On Behavior of Persons Who Eventually Find Themselves as Situation Leaders: A Causation Analysis

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Abstract

The research is sequel to former attempts to study how the mental organizers of the persons produce possible causalities in behavior. An observation category system was the device to find out causal processual relation. The number of the situation leaders was 35 out of whom 25 were men and 10 women. Reliability, subjectivity, and validity of observation were assessed in a novel way. The analysis with probabilities included a Bayesian application and an application of Gram-Schmidt process. The results indicated different types of causal processes exist between the mental organizer, the overt behavior, and the right outcome. The leaders utilize their mental organizers and find the right outcome in the most probable way. One of the flaws, however, was the lack of the clear causalities between the organizer and the overt behavior. A problem that has a wider meaning, too.

On Behavior of Persons Who Eventually Find Themselves as Situation Leaders: A Causation Analysis

The research is sequel to former attempts to study how the mental organizers of the persons produce possible causalities in behavior. Leadership as such is much researched but situation leadership is less. One of the reasons may be situations emerge and disappear in some kind of 'meteorological' way. Another question is the one where persons confront with situations and get into leadership without any preparation. The focus of the present research is the situation leadership without preparation.

The number of the degrees of freedom is to be as high as possible to tackle the problem. So the hypothesis was in a question form. How do the mental organizer and other included processes relate causally? The causation in this context means the most probable causes, not zero-one relations. An observation category system

was the device to find out causal processual relations. The mental organizer comprised of the categories; from the view of angle of the persons.

1) explains, shows the meaning and its context; 2) uses deductive reasoning, derives from general information to specific information by reasoning; 3) uses inductive reasoning, derives from specific information to general information; 4) infers, constructs a comprehension from facts or reasoning; 5) concludes from, develops a belief as a result of reasoning; 6) reasons out, finds a solution from a set of solvable alternatives; 7) elaborates, develops a matter in detail; 8) describes, tells what kind of a matter is in question.

As to the other processes conformity and deviation included in the observation. The question was if a situation leader agrees with the choice of a member of a small collective, or uses his or her own judgment. Furthermore, consonant, and discrepant behaviors included in the observation. The former

means that the persons match verbal and non-verbal behavior, the latter behavior means existence of discrepancy between verbal and non-verbal behavior.

METHOD

Subjects and Procedure

The number of the situation leaders was 35 out of whom 25 were men and 10 women. The subjects got into the situation leaders through an evaluative task. The observation took place from videotaped group sessions.

The behavior of the situation leaders was coded with the help of an observation minutes. The minutes included in the preferences of the alternatives, the choice of a member in a small collective, his or her name, the letter of the category of the mental organizer, the choice of the situation leader, the consonant ex-or discrepant behavior, and the right ex-or wrong outcome. The behaviors were tallied and frequencied for further analysis.

Reliability and Subjectivity of Observation

The assessment of the reliability, and the subjectivity of observation took place a little bit differently than used to. The categories of explanation, deductive reasoning, and description remained without observations. A corresponding random matrix with the data matrix was generated with double randomization where the pseudorandom numbers were multiplied by the fifty-fifty ones and nulls, in the same range as the original frequencies. The matrices are in Table 1.

Correlation matrices were calculated at time from both matrices. The obtained matrices were squared to have common variances. The empirical coefficient of reliability was calculated according to Nunnally (1967, p. 195, (6-23)). The operation resulted in the value 0.965. The reliability coefficient was subtracted from 1.000 to have the error term. Correspondingly, the same operations concerned the random matrix for the total variance, the common variance, and the specific variance.

Table 1

Data matrix and Random Matrix

Data matrix

	Dicrete time				
	1	2	3	4	5
Social preference	35	35	35	31	26
Inductive reasoning	4	5	8	12	1
Inference	8	8	8	11	3
Conclusion from	3	7	10	9	2
Reasoning out	8	9	13	14	4
Elaboration	17	19	19	14	6
Conformity	35	33	31	21	22
Deviation	0	2	4	10	4
Consonant behavior	27	24	26	22	19
Discrepant behavior	8	11	9	9	7
Right outcome	35	35	31	26	17
Wrong outcome	0	0	4	5	9
Randomized matrix					
Social preference	16	22	31	25	33
Inductive reasoning	24	20	10	14	26
Inference	22	35	35	10	5
Conclusion from	6	17	9	31	1

(Table 1 continues)

Table 1

Data matrix and Random matrix

Randomized matrix

	Dicrete time				
	1	2	3	4	5
Reasoning out	7	23	5	21	22
Elaboration	35	11	3	13	28
Conformity	26	5	32	3	14
Deviation	22	2	11	7	21
Consonant behavior	6	25	5	16	16
Discrepant behavior	23	29	1	35	14
Right outcome	5	13	12	2	2
Wrong outcome	25	9	3	2	12

In the empirical data the total variance was 22.346, the common variance was 17.346, and the specific variance was 5. The corresponding random values were, 1.385, 1.164, and 0.221. The error term was 0.034.

The subjectivity of the observation needs an auxiliary concept the full variance or the sum of the ones in the correlation matrix. The value was 25. The different variances of the random data were subtracted from the empirical ones and s_u or the subjectivity term was added in an equation where the full variance was in the left and the subtracted values with error term in the right. The scaled equation gives the values; 1.000=0.647+0.191+0.160+0.001. The subjectivity or s_u is 0.160; presented as percentage the observation includes 16% of subjectivity.

Validity

In the place of validity, the calculations concerned the rows of the data, and the random matrices. The coefficient of alienation indicates how apart the categories are from each

other. The overall alienation is 144. The calculated empirical alienation coefficient was 97.078; the same value from the random data was 111.914. Thus the random alienation from the overall alienation is 77.7%. The empirical alienation is 67.4% from the overall alienation. Therefore the observation categories are more exclusive than overlapping. The major amount of the observations is in the right categories. In addition, the empirical alienation is 86.7% from the random one.

Results

Analysis with Probabilities

A glimpse at Table 1 reveals some of the frequencies to be too low for further analysis. That is why, the processes which included in the further analysis were: the social preference, the inductive reasoning, the inference, the conclusion from, the reasoning out, the elaboration, the conformity, the consonant behavior, the discrepant behavior, and the right outcome.

The differentiation between the frequencies was insufficient. Thus it was necessary to weight the frequencies with their ordinal numbers row by row, in an ascent order. The weights are in Table 3. The weight matrix and the frequency matrix were multiplied one-to-one and the obtained values converted into the column probabilities. In the entity of the processes nothing is 'put back'.

The consequence was to use Sampling Without Replacement with an exception. The probabilities do not approach the same value. So the column before the last one was subtracted from the last column of the ones. However, it was unknown in which states the processes at the discrete time were. So the multiplication theorem for conditional probabilities was suitable to find out the states. In a matrix form the multiplication of the states is $\sum B_{.,t+1} = a_{.,t} * (A_{t,t+1} | a_{.,t})$, where the conditional probability matrix is multiplied by the column of the absolute probabilities and the result matrix adds over the rows.

Table 3

Ordinal Weights for Empirical Frequencies

	Discrete time				
	1	2	3	4	5
Social preference	4	4	4	2	1
Inductive reasoning	1	2	3	5	4
Inference	4	4	4	2	1
Conclusion from	1	2	4	5	3
Reason out	1	2	4	5	3
Elaboration	2	4	5	3	1
Conformity	5	4	3	2	1
Consonant behavior	5	3	4	2	1
Discrepant behavior	1	5	4	3	2
Right outcome	4.5	4.5	3	2	1

The conditions are in the rows of the conditional probability matrix. The matrix enables the use of Bayes' formula in a matrix form where the nominator is the former matrix and the denominator is the sum of the matrices in a partition.

Use of Bayes and Gram-Schmidt Process

There were 4 time partitions and the Bayes formula in a matrix form was suitable to the partitions. The obtained matrices were multiplied, directly. The product matrix deconstructed to the row vectors. The row vectors were put into the Gram-Schmidt process that builds an orthonormal base. The selected, greatest values base on the rounded accuracy of one decimal place, row by row. Other cells of the base matrix filled in nulls. The base matrix was scaled by dividing the cell values with the maximum. The start matrix was powered from 1 to 5 and the powered matrices were rescaled.

The start values of the dynamic analysis are in Table 4.

Table 4

Scaled Probabilistic Causalities of 1st Power

Sp	Ir	I	Cf	Ro	E	Cn	Cb	Db	Ro
Sp		.597			.598				.603
Ir		.772			.795				
I			.882						
Cf									1.000
Ro					.700				
E			.527						
Cn								.970	
Cb							.638		
Db			.679						
Ro								.537	

Note. Abbreviations mean: Sp=social preference; Ir=inductive reasoning; I=inference; Cf= conclusion from; Ro=reasoning out; E=elaboration; Cn=conformity; Cb=consonant behavior; Db=discrepant behavior; Ro= right outcome.

The values in the start matrix do not tell what kinds of the causalities are in question. So it was necessary to classify the causes. Simultaneously, with the help of the classification, variety of the relations becomes evident. The classes of the causation are in Table 5.

The diagonal values of the matrices indicate parallel processing between the causal processes and the off-diagonal values show the serial processing between the causalities. The matrix powering continues in Table 6.

Table 5

Classification of Causal Relations

Class	Name
0.0001—0.250	slack
0.251—0.500	thin
0.501—0.750	tight
0.751—1.000	tough

Table 6

Scaled Probabilistic Causalities of 2nd Power

Sp	Ir	I	Cf	Ro	E	Cn	Cb	Db	Ro
Sp			.765					.294	
Ir			1.000						
I									.802
Cf								.488	
Ro			.336						
E									.480
Cn			.599						
Cb							.370		
Db									.618
Ro			.331						

Note. Abbreviations mean: Sp=social preference; Ir=inductive reasoning; I=inference; Cf= conclusion from; Ro=reasoning out; E=elaboration; Cn=conformity; Cb=consonant behavior; Db=discrepant behavior; Ro= right outcome.

Table 7

Scaled Probabilistic Causalities of 3rd Power

	Sp	Ir	I	Cf	Ro	E	Cn	Cb	Db	Ro
Sp				.200						.765
Ir										1.000
I									.430	
Cf				.331						
Ro										.336
E									.257	
Cn										.599
Cb								.236		
Db									.331	
Ro										.331

Note. Abbreviations mean: Sp=social preference; Ir=inductive reasoning; I=inference; Cf= conclusion from; Ro=reasoning out; E=elaboration; Cn=conformity; Cb=consonant behavior; Db=discrepant behavior; Ro= right outcome.

Table 8

Scaled Probabilistic Causalities of 4th Power

Sp	Ir	I	Cf	Ro	E	Cn	Cb	Db	Ro
Sp								.765	.373
Ir								1.000	
I			.545						
Cf									.618
Ro								.336	
E			.326						
Cn								.599	
Cb							.281		
Db			.419						
Ro								.331	

Note. Abbreviations mean: Sp=social preference; Ir=inductive reasoning; I=inference; Cf= conclusion from; Ro=reasoning out; E=elaboration; Cn=conformity; Cb=consonant behavior; Db=discrepant behavior; Ro= right outcome.

Table 9

Scaled Probabilistic Causalities of 5th Power

Sp	Ir	I	Cf	Ro	E	Cn	Cb	Db	Ro
Sp			.765					.294	
Ir			1.000						
I									.802
Cf								.488	
Ro			.336						
E									.480
Cn			.599						
Cb							.264		
Db									.618
Ro			.331						

Note. Abbreviations mean: Sp=social preference; Ir=inductive reasoning; I=inference; Cf= conclusion from; Ro=reasoning out; E=elaboration; Cn=conformity; Cb=consonant behavior; Db=discrepant behavior; Ro= right outcome.

Discussion

As an entity the dynamic causal processes remain, although the dependencies have been eliminated. Thus the dependencies are no conditions for the causal processes.

A keener examination of Table 4 shows behavioral causalities. The social preference makes the processes active in the organizer of the situation leader. The situation leader develops in detail the preference, constructs a comprehension, and does a sketch for the right outcome, tightly. The situation leader uses his or her specific information as general in the detailed development, and in the construction of the comprehension about the social preference. Thereafter, the leader finds a solution that he or she uses in the detailed development. The causalities from the specificity are tough while the causality from the solution is tight. The construction of the comprehension is more determinative than the detailed development when the situation leader develops a belief about the social preference. The former causality is

tough the latter one is tight. Furthermore, the leader utilizes the belief for the right outcome, toughly.

As with the overt behavior, the discrepant behavior of the situation leader is stuck with the utilized belief, tightly. However, the conformity brings forth the discrepant behavior. So the leader conforms to the social preference that results in the discrepant behavior with the belief, in a tight way. The consonant behavior stays in its auto-causal loop. Finally, the right outcome maintains the discrepant behavior, tightly.

In Table 6 the processes change. The social preference makes the situation leader to develop a belief and to behave discrepantly. The causality to the belief is tough while the causality to the discrepant behavior is thin. This time the specific information of the situation leader is more determinative than finding a solution. The former causality is tough while the latter one is thin. The conformity of the leader produces the

development of the belief, directly, and tightly. However, the construction of the comprehension has importance to the situation leader because the comprehension induces the right outcome, in tough way. The same concerns the detailed development although the causality remains thin. The discrepant overt behavior mediates, tightly.

Thus the right outcome is the effect of the processes in the organizer of the situation leader directly, ex-or indirectly. The causal forces are different and the right outcome reinforces the belief, in a thin way. The result is not certain, relatively taken. The consonant behavior continues its auto-causal loop but in a looser way.

The former two systems have been serial in nature but then follow a mixture of serial and parallel processing. In Table 7 the social preference causes the situation leader to develop a belief, slackly. Second, the social preference causes the leader to construct a sketch for the right outcome or a vague mental

process. Thereafter, the situation leader works through the sketch of the right outcome. The developments of the belief, the discrepant behavior, and the right outcome take place, parallely. Serially, the leader constructs a comprehension, and develops the social preference in detail. The behaviors determine the discrepant behavior, thinly. The situation leader uses his or her specific information, and finds a solution working through the vague mental process into the right outcome. The conformity prevails in the behavior of the leader. The specific information is the main process the situation leader uses in the production of the right outcome. The solution occurs as the last process. As an entity, the belief formation, the discrepant behavior, and the right outcome are the results of the serial processing but they process parallely. The loops where the result processes remain are thin.

In the next system the situation leader produces the sketch for the right outcome in a

slacker way, as shown in Table 8. On the contrary, the leader behaves more discrepantly because of the social preference. As a whole, the causal processes are serial in nature. The specific information the situation leader uses to induce the discrepant behavior, toughly.

On the other hand, the leader finds a solution that produces the discrepant behavior, in a thin way. Next the situation leader constructs a comprehension that he or she develops into a belief. The causality with the development of the belief is tight while the detailed development causes the evolvement of the belief, only thinly. The discrepant behavior of the leader has a thin causality with the formed belief. Again, the situation leader utilizes the belief to produce the right outcome. The right outcome maintains the discrepant behavior in a thin way. The consonant behavior continues to slack.

The last system is a replication of the second one such as in Table 9. The social preference makes the situation leader to develop

a belief and to behave discrepantly. The causality with the belief is tough while the causality with the discrepant behavior is thin. In this context, the specificity of the situation leader is more determinative than finding a solution.

The former causality is tough while the latter one is thin. The conformity of the leader produces the development of the belief, directly, and tightly. However, the construction of the comprehension has importance to the situation leader because the comprehension induces the right outcome, in a tough way. The same concerns the detailed development although the causality remains thin. The discrepant overt behavior mediates, tightly.

Thus the right outcome is the effect of the processes in the organizer of the situation leader directly, ex-or indirectly. The causal forces are different and the right outcome reinforces the belief, in a thin way. The consonant behavior is in its auto-causal loop.

Situations are not much dealt with an

issue. In some modeling, such as Holmes (2002, p.3) uses them as starting points to understand social interaction better. However, habitualization is a central concept when persons construct their reality (Berger & Luckman, 1966, p.70). On the other hand, the situations are understandable as entities where persons, matters, and things occur in combination.

The situations emerge when deviations from daily frequencies exist. So habitual behavior hardly produces situations whereas environmental changes enable such as stuck within a traffic jam is a situation. Roughly, the situations are divisible in two classes, the ones a person is able to cope with, and the ones a person is not able to do anything. In the present study the leaders utilized their mental organizers and found the right outcome in the most probable way. One of the flaws, however, was the lack of the clear causalities between the organizer and the overt behavior. Probably, there are mediating processes which map the organizing

processes in the overt behavior, more adequately. So the situations emerge as deviations from daily routines and persons try to optimize confronting problems with their organizers. However, the varying organization does not transfer to the overt behavior as such. A problem has a wider meaning, too.

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