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Readiness to trust in complex situations¹

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This experiment studies whether people are readier to accept suggestions for solutions when the problem is more complex and whether such complexity also increases trust in the source of the solution. The experimental paradigm concerned the mayor of a small, barely developed community who has to decide on the sale of an industrial site to an investor. Complexity was manipulated in terms of the number and interrelations of the variables to be considered in making a decision on the sale. The mayor may

call in a consultant who offers more or less elaborated suggestions as to how to evaluate the appropriateness of a given investor. Results ($N = 93$; 2×3 factorial design) indicate that greater complexity increases not only readiness to accept even inadequately elaborate solutions but also degree of trust in the source, the consultant.

Key words: Trust, purchasing decision, complexity, management of resources

“Trust” and related concepts are vital to the understanding both of social life and of personality development (Deutsch, 1958, p. 265). To this observation by Deutsch, it should be added that trust is also important for the understanding of cognitive information processing. An extended analysis of the concept of trust which includes its relation to such processing makes clear that, until now, the focus of attention has been upon the negative aspects of distrust and the correspondingly positive aspects of trust. Thus, distrust in the context of relations within and between groups has been regarded only as the cause of personal problems in development or of aggression and conflict (Pruitt & Carnevale, 1993; Webb & Worchel, 1986). In the context of information processing, however, it has to be acknowledged that distrust may well be functional under certain conditions, for example, to detect cheating, exploitation, and fraud (cf. Gigerenzer & Hug, 1992; Oswald, 1996). In this paper, we define trust as “reliance on another’s integrity” (Erikson, 1950), although here it does not refer to a personality variable but rather to an attitude toward a specific person.

In situations where people are not sure whether the intentions of their partners are really benevolent, but where they are more or less dependent on them, there will often be a need to detect a possible abuse of trust in the longer run. This need corresponds to what Kruglanski (1990) called need for validity, and what Cacioppo & Petty (1982) called need for cognition; it is accompanied by an increased motivation to obtain additional information about the intentions of the partner (Oswald, 1997) as well as to process the information about the partner intensively, i. e. to focus on the content of the information rather than on its face value. In this sense, distrust not only increases the chances of detecting a possible abuse of trust but also requires of the individual concerned a higher level of cognitive information processing capacity.

This elaboration raises the question of how people deal with trust/distrust in highly complex situations. In such situations, distrust could rapidly prove to be a problem since the additional information processing required might threaten capacity to cope with the situation. Should we therefore expect that people will be inclined to renounce distrust in complex situations? In this context, Luhmann (1973) talks not only about renouncing distrust but also about a *need for trust* since trust may reduce the perceived complexity of the situation. Certainly, this is a daring hypothesis because it postulates

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that the readiness to trust increases precisely as a result of high situational complexity. In certain respects this hypothesis resembles the idea in lay psychology that particularly in difficult and complex situations people are inclined to believe the prophets of simple solutions. Although there might exist a specific connection between complexity of the situation and readiness to trust the person who offers a solution, acceptability of the solution offered and trust in the person offering it should not be confounded. Kee & Knox (1970) have previously pointed to the important differentiation between *actions* of trust on one hand, and *attitudes* of trust on the other. Thus, they criticized Deutsch (1958) who equated an attitude of trust with cooperative action in the PDG (prisoner's dilemma game) in which participants maximize their joint payoff at the risk of being exploited. A cooperative action may rise from other considerations than trust, such as for example normative elaborations, or pure utility. Thus, it could readily be anticipated that increasing the complexity of the task would increase the likelihood of accepting a suggested solution, especially if the solution appears simple, *but that people will retain their attitude of distrust* towards the source. Therefore, we need to test whether increasing complexity results in a more trusting attitude and not just greater readiness to accept the solution offered. Additionally it is important to determine whether any effect of increasing complexity upon acceptance and trust is greater if a less elaborated solution is offered.

We predicted that in a problem situation which could not easily be escaped, both readiness to accept offered solutions and attitude of trust towards the person offering these solutions would increase with increasing complexity in the situation. Moreover, we anticipated that the effect of such complexity on both trust and acceptability of the solution would be greater when a less elaborated solution was offered.

Method

Testing these assumptions requires an experimental setup in which (1) the subject is interested in solving the problem, (2) trust in the intentions of the partner is important, and (3) the

complexity of the situation may be varied without changing the essence of the problem to be solved.

The experimental setup chosen is of particular relevance for the new provinces of the Federal Republic of Germany: A small community wants to sell an estate for commercial use to an investor. Subjects take the role of the mayor who is responsible for evaluating the potential investor and for making a recommendation to the city council regarding acceptance or rejection of the investment project. To execute this task subjects are also given the option of calling in a consultant.

The experimental design was a 3 (degree of complexity of the problem situation) \times 2 (degree of elaboratedness of the solution offered) between-subjects design. 93 students at the Technische Universität Chemnitz-Zwickau participated in the experiment. They were all beginners in a course leading to a masters degree with psychology as a minor. (Subjects were 18–21 years old, average 19.6 years. Most originated from Saxonia, a new province in the Eastern part of Germany. Females formed 65% of the total.)

The situation in the community "Helmertsgrün", and the task of the mayor whose role they had to take was presented to them by means of a video tape. It was stressed that the community was located in a barely developed area in the South East of the new provinces of Germany, that it had invested money in the development of three hectares for industrial use, and that it was looking for an appropriate investor. Moreover, it was emphasised that the reality is that mayors of small communities have to decide on the sale of industrial estates essentially without being experts in this field; i. e. they are in the same position as the experimental subject.

After watching the video tape, subjects read a letter from a potential investor addressed to the mayor, a leaflet on the investor's company, and a description of his investment project in "Helmertsgrün". To make the scenario as representative as possible of conditions in the new Eastern provinces of Germany following reunification, the investor, Mr. Osterfeld, was presented as originating in the Western provinces of the Federal Republic of Germany.

He was a manufacturer of men's and women's clothing, and wanted to extend his production to so-called outsizes of high quality.

Complexity of the task situation

After subjects had watched the video tape, and read the investor's letter, they were reminded that their task was to make a recommendation to the city council about acceptance or rejection of the investment project. However, before they had the opportunity to gather any further information on the potential *investor* and his project, the complexity of the task situation was manipulated. This was achieved by varying the number and interrelations of variables characterizing the situation (cf. Hussy, 1984). The respective variables did not refer to the investor and his project but rather to factors which have to be considered in *any decision* on selling industrial real estate. In this way, it was ensured that variation in the complexity of the situation did not contain any hint concerning the possible success of the specific investment project or the integrity and/or solvency of the investor "Osterfeld".

At all levels of complexity, the relations between variables to be considered in a decision on an investment were presented to the subject by means of an overhead projector, and explained by the experimenter. In the *low complexity* condition, subjects were shown a flow chart indicating only basic advantages and disadvantages bringing in an investor. Thus, it would prove positive for (1) local employment and (2) the community's tax revenue. On the other hand, granting financial support is a government means to stimulate market prospects in less developed regions. In general, such support is restricted to a limited time period and is given as a supplement to investments, as a low interest loan, or as a tax reduction. Thus, (3) governmental financial supports available for development would be exhausted, which (4) would increase the risk that the investor might leave the community after taking advantage of the support, or (5) go bankrupt. Since such an outcome would be disadvantageous for the community, its interests would lie in finding an investor who will settle in Helmersgrün for a longer period, and do so successfully.

In the *medium complexity* condition, subjects were also shown a flow chart indicating the advantages and disadvantages involved in settling upon a particular investor. However, there were significantly more variables and more mutual interrelations displayed than at the level of low complexity. Whereas in the low complexity condition only five variables were mentioned, at this level there were 24 variables, e. g., the tax income of the community, re-education of the seamstresses formerly employed by other firms, bringing in supplier firms, attractiveness of the community, exploitation of government support, discretionary power of the community to control the area of the estate, increases in traffic, etc. Of the possible interrelations between these variables, however, only the 33 most important ones were displayed.

Subjects in the *high complexity* condition were presented the same flow chart as in the medium complexity condition, rather than presenting a still more complex flow chart. But subjects received an additional hint that among the preliminary considerations to be made was the kind of industry that it would be appropriate to bring in to Helmersgrün, given the characteristics of the community of the place. Drawing on a paper about different types of industry and their respective location requirements, subjects were informed about how to read from a table the geographical characteristics that are typical for six different kinds of industrial plants, such as distance from living quarters, from garbage disposal areas, inclination of the site, maximum load on the soil, etc. They were instructed to consider what kinds of industry would be appropriate for Helmersgrün given the local conditions.

A pilot study on three groups of 10 students confirmed that the high complexity condition was indeed perceived as significantly more complex than the medium complexity condition, and that this in turn was perceived as more complex than the low complexity condition (rated on a seven point scale from 1 = very low to 7 = very high. The respective means and standard deviations were: Low complexity: $M = 3.6$, $SD = 1.08$; medium complexity: $M = 4.7$, $SD = 0.95$; high complexity: $M = 6.1$, $SD = 0.99$.) The background information that the local conditions in Helmersgrün fitted the re-

quirements of the project planned by Osterfeld, were held constant over all levels of complexity, and were relayed to subject at the end of the presentation of the complexity condition.

After this preliminary induction of the variation of degree of complexity, subjects were required to gather information about the organization of the investor's company, e. g. its creditworthiness, or the prospects of success of its new collection of products. To make the task easier for the mayor, they had the *option of hiring a consultant* who was already in contact with the community. This consultant might support the mayor in deciding upon what information to ask for, how to evaluate the individual pieces of information, and how to summarize them in order to make a recommendation to the city council with respect to the investor's proposal. Subjects were offered a guideline issued by the consultant. In this guideline the consultant suggested a solution as to how to evaluate the appropriateness of a given investor.

Elaborateness of the solution suggested

The solution offered at the level of *low elaborateness* had an extremely simple structure. The consultant was of the opinion that, in evaluating the investor, *only one central variable* was relevant. In the current case, this was the variable "sales potential of the products planned". According to the consultant, if the sales potential was good, then there was a guarantee of turnover, and also a guarantee that the bank would be ready to grant credits for investments. All other considerations were of minor importance.

At the level of *appropriate elaboratedness*, however, the consultant proposed a specified guideline in which several factors were considered important. Thus, the financial situation of the investor, the sales potential of the new product, the organizational structure of the company, and the technical level of the production facility had to be considered. The consultant emphasized that it was difficult but in principle feasible to obtain information on these factors, and to weigh them against each other. This effort, however, would be necessary to reach a competent decision.

Both consultants' solutions were of equal length, and were evaluated by five graduate students of business administration with respect to their appropriateness. The criteria used in the solution with an appropriate elaboratedness (medium complexity) were unanimously judged as very appropriate, the solution with a low elaboratedness as much too simplified.

Dependent variables

To measure the *acceptability of the consultants' solution*, a scale of eight bipolar attributes was constructed to represent qualitative aspects of the solution such as "appropriate/inappropriate", "convincing/unconvincing" or "positive/negative" as well as utility aspects such as "facilitating/aggravating" or "useful/useless". The attributes were presented in the form of a semantic differential with items on seven-point scales, ranging from -3 to +3. Inter-item correlations were in the range .32 to .74. The corrected item total correlations for these variables ranged from .53 to .80 with a Cronbach's α of .89.

The attitude of *trust toward the consultant* could not be measured by means of an established scale. Most scales, such as the well-known interpersonal trust scale by Rotter (1967), measure trust as a personality dimension (cf. Krampen, 1987), and those few scales which measure trust toward an actual person (cf. Buck & Bierhoff, 1986) were not applicable in our case. A scale of ten items all referring to that concept of trust as defined above was constructed. Among its items were "frankness", "honesty", "respectability" and "reliability" which were rated on seven-point bipolar scales, ranging from -3 to +3. For the other items, like "persistence in spite of unexpected difficulties", "keeping promises" and "personal commitment for success", subjects were asked to confirm or disconfirm statements on five-point rating scales, which were later transformed into a seven point scale, ranging from -3 to +3. All the items correlated with each other between .41 to .78. The corrected item total correlations for these variables varied from .59 to .81 with a Cronbach's α of .90.

Additional dependent variables, rated on seven point scales, were how competent, and how pleasant the consultant was rated and how sure the subjects were as to whether they would hire him, and what recommendation the mayor (subject) would give to the city council with respect to the investor's proposal. The latter variable was measured on a scale of six points from "under any circumstances" to "by no means".

Results

Acceptability of the solution

The means of the scale "acceptability of the solution" support the hypothesis that the general acceptability of a suggested solution changes with increasing complexity of the problem: acceptability increases as complexity increases (cf. Table 1). This shows as a *main effect* on means of the total scale ($F_{2,87} = 3.918$; $p < .03$) as well as for most individual items. Thus, with increasing complexity, the solution offered by the consultant is judged as more helpful, more appropriate, more positive, more useful, and more successful (minimal F of these items: $F_{2,87} = 2.345$; $p < .05$)

The interaction hypothesis that with increasing complexity of the task situation the acceptability of a simple solution increases more than the acceptability of an elaborate one, could not be confirmed ($F_{2,87} = .560$, $p = .573$).

A main effect of the "elaborateness of the suggested solution" was not expected in the hypotheses, and did not occur in the data ($F_{1,87} = 2.444$; $p = .122$). An analysis of the individual items forming the scale "acceptability of the so-

lution" did, however, demonstrate, that the simple solution was at least perceived as less appropriate and less convincing than the elaborate one (minimal F of these items: $F_{1,87} = 4.069$; $p < .05$).

Trust in the consultant

The ten items on "trust" could be summarized as a scale with adequate reliability, as mentioned above. The means on the total scale "attitude of trust" confirm the assumption (cf. Table 2) that the degree of trust in the consultant significantly increased with the complexity of the task situation (main effect, $F_{2,87} = 3.489$; $p = <.04$). A separate analysis of individual items demonstrates that this effect was mainly based on the items "sense of responsibility", "persistence in spite of unexpected difficulties", "reliability", and "personal commitment for success" (minimal F of these items: $F_{2,87} = 3.550$; $p < .04$).

As expected, the elaborateness of the consultant's solution did not generally influence the attitude of trust of the subject toward the consultant (main effect, $F_{1,87} = 1.949$; $p = .166$). Only two individual items show a significant effect. Thus, a consultant who suggested a more specific solution was judged significantly more respectable and responsible than a consultant offering a simple solution (minimal F of these items: $F_{1,87} = 6.033$; $p < .02$).

The hypothesised interaction that, with increasing complexity of the situation, trust in a consultant offering a simple solution should increase more than in one offering a more elaborate solution, could not be confirmed ($F_{2,87} = .81$; $p = .448$).

Table 1: Acceptability of the consultants' solution

		Elaborateness of the solution		
			low	appropriate
Complexity of the situation	low	M	0.75	1.31
		(SD)	(1.07)	(1.16)
		N	15	16
	medium	M	1.07	1.23
		(SD)	(1.27)	(1.10)
		N	15	16
high	M	1.58	1.67	
	(SD)	(0.91)	(0.96)	
	N	16	15	

Table 2: Trust in the consultant

		Elaborateness of the solution		
			low	appropriate
Complexity of the situation	low	M	1.40	1.84
		(SD)	(0.90)	(1.02)
		N	15	16
	medium	M	1.95	1.95
		(SD)	(0.78)	(0.76)
		N	15	16
high	M	2.01	2.21	
	(SD)	(0.76)	(0.96)	
	N	16	15	

Additional dependent variables

Increasing complexity not only increased the attitude of trust toward the consultant but also the competence attributed to him ($F_{2,87} = 4.028$; $p < .03$). Although it is theoretically appropriate to differentiate between the competence attributed on one hand (labelled 'competence trust' by Oswald, 1994), and trust in a partner's intention on the other, a relatively close relation between these variables ($r = .67$) occurred. This result might reflect to a naive attitude of not distinguishing between intention trust and competence trust (Borg & Braun, 1995).

With increasing complexity, the general readiness to hire the actual consultant also increased ($F_{2,87} = 3.417$; $p < .04$), but not the perceived pleasantness of the consultant ($F_{2,87} = 1.050$; $p = .354$).

Finally, the recommendation given by the mayor at the end of the session was the more positive the higher the complexity of the task situation ($F_{2,87} = 3.969$; $p < .03$). This effect is surprising, because, even assuming that the increasing trust in the consultant and the increasing acceptability of the solution offered by him is rationally founded, these *conditions do not provide any prediction* as to whether the investment project has to be judged positively or not.

Discussion

What happens if people have to solve problems in a context which they experience as being increasingly complex? Until now, studies have been conducted mainly from the perspective of cognitive psychology and have focussed upon the strategies or heuristics applied and upon the nature of the errors that typically occur in complex situations (cf. Mayer, 1983; Dörner, 1989). In the present study, however, the emphasis is on the question of how increasing complexity of the situation changes the evaluation of more or less specific solutions offered, and how it changes the attitude of trust toward the person offering the solution. The experimental paradigm was a situation in which the mayor of a small community had to decide whether an industrial site in a small community should be

sold to a given investor. To accomplish this task, he or she could call in a consultant.

Results indicate that the complexity of the situation influences the acceptability of even inappropriately simple solutions as well as the degree of trust in the intentions and competence of the consultant. This leads us to assume that people become more credulous with increasing complexity of the situation. Specifically they become more inclined to believe a consultant who offers a solution for accomplishing the task, and this additionally seduces them into a more positive position toward the investor and the sale of the industrial site.

This credulousness, however, seems not to go so far that the increase in acceptability and trust is even greater when a less elaborate solution is offered. On the global measure, acceptability for the inappropriately simple solution in highly complex situations is at least as high as the acceptability of a more elaborate solution offered in a less complex situation. The degree of trust in the consultant shows an analogous tendency.

How are we to interpret these results? The results are compatible with the initial hypothesis that an increase in the complexity of the situation increases the tendency of the person to cope with this complexity by trusting completely both the intentions and the competence of a consultant. This is also supported by the increasing readiness to hire the consultant as problem complexity increases. An interesting next step would be to learn more about the cognitive and emotional processes underlying these responses. Thus, it is possible that an increase in complexity results in a decrease of self-confidence, i. e., a decrease in perceived control. From an attribution-theoretical point of view, this could increase subjective dependency on the consultant, and together with this, the positive evaluation of; his or her person (cf. Knight & Vallacher, 1981). However, this attribution process does not necessarily explain why the solution, even an inappropriately simple one, is also judged more positively. It is possible that a shift in perception of one's own control in a negative direction reduces the intensity of information processing, for example, because the person considers the task insoluble (cf. Bohner, Rank, Reinhard, Einwiller & Erb, 1996). A

less intensive elaboration of the consultant's solution could thus have the result that the person does not immediately notice the inappropriateness of the simple solution. However, this would at most explain why acceptance of an inappropriately simple solution increases with increasing complexity. A reduced elaboration of the appropriate solution should keep the rate of acceptance at the same level or should even lower this level. The cognitive and emotional processes involved in the changes of acceptability and trust are still in need of closer investigation.

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