than would their subordinates because of the greater dominance (Lendenmann & Rapoport, 1980) and fate control (Armstrong & Roback, 1977) of the managers.

Results

Ten trust condition scores (excluding discreetness) of the 166 managers were correlated with the corresponding scores of one subordinate of each of those managers. These correlations ranged from .15 ($p = .06$) for availability to .38 ($p < .0001$) for receptivity. All were significant at the .05 level, except for availability. Thus, the hypothesized reciprocity was observed by the CTI scales.

Managers' scores were significantly higher than subordinates' scores ($p < .05$) for every trust condition except competence ($p = .12$). Wilks' criterion, contrasting the two vectors of 10 trust conditions (managers vs. subordinates), was .86 ($F = 5.60$, $df = 10, 155$, $p < .0001$). Thus, the hypothesized overall effect of organizational level on trust conditions was captured by the CTI scales. Table 6 shows the correlations between managers' and subordinates' scores for corresponding conditions of trust, and the means and standard deviations of the scale scores.

Discussion

This study extended and validated the list of trust conditions identified by Jennings (1971) and Gabarro (1978). The contribution of the study focuses on understanding and measuring not only conditions of managerial trust, but also conditions of trust between people in other types of relationships. Although content validity of the set of scales was established from interviews with managers and a review of the management literature, the items were worded so they could pertain to individuals in all types of relationships. However, the 10 conditions might not represent a complete content domain of trust conditions in friendships or family relationships. In any event, the results were consistent with earlier findings con-

Table 6
CTI Scale Scores: Correlations between Scores of Managers and their Subordinates;
Means and Standard Deviations

CTI Scale	M(SD) ^a			
	Correlations (<i>n</i> = 166)	Managers (<i>n</i> =180)	Subordinates (<i>n</i> = 173)	<i>f</i>
Availability	.15	17.6(2.7)	15.9(3.6)	5.1*
Competence	.24*	18.0(2.6)	17.5(3.1)	1.6
Consistency	.18*	16.1(3.0)	14.0(3.4)	6.1*
Fairness	.34*	17.7(2.7)	16.9(3.3)	2.7*
Integrity	.18*	17.5(3.3)	16.6(3.5)	2.5*
Loyalty	.24*	16.6(3.4)	15.8(3.9)	2.1*
Openness	.24*	16.1(3.1)	14.7(3.8)	3.7*
Overall trust	.27*	17.5(3.4)	16.8(3.6)	2.1*
Promise fulfillment	.26*	17.3(3.1)	16.2(3.7)	3.2*
Receptivity	.38*	16.7(3.0)	15.9(3.7)	2.2*

Contrasting the two vectors of means: Wilks' criterion = .86, $F = 5.60$, $df = 10/342$, $p < .0001$.

* $p < .05$.

cerning the multiconditionality of trust and the focus on specific others. Construct validities of individual scales were supported by confirming hypotheses about relationships, or the lack of them, with measures of other constructs.

Construct validities of the CTI scales were also supported by confirming hypotheses about levels of trust conditions under different situations, observed trust, observed information sharing, and the reciprocity of trust conditions. In the role-playing task, all the scale scores correlated as expected with the observers' ratings of trust and shared information. These correlations were especially convincing because they were computed from data gathered with different methods and provided by two different people responding independently. Therefore, the correlations could not have been inflated by common method variance or common response style variance. Common response style variance can also be ruled out for the reciprocity of scale scores found for manager-subordinate dyads, and for the difference between the means of those scores for managers versus subordinates.

In the present study, differential dominance and fate control between managers and subordinates were used to assess the construct validity of the CTI scores. Managers might have expressed high levels of "trust" conditions regarding then-subordinates not because they felt that the subordinates were truly available, competent, consistent, honest, loyal, etc., but because the managers knew that they had power over their subordinates. As suggested by Zand (1972), conditions of trust are needed only when the other's behavior is beyond one's control.

In future studies, the relationship between trust conditions and power should be investigated, and power differences should be controlled for in examinations of reciprocal trust conditions. Other related variables include goal interdependence (Tjosvold, 1989) and preferred conflict handling mode (Thomas, 1976).

One difference between the CTI and other trust instruments is that the CTI focuses on the *conditions* of trust in a specific target person. The distinction between conditions leading to trust and dimensions of the construct of trust is an important one. Many managers have a greater need to know what causes trust than to understand the construct itself, and the CTI can assist them in diagnosing prob-

lems related to causes of trust. For example, one plant manager's suspicion of inconsistent decision making by his subordinates was confirmed by low scores on the consistency scale of the CTI. He had received informal reports of favoritism, but had discounted them because he considered the informants to be habitual complainers. He was surprised to learn, from a survey using the CTI, how widespread the perceptions of inconsistency had been. As a result, he initiated the development of personnel policies to increase the probability of consistent decisions — not only among different managers, but by any particular manager from one time to another. Although an instrument measuring the construct of trust might have indicated a problem with trust, it would not have focused on the *cause* of inconsistency, even if it were capable of breaking out dimensions of the construct. The CTI can also be useful to counselors interested in making recommendations concerning relationships where specific conditions of trust might be causing interpersonal problems for employees.

The CTI is a tool that can be used to help answer research questions about the conditions leading to trust. The following questions address the relative importance of the conditions of trust with respect to one another. Are some trust conditions more crucial than others in terms of their impacts on career effectiveness and advancement? Can the conditions of fairness and loyalty be discriminated from each other, or should they be? Are there differences among vocations in terms of how people trust one another, measured by the relative importance of different trust conditions? Are there differences in trust conditions between upward and downward trust in organizations? Do trust conditions differ between the sexes in terms of the intensity of trust and targets of trust? Are individuals different from groups of people in terms of the conditions of trust they elicit? Are the conditions of trust that are salient in close relationships different from those salient in distant ones? Do some conditions of trust tend to be reciprocated more than other conditions? How are the conditions of trust inter-related?

Finally, do conditions of trust moderate relationships between attitudes and behaviors? For example, the job satisfaction-turnover relationship might be moderated by conditions of trust in managers as perceived by employees. Beliefs in the integrity, loyalty, and promise fulfillment of decision makers might reflect beliefs that an organization will continue in the future to provide the need and value fulfillments required for job satisfaction. The perceived favorability of the future, represented in part by trust in decision makers, could moderate the relationship between one's current satisfaction and one's intention to quit or stay.

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