

On Capability of Handling Diversity of Psychosocial Information in Workplace Interventions

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It's generally recognized in professional discourses that a multitude of aspects are connected with health, well-being and performance at workplaces. The term "complex" is frequently used to express the state. Yet in everyday practice, simple causal attributions and ambiguous effects prevail in communication. A prior pilot study corroborated such use of limited explanatory schemes by people with managerial experiences. The present project is an attempt to explore some pertinent ways of improving qualitative assessment and action in interventions at complex workplaces. Focus is upon the interactions between individual perspectives and situational aspects.

Theoretical background and exploratory experimentation

The interplay between individuals and other work-related components are conceived as complex phenomena – characterized as large sets of dynamically interacting elements, in states with non-transparent features. Complexity generates diversity in experiences and behaviour, which is a source of both negative and positive challenges in interventions.

Some sub-studies exemplified here investigated how diverse personal experiences of memory of social situations can be analysed through methods for memory retrieval and judgment. The experiences were modelled as networks of stored or reconstructed images of situations and events to be retrieved from memory.

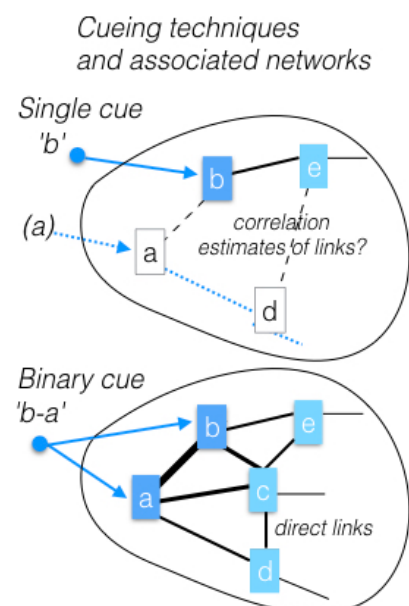
A judgment approach to situation analysis

In one study the participants received short texts of eight social situations in turn. After confirming the state of personal experience of a given situation, they performed two retrieval tasks with a sample of 13 cue components related to work environment contexts. The first, single-cue (SC) test included categorizations (into *yes*, *partially* or *no*) about the occurrence of each of the 13 components in the situation. The following binary-cue (BC) test included categorizations (into *positive*, *negative* or *no* or *neither positive nor negative* connection) of all $n(n-1)/2=78$ possible connections between the 13 cues.

The picture illustrates how the retrieval process for the respective cueing technique was assumed to activate connections between memory images. The retrieval cues were a mixed set of components related to task, personal and social attributes of work: {management, role/ instructions, physical factors, change, benefits, support, personal qualities, psychological stress, uncertainty/ anxiety, work motivation, participation, competition, social relations}. Its purpose was to function as a semantic grid of concept nodes, capable of activating possible mental images and connections between them. It was identical for all tested situations.

Selected results

One key question here is about using individual judgment to spot relevant interactions between work environment components. The maximum potential of the BC-technique to identify directed interactions (direct links) was 78. Generally, many directed connections were recognized,



though there is a large variation between individuals with personal experiences. The examples of two situations indicate that some individuals made extremely few negative or positive judgments.

Table 1. Frequency of recognized connections	Negative connections		Positive connections		No or Undirected connections		Participants
	Mean	Range	Mean	Range	Mean	Range	N
<i>BC-technique</i>							
Situation A	34	0-66	13	0-42	31	12-57	24
Situation F	29	0-69	17	0-57	33	2-65	32

The SC-technique can only indirectly indicate interactions through estimates of group correlations and confidences for the 13 components.

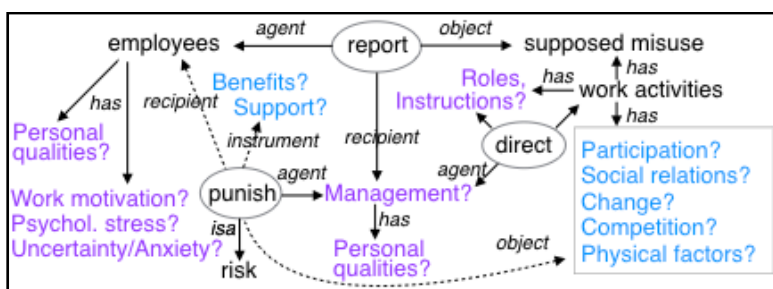
The eight cases varied regarding supposed positive, negative or ambiguous connotations of the texts for reminding. The results confirmed that there were statistically significant differences between the group judgments of situations in line with the text contents.

Selected examples of qualitative variation

The texts for reminding situations were hypothetically represented as deep-level semantic networks (according to Case Grammar) including propositions with predicates and arguments and formulated in terms of a few components. Thus, each situation had its unique core (highest level 1) of interpreted components and their interconnections. The additional components and connections were ordered in levels 2-4 according to their assumed relations to core connections (level 1).

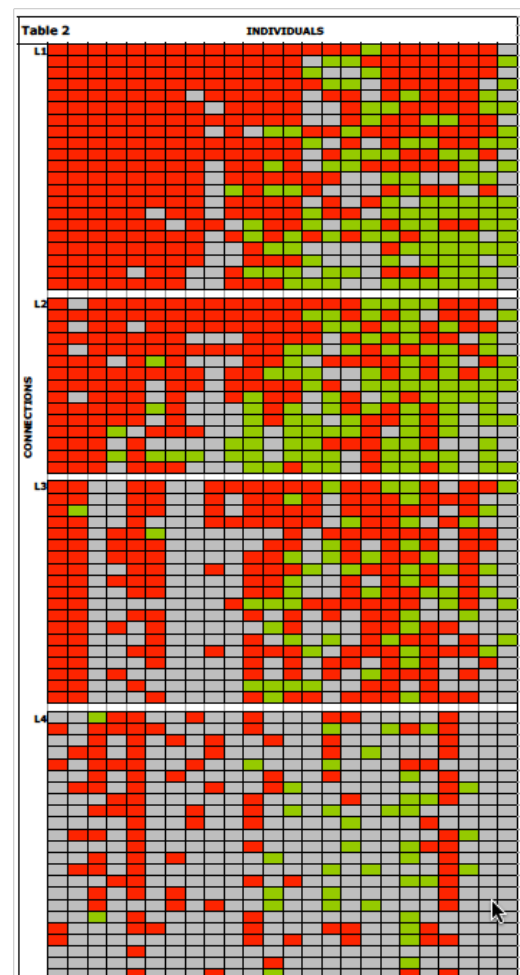
A whistleblower case (A)

Situation (text): "Some employees reported supposed misuse at the workplace. Rumours circulated that management might react negatively to the reporting and plan sanctions."



The semantic model of level 1 includes two joined propositions with predicates (*report*, *punish*, *direct*) and arguments. The retrieval cues are marked purple (level 1) and blue (level 2-4), respectively.

The individual data with the BC-technique are pictured in Table 2 through the 24 column vectors with 78 rows of connections segmented into four levels. The unlikeness between the complete individual profiles are impressive. Categories are colour-coded: negative (red), positive (green), undirected or no (grey) connection.



As expected for this problematic setting, the top-level management-related interactions were predominantly judged negatively (red). A few sub-clusters show deviating positive patterns (green), associated with manager role, support or personal qualities. Levels 2-4 include contingent connections, ordered from closely related (level 2: 'participation', 'social relations') to more indirectly (level 3: 'change', 'competition') or infrequently related (level 4: 'benefits', 'physical factors').

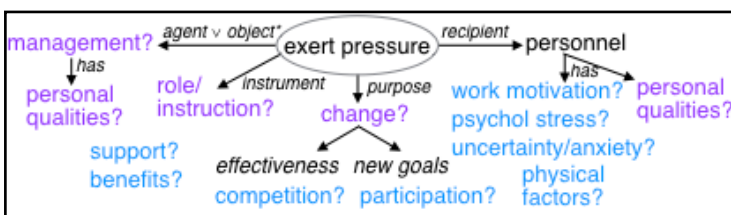
The strong bias of negative connections ($mean p_{neg} = 0.64$) on level 1 decreased on levels 2-4. The index of qualitative variation, ($IQV = 1.00 - \sum p_i^2, i = 1, \dots, 3$) increased from 0.53 to 0.63 and 0.62 for the respective levels 2 and 3.

Thus, the qualitative variation increases when judgment includes connections mixed with possibly positive or neutral components. When components are not critically related to the core components, the essential interactions will be less frequent (level 4).

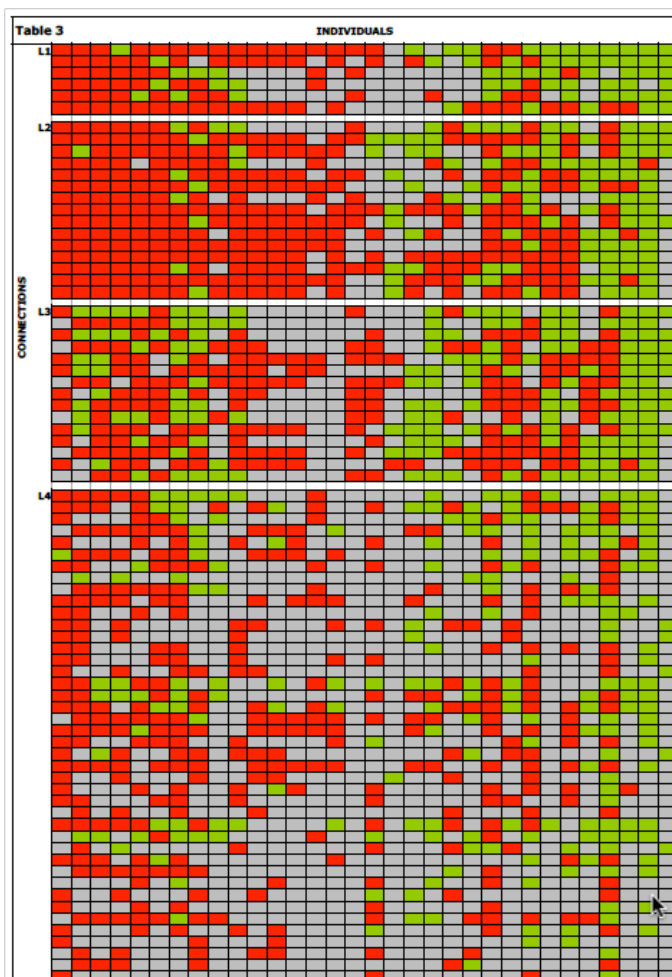
An important question is whether shifts of focus away from negative components can be manipulated to induce more holistic or integrated views of problematic situations among personnel at the workplace?

A case of organization change (F)

Situation (text): "Management exerted pressure on its personnel by formulating new goals, priorities and work forms to make business more efficient."



The semantic model of level 1 connections includes one proposition with one predicate (*exert pressure*) and four arguments (*management, roles/instruction, change, personal qualities*).



The model depicts this situation as ambiguous regarding the management's intention. It is possible to interpret the purpose of change as either agent-driven to increase employee performance or object-driven to improve organization development.

The qualitative variation in the data matrix 78x32 (Table 3) supports the interpretation of an ambiguous situation. There is a clear division between negative and positive judgments for level 1 data in agreement with the model. This trend remains for level 2 with its implications from level 1 about interactions with 'work motivation', 'uncertainty' and 'psychological stress' and to a lesser degree also for level 3 about interactions with 'support' and 'participation'.

The index of qualitative variation indicates rather high and stable states. $IQV = 0.72, 0.67, 0.73, 0.65$ for the respective levels 1-4, while the number of critical interactions generally decreases correspondingly.

Conclusions about the explorative studies

It was confirmed that the judgment approach was sensitive enough to reliably catch the differences between the target situations (level 1). This result is consolidated and general because the participants came from divergent positions and organizations and the set of retrieval cues was constant. It will of course be possible to make more refined retrospective interpretations of data on lower levels when retrieval cues are tailor-made to specific purposes and targets of assessment. The tentative conclusion is that this particular approach of spotting experienced interactions with positive and negative implications should be developed further to a user-friendly instrument. That would strengthen the capability of intervention agents to assess important qualitative patterns of unlikeness among individuals and situations as a basis for action.

An additional method using structured narrative task analysis focussed closer on specific interactions between task components and effects within various situations. Otherwise, its logic of analysing interactions was similar to the judgment approach. Those participants made narrative descriptions instead of categorizations. This response mode requires intricate post-interpretation but can be advantageous because of its more direct link to everyday communication about work events.

A common characteristic of these exploratory studies is that the participants afterwards completed structured self-assessment of own data. That procedure followed a simple control-theoretic model, which combined moments of assessment with associated choices and decisions about action plans. These post-experimental requirements was intended to train participants to assume an objective stance towards their experiences and improve their capability to handle diversity in complex practical settings.

The applied roots of this endeavour

The present project is a direct consequence of experiences and methodical challenges in our previous action-oriented field projects. Existing surveys and action-plans commonly fail to manage the complexity and diversity in practical contexts. One major impediment is the variety of perspectives and relations between agents and clients, management and personnel, authorities and businesses, and among different professions.

The difficulties of diversity encountered in interventions can be due to shortage of adequate *models* as well as of methods. In an action-oriented project on implementing a procedure for healthcare planning, the main hindrance was the time-consuming discourses with different parties concerning their tasks, needs and capabilities. The solution involved construction of a system model that included necessary types of interactions between patients and different categories of healthcare personnel.

How diversity is treated in relations between authorities and different business activities was studied in projects on work environment legislation and supervision. It was possible to connect the choice of different strategies and practices in design of inspection methods to separate underlying assumptions about linear vs. non-linear processing in judgment and decision making during interactions between inspectors and managers.