An analysis of forms of work satisfaction and latitudes at work in a computer-aided laboratory study: Method development and first results

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Keywords

Forms of work satisfaction, work motivation, latitude at work, knowledge and action, nursing, computer-based simulation game of everyday work tasks.

Summary

The influence of forms of work satisfaction (resigned satisfaction, constructive dissatisfaction) and different latitudes at work on the relationship between knowledge and action are examined in an experimental study. In a computer-aided work sample (nursing scenario) 18 registered nurses were confronted with a series of typical situations from an internal ward. Actions reported by the nurses were analysed with respect to indicators of outcome-related and process-related quality in various data sources (verbal data, log-files). It is assumed that (a) resigned satisfied and constructive dissatisfied differ in the quality of reported actions and that (b) constructive dissatisfied in particular profit more strongly from higher latitudes than resigned satisfied. Results show that constructive dissatisfied react to different latitudes in terms of increasing actions, whereas resigned satisfied do not. Unexpectedly, this effect was observed for lower latitudes. Moreover, we found that although both forms of work satisfaction do not differ in the take-up of information, the search for information nor professional knowledge the constructive dissatisfied more strongly transform their knowledge into action than the resigned satisfied. These findings offer an explanation for the relatively low correlations found in research on the relationship of work satisfaction and performance. As well, first results indicate that situation variables have a stronger impact on action in the nursing scenario than dispositional variables. Additionally, there is some evidence for a generalisation of effects of forms of work satisfaction to other areas of life outside work especially for the resigned satisfied as a compensation. The implications of different forms of work satisfaction for personnel management and the nursing-scenario as a research method and as a practical learning environment are discussed.
1 Introduction

The theoretical basis of this study integrates two fields of industrial/organisational psychology - forms of work satisfaction and latitudes at work - which have not yet been studied in a laboratory setting. The study pursues three objectives. First, we will examine the extended model of different forms of work satisfaction (Büssing, 1991, 1992a, 1996a; Büssing, Bissels, Fuchs & Perrar, 1998) and its constituent variables in a quasi-experimental, computer-aided laboratory study. Moreover, we manipulate latitudes at work as a situational factor. Second, we will investigate the generalisability of the effects of different forms of work satisfaction to other contexts (leisure, work-nonwork). Third, we address the question how forms of work satisfaction and latitudes at work influence the transfer of knowledge (professional knowledge in nursing) into action (self-reported actions in a computer-aided work trial). This leads to the following research questions:

- Do different forms of work satisfaction differ in performance-related actions in a computer-aided work sample (so-called nursing-scenario)?
- Do differences in latitudes at work lead to differences in performance-related actions?
- Is there an interaction between forms of work satisfaction and latitudes at work?
- Do the assumed effects of different forms of work satisfaction generalise to other contexts (work-nonwork, leisure)?
- What influence do forms of work satisfaction and latitudes at work have on the transfer of knowledge (professional knowledge in nursing) into action (self-reported actions in a computer-aided work sample)?

2 Forms of work satisfaction and latitudes at work

2.1 Forms of work satisfaction

Work satisfaction traditionally is conceptualised as an attitude towards work measured by using questionnaires (Arvey, Carter & Buerkley, 1991; Büssing, 1996a; Six & Eckes, 1991; Six & Kleinbeck, 1989). However, this approach is not unproblematic as shown by the invariably high rates of satisfied employees in different nations (60-90%; for a summary see Büssing, 1992a), the persistently low correlations bet-
ween work satisfaction and behaviour (e.g. Iaffaldano & Muchinsky, 1985), and the little developed theorising in work satisfaction research (Büssing, 1991; Nord, 1977).

The model of different forms of work satisfaction was originally proposed by Bruggemann (1974), and an extended version (Büssing, 1991; see below) was first introduced to the English speaking community by Büssing (1992a, 1996a; see also Büssing & Bissels, 1998a). It explains under what conditions and by which psychological processes qualitatively different forms of work satisfaction evolve, and what the respective consequences for those forms are (figure 1). The following three variables are central to the model:

• comparison of the actual work situation and personal aspirations,
• changes in the level of aspiration,
• problem-solving behaviour.

Work (dis)satisfaction results from the degree of fit between the actual work situation and individual expectations, needs or motives. Based on changes in the level of aspiration (structure of personal goals; see Büssing, 1991; Lewin, Dembo, Festinger & Sears, 1944) and problem-solving behaviours six forms of work (dis)satisfaction are predicted (see figure 1).

**Constructive dissatisfaction and resigned satisfaction: Differences in actions**

Based on the differentiation of forms of work satisfaction assumptions with respect to actions at work can be made. In this report the focus is on the constellations of the constituent variables of the extended model, which are assumed to be responsible for the forms’ different propensities to act and in part for differences in actions.

Constructive dissatisfied and resigned satisfied were chosen for analyses because they are two markedly distinct forms. Constructive dissatisfied, who maintained their level of aspiration despite of dominantly negative aspects of their work situation, are supposed to intensify their actions in face of problematic situations in everyday nursing, and therefore work more effectively than resigned satisfied (see Büssing, 1992a). Resigned satisfied, on the other hand, respond to problematic situations in a less intensive, persistent manner, because they reduced their level of aspiration in order to adapt to the negative aspects of their work situation on a lower level and thus (re)gained satisfaction. We propose that these motivational states will transfer to the “internal ward-scenario” and will lead to differences in the quality of actions reported by participants (outcome-related quality, process-related quality; see below).
Figure 1: Different forms of work satisfaction according to the extended model (Bruggemann, 1974; Büssing, 1991)

Outcome of comparison

actual work situation and aspirations

congruent

- Perceived controllability of the work situation
- Increase of level of aspiration

PROGRESSIVE work satisfaction

- Perceived uncontrollability of the work situation
- Maintenance of level of aspiration

STABILISED work satisfaction

discrepant

- Perceived controllability of the work situation
- Decrease of level of aspiration

RESIGNED work satisfaction

- Perceived uncontrollability of the work situation
- Maintenance of level of aspiration

PSEUDO work satisfaction

- Perceived uncontrollability of the work situation
- New problem solving attempts

FIXATED work dissatisfaction

- Perceived controllability of the work situation
- Without new problem solving attempts

CONSTRUCTIVE work dissatisfaction

Processing of (dis)satisfaction

Perceived controllability of the work situation

Distortion of situation perception

Without new problem solving attempts

New problem solving attempts
Hypothesis 1 on forms of work satisfaction:
Constructive dissatisfied display a higher quality of reported actions in the “internal ward-scenario“ than resigned satisfied.

2.2 Latitudes at work

The work situation, on the one hand, is characterised by assigned goals, plans and working conditions on different work and organisational levels, and by latitudes or control on the other hand. Latitudes are conceptualised and operationalised very differently (see Büssing & Glaser, 1991; Ganster & Fusilier, 1989; Sauter, Hurrell & Cooper, 1989). This study applies the concept of latitudes at work ("Tätigkeitsspielräume"; Büssing, 1996b; Hacker, 1997; Ulich, 1994; also see Frese & Zapf, 1994). The three facets of latitudes at work, latitudes for action, design latitudes and decision latitudes address both aspects of the working conditions and motivational aspects (table 1; for more details see Büssing, 1991).

Table 1: Latitudes at work

<table>
<thead>
<tr>
<th>Latitudes for action:</th>
<th>Different task related courses of action are possible (e.g. degree of choice in instruments, procedures and temporal organisation of work).</th>
</tr>
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<tbody>
<tr>
<td>Design latitudes:</td>
<td>Opportunity to design work procedures independently.</td>
</tr>
<tr>
<td>Decision latitudes:</td>
<td>Scope of autonomy of actions at work.</td>
</tr>
</tbody>
</table>

The consequences of latitudes on well-being, health, personality enhancement and performance have been shown in numerous studies (Büssing, 1996b; Hacker, 1997; Karasek & Theorell, 1990; Sauter et al., 1989; Wall, Jackson & Davids, 1992). Therefore, we posit that working on the situations in the “internal ward-scenario“ under the condition of high latitudes versus low latitudes will lead to differences in the quality of reported actions.

Hypothesis 2 on latitudes at work:
High latitudes at work result in higher quality of reported actions in the “internal ward-scenario“ than low latitudes at work.
However, there is less consensus on the underlying mechanisms. Three mechanisms - increased cognitive activity (cognitive approach), addressing the individual’s motivation for control (motivational approach) and increased acceptance of responsibility for outcomes (attributional approach) - appear to be relevant, and are presented in more detail by Büssing, Bissels and Krüsken (1997).

Besides the main effects of forms of work satisfaction and latitudes at work, we also posit an interaction between those factors. Because of their maintained level of aspiration constructive dissatisfied should utilise higher latitudes for intensified action in dealing with problematic situations at work. Whereas the resigned satisfied will hardly use higher latitudes in that way due to their reduced level of aspiration.

**Hypothesis 3 on the interaction between forms of work satisfaction and latitudes at work:**

Latitudes at work and forms of work satisfaction interact, i.e. constructive dissatisfied profit relatively more from higher latitudes than resigned satisfied.

### 2.3 Forms of work satisfaction and the sphere of non-work

The literature on occupational socialisation suggests that complex interactions between the spheres of work and non-work exist (e.g. Wanous, 1992; Zedeck, 1992; see also Büssing, 1992b, 1995 for subjective concepts about the relationship of work and leisure). Indeed, one may assume that effects of forms of work satisfaction from the nursing-scenario generalise to the leisure context or to the work-non-work context (i.e. activities located at the intersection of work and non-work sphere). Alternatively, a compensation of work experiences in other contexts may occur, for instance a person who has reduced his/her work-related aspirations may pursue personally more relevant goals in his/her leisure. In this case no influence of forms of work satisfaction on behaviour or attitudes in leisure would be expected.

The question will be explored whether or not effects of forms of work satisfaction observed in the internal ward scenario generalise to other than the work context, i.e. the work-non-work context (“ward celebration-scenario“) and the leisure context (“sight seeing tour-scenario“).
2.4 **Forms of work satisfaction, latitudes at work: their relationship to knowledge and action**

The concepts of knowledge and action are used in the sense of work psychological terminology. Figure 2 illustrates the transfer of knowledge into action. We are interested in what the influence of motivational variables (forms of work satisfaction and latitudes at work) is on the transfer of knowledge into action. For instance, will the constructive satisfied be more motivated than the resigned satisfied to make use of their professional nursing knowledge in the presented work sample?

According to action regulation theory *knowledge* is the basis for effectively dealing with work tasks, for which “... knowledge on goals, signals, causes and measures is decisive“ (Hacker, 1992, p. 51). This concept of knowledge is reflected in our self-developed test on professional knowledge in nursing and in the analysis of participants’ goals. According to Hacker *action* is “... the smallest psychological unit of volitionally controlled activities“ (Hacker, 1986, p. 73). It is seen as a primarily cognitively controlled, goal-oriented, conscious and hierarchically organised process (Oesterreich & Volpert, 1987), while motivational aspects are often neglected. The study addresses this deficit by examining forms of work satisfaction and latitudes at work: The quality of reported actions (planning one's actions in a computer-aided work sample) is investigated depending on different forms of work satisfaction and the degree of latitudes at work.

**Figure 2: The transfer of knowledge into action**

![Diagram showing the relationship between forms of work satisfaction, knowledge, action, and latitudes at work.](image-url)
3 Method

3.1 Method development

3.1.1 The nursing-scenario: A computer-aided simulation of occupational demands

To analyse the postulated effects of forms of work satisfaction on behaviour in an occupational context descriptions of typical work situations (work tasks in a defined context) were presented. The situations consist of subsequent events during the early morning shift on an internal ward. Participants are requested to name their (imagined) actions for each situation and give a brief explanation for the particular course of action they have chosen. In other words, the participants are presented an internal ward-scenario in which at certain points participants have to decide how they would act under the given circumstances.

Using a computer-aided work sample allows one to investigate the relationship between forms of work satisfaction and work-related behaviour independent of individual working conditions or experiences. The selection of situations were supposed to be representative of job demands in nursing and required little specific professional knowledge in any particular field of nursing. The internal ward-scenario suits this purpose because there is an internal ward in every general hospital, prototypical tasks can be integrated plausibly and each nurse has had contact with the internal ward at least once during her professional training.

3.1.2 Development and test

The aim of the first phase of the project was to collect and refine representative work-related situations in nursing in order to consolidate the design of a computer-aided simulation. This was done by referring to work psychological analyses in nursing performed by Büssing and collaborators (e.g. Büssing, Eisenhofer, Glaser, Natour & Theis, 1995). Situations were refined in a sequence of interviews with experts in nursing (three heads of nursing service, four registered nurses working for several years in the field, one student nurse and one conscientious objector). Some of these experts from different hospitals in the Munich area were questioned on the adequacy and applicability of the scenario, while others ran through different versions of

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To clarify the terms used: A situation contains events and a defined context. Screen refers to the presented situation on the computer screen. The nursing-scenario consists of three sub-scenarios with different contexts. Thus, the nursing-scenario comprises several situations connected that continuous sequence of actions.
the scenario and were questioned afterwards. At the end of these try-outs a standardised procedure for the study resulted.

Another round of interviews were conducted to establish a set of evaluation criteria for assessing potential responses to the situations. To do so, further experts\(^3\) were familiarised with the selected situations and all relevant background information from the scenario. First, experts were asked to work on the scenario freely in order to detect aspects that may have been overlooked until then. Second, experts were shown a summary of responses by participants, before they were asked a number of questions:

- Which situational circumstances should be considered and why?
- What are the action goals and criteria which a nurse should orientate herself/himself by in these situations?
- Is the list of action steps complete?
- Which actions are required minimally?
- Which latitudes do you see for the responsible nurse in this situation?
- What would be typical mistakes in such situations? (or what is frequently overlooked or forgotten?)
- To what extent should the previous events in the scenario be considered when action is planned for the next situation?

The experts' answers were taken as important hints for the assessment of individual responses and provide an initial specification of dependent variables (see chapter 3.5).

### 3.1.3 Structure of the nursing-scenario

Having assembled a collection of representative and realistic situations containing conflicting demands in everyday nursing, we embedded these situations in a chain of events on a fictional ward: the 'Internal ward of a suburban hospital'. Some conditions in this scenario are kept constant across all situations:

- rooms and equipment on the ward,
- features of other relevant units (e.g. services),
- the clinical pictures and characteristics of patients,
- colleagues and doctors present at the early morning shift,
- the role each participant is supposed to play (ward nurse vs. registered beginner).

Some conditions are variable, i.e. they are defined for each of the nine situations:

---

\(^3\) A vice head of nursing service and a head of a nursing school both with several years of job experience.
• the degree to which colleagues are occupied at a certain point in time,
• the present location of colleagues and doctors on the ward,
• presently voiced complaints by patients,
• the situation of the services.

The presentation of the scenario is computer-aided and descriptions of the present situation are shown one after the other. Pre-tests showed that participants performed very differently in a rudimentary printed version of the scenario, for instance, due to information overload, misinterpreting the situation as an interview or too strong reference to the participant's real working situation. The standardised presentation via computer screen made it easier for participants to concentrate on the scenario and allowed the experimenters to provide information permanently or for specific situations only. Whereas the sequence of events is given, important aspects of the situations may be gathered by mouse-clicking the menus. Thus, participants do not feel urged to learn all the given information that might become relevant during the course of the scenario. The following menus are offered:

• "Ward": map of the ward and information on the rooms,
• "Colleagues": present location, information on the degree to which colleagues are occupied at a certain point in time and a characterisation of colleagues,
• "Patients": a description of the clinical picture, the current state and characteristics of patients,
• "Doctors": a characterisation of doctors on the ward,
• "Services": a description of other relevant units.

During the session the participant sits in front of the screen and the experimenter sits beside the participant also facing the screen and controlling the presentation of situations (the participant signals when she/he has finished reading or dealing with the situation). Since mouse-clicking the menus is the only operation that needs to be performed on the computer by the participant, no computer experience is required. Pre-tests indicated that a short trial phase before participants entered the performance phase was necessary to practise the use of a mouse and to familiarise oneself with the menus and the tasks. The structure of the scenario is shown in appendix 2 (the situations from everyday nursing are called screens because of the presentation on the computer screen). During the course of the scenario participants run through the following phases:
1. Exploration phase
- familiarising the participant with the tasks,
- practising the use of the mouse and exploring the menus,
- general information on the working conditions on the internal ward,
- role instruction for the induction of latitudes (a) describing the different latitudes, 
b) offering the possibility to make some decisions in the scenario vs. informing 
the participant about the decisions that have been made by others),
- a trial situation at the end of the exploration phase (warm-up)

2. Performance phase
- presenting a sequence of events lasting one hour during the early morning shift on 
an internal ward,
- relevant background information can be gathered by clicking the menus,
- the participants are requested to name a sequence of actions using the given in-
formation and to give reasons for their course of actions briefly; all verbalisations 
are tape recorded,
- the experimenter's task is (a) if necessary, to encourage the participant to 
complete her/his sequence of actions or to give reasons for their course of actions, 
(b) to encourage a detailed report on what the participant intends to do, if the 
activities are formulated in a rather abstract manner\(^4\), (c) not to accept actions that 
leave the given framework of the scenario.

Despite the possible interferences for the experimenter the instruction emphasises to 
work on the scenario as independently as possible to prevent the session from 
becoming an interview situation.

3.1.4 Tasks and demands in the internal ward-scenario

Table 2 gives an overview of tasks and demands in the nursing-scenario\(^5\). The selec-
tion of situations and associated job demands had to meet the criterion that the type 
of problems had to occur not only on internal wards but also on other kinds of wards 
and that registered nurses from these wards were able to respond to these situations.
Moreover, the problems were supposed to be solvable (even under the condition of 
low latitudes and also for student nurses). We selected 'standard situations' for which 
we could assume that both professional knowledge and a minimum of experience 
with comparable situations existed for. Thus, the influence of the personal level of

\(^4\) An example from the admission of a new patient: Participant: "... then I do the paperwork, 
Experimenter: "What exactly do you do?"

\(^5\) Both terms nursing-scenario and scenario refer to all three sub-scenarios.
aspiration and the perceived controllability of working conditions on the use of knowledge can be investigated. This also applies to the different induced latitudes.

3.1.5 Manipulation of latitudes at work

Apart from the operationalisation of latitudes by choosing participants with different positions (registered nurses vs. student nurses) an instruction is used to induce either a role characterised by low latitudes or by high latitudes. To do so, participants are requested to assume the perspective of a ward nurse or the perspective of a registered beginner in the job. Allegedly the roles are assigned randomly by having participants chose one of two envelopes containing the respective role instructions.

After participants had learned about their role a description of their decision competences on the internal ward was illustrated. These descriptions are repeated twice during the course of the internal-ward scenario (see appendix 2). Moreover, during the exploration phase four decision situations were presented. In the high latitudes condition (ward nurse) participant had the opportunity to make a decision, whereas in the low latitudes condition (registered beginner) participants were informed about the decision that were made for them. This procedure is supposed to reinforce the perception of low or high latitudes before the performance phase by experiencing consequences of occupying a certain role in the scenario. The decision were to be made or accepted in the following situations:

- accepting or delegating of routine activities,
- accepting or delegating the duty for answering the bell on the ward,
- voting on the introduction of a nursing documentation system,
- handling on request medication in case no doctor is present,
- co-ordinating an appointment with one of the services.

The effectiveness of the manipulation of latitudes is checked upon in two ways after the performance phase:

- items on the perceived latitudes in the internal-ward scenario,
- passages from the interview that indicate references made to the assigned role and thus evidence whether the assigned role is reflected in the self-reported actions and thoughts.

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6 The decisions were designed in such a manner that they affected participants’ work in the scenario.
### Table 2: Overview of tasks and job demands in the nursing-scenario

<table>
<thead>
<tr>
<th>No.</th>
<th>type of problem</th>
<th>demand</th>
<th>complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Contradictory demands from different wards / occupational groups</td>
<td>During the doctor's round a patient is demanded for electrocardiogram away from the ward</td>
<td>No other colleague is available for the transport</td>
</tr>
<tr>
<td>2.</td>
<td>Dealing with apparently unfounded complaints by a patient under time pressure</td>
<td>Patient rings the bell during the doctor's round</td>
<td>The patient is confused</td>
</tr>
<tr>
<td>3.</td>
<td>Admission of a new patient and changing occupancies of rooms</td>
<td>A newly admitted male patient has to be accommodated. There is no empty bed in the men's room. Relocating a difficult female patient is necessary</td>
<td>Putting patients, who are likely not to get along well, into the same room</td>
</tr>
<tr>
<td>4.</td>
<td>Unexpected emergency</td>
<td>A patient has got an asthma attack</td>
<td>There is no oxygen supply in the room</td>
</tr>
<tr>
<td>5.</td>
<td>Co-ordination of a routine activity</td>
<td>Transport of a patient to one of the services</td>
<td>Narrow rooms and aisles</td>
</tr>
<tr>
<td>6.</td>
<td>Unexpected interruption of the routine activity</td>
<td>Documentation for a forthcoming examination cannot be found</td>
<td>The patient is left unattended on the floor, while the documentation is searched</td>
</tr>
<tr>
<td>7.</td>
<td>Dealing with confused patients</td>
<td>The confused patient rings the bell again having exactly the same complaints as before</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Resuming the interrupted activity</td>
<td>Continuing the admission procedure for the new patient</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Diagnosis of an emergency and taking the correct measures</td>
<td>A patient is hypoglycaemic and complaints about acute heart ache</td>
<td>Suspicion of heart attack</td>
</tr>
</tbody>
</table>

Two situations with events from the leisure and the work-non-work context

10. Planning and organizing a ward celebration | Make it complete success | The colleagues differ on the programme; nevertheless, the expectations are high |

11. Planning and conducting a sight seeing tour | An unexpected visit by relatives calls for a guided sight seeing tour | The relatives have different wishes and there is a strike in public transport |
3.1.6 Situations from the leisure context and the work-non-work context

In order to investigate whether a generalisation, compensation or interaction of effects in the internal-ward scenario occurred in non-work contexts the scenario was complemented with two further situations. After the internal-ward scenario participants were requested to plan and organise a ward celebration (ward-celebration scenario), and subsequent to that, they were asked to report on how they would organise and conduct a sight seeing tour for unexpectedly arrived relatives (sight-seeing-tour scenario). Complications were built into both situations, for instance, colleagues (relatives) have different and partly conflicting interests. The participant's task is to develop a suggestion that is acceptable to all parties and realisable.

The contexts were chosen according to two criteria: First, situations were supposed to be located on a continuum of work- and leisure-related situations yielding three different contexts for investigation, work, work-non-work and leisure. Second, we aimed at designing tasks with demands comparable to the ones in the internal-ward scenario, i.e. tasks with complications brought about by external factors e.g. strike in public transportation and social competence is required to respond to the tasks.

The implementation of these sub-scenarios on the computer is similar to the one in the internal-ward scenario. The description of the situations is presented via texts on the computer screen, participants may gather further information by clicking menus on circumstances (e.g. localities for the celebration or weather and traffic conditions in Munich) and on suggestions and preferences by colleagues or relatives. Again, the participant's task is to name an adequate sequence of actions and to give the reasons for this decision briefly.

The structural similarity in terms of demands, computer implementation and instructions to the participants allow us to analyse all three sub-scenarios on the same dimension and, thus, we can compare the effects of different forms of work satisfaction on the relationship of knowledge and behaviour in different contexts and environments.

3.2 Sample

Our design of the study required 2x2x5 participants (see table 3); in fact, we collected data of 18 registered nurses\(^7\) (16 females, 2 males) from three German general

\(^7\) The analysis of data for the subsample of student nurses was temporarily deferred in favour of concentrating on the focus group of registered nurses.
hospitals. Age varied between 21-54 years (mean age: 38 years). Average job tenure was 13.5 years. The participants worked on eight different wards. The vast majority of participants completed secondary education. The experiments were conducted during working time; participation was voluntary and additionally paid for.

Table 3: Research design and sample size*

<table>
<thead>
<tr>
<th>Constructive dissatisfied</th>
<th>high latitudes (role of the ward nurse)</th>
<th>low latitudes (role of the registered beginner)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Resigned satisfied</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

* Because of the small sample sizes all statistical analyses are performed by exact statistical test procedures.

### 3.3 Design

As already mentioned above the study focuses on two forms of work satisfaction: resigned satisfaction and constructive dissatisfaction. Research is conducted in a 2 (forms of work satisfaction) x 2 (latitudes at work) design. We performed a detailed experiment on this design with a small sample of nurses (see table 3) because we were interested in a thorough exploration and analysis of specific processes rather than collecting a large sample. However, the small sample is very helpful because of the use of exact test procedures for data analysis (see section 3.6).

### 3.4 Experimental procedure

The experiments were conducted in the following order (sessions lasted between 2.5-3.5 hours):

1. standardised interview on the current form of work satisfaction
2. “internal ward-scenario“:
   - exploration phase and manipulation of latitudes
   - pre questionnaire (perceived difficulty of the tasks, commitment, strain etc.)
   - performance phase
   - post questionnaire (see above)
3. two scenarios from other contexts (ward celebration-scenario, sight seeing tour-scenario),
4. test of professional knowledge in nursing
5. card-based method for measuring the current form of work satisfaction.
Forms of work satisfaction: Interview and card-based method

The standardised interview for measuring the current form of work satisfaction began with the comparisons of the actual work situation and personal aspirations (as the first of the four core variables of the extended model of work satisfaction) rated along ten aspects of the work situation (e.g. pay, superior, promotion). After that a global assessment on this core variable of the model was requested on a five-point scale. This procedure was repeated for the other three core variables.

At the end of the session the current form of work satisfaction was measured using a card-based method. Statements on the four constituent variables of the extended model were divided up into descriptions of situations (i.e combinations of statements on 1. comparisons of the work situation and 2. personal aspirations and perceived controllability) and the nurses’ reactions (i.e. combinations of statements on 3. changes in the level of aspiration and 4. satisfaction), and printed on cards. The respective statements for constructive dissatisfaction were: “The present situation at work does not meet my original expectations, but I can influence the situation” (description of the situation). “I am rather dissatisfied with my present work situation because I have not changed my aspirations concerning work” (reaction). The participants were requested to briefly characterise a typical positive (respectively negative) everyday situation at work, then choose the card that described the situation best before they were asked to choose the card that showed their reaction to this situation best. If the chosen two cards were not generalisable to the global work situation, the procedure was repeated for a typically negative (respectively positive) situation so that, in a third step at the latest assessments from both situations could be integrated into a global assessment on the participants current form of work satisfaction.

The internal ward-scenario and latitudes at work

In order to analyse the effects of forms of work satisfaction on actions in an occupational context participants were presented descriptions of typical situations on a simulated internal ward involving everyday nursing tasks on an early morning shift.

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8 The interview as well as the card-based method at the end of the session were introduced to the participants as an additional research question independent of their performance in the “internal ward-scenario”. Participants had already completed a questionnaire on work satisfaction in a previous study.

9 The selected situations were representative for everyday demands in nursing independent of the type of ward, on which the participants were working; they were developed and tested in close cooperation with experts in the field of nursing.
At certain points participants were asked to report how they would act given the circumstances in that situation and briefly to explain why (Appendix 1).

The situations were presented via computer screen. Certain circumstances on the ward were held constant across all situations (staffing, medical files of the patients, the ward’s equipment etc.), while other circumstances such as the whereabouts of staff and doctors, availability of colleagues or present complaints by patients changed along with the display of situations on the screen. Information on circumstances on the ward could be collected by mouse-clicking the menus (patients, colleagues, doctors, ward, services). In the beginning participants learned about the ward and how to use the mouse, gathered various kinds of information, received their role instruction (ward nurse or registered beginner) and passed through an exercise trial (exploration phase). After that participants were consecutively confronted with nine problematic situations, for which they had to generate solutions (performance phase; Appendix 2).

Latitudes at work were manipulated in two ways. First, during the exploration phase latitudes were manipulated by describing the three dimensions (latitudes for action, decision and design latitudes) for the respective role of the ward nurse or the registered beginner. These descriptions were repeated three times during the performance phase. Second, the participants in the role of the ward nurse had the chance to make a decision in four matters concerning nursing, whereas participants in the role of the beginner had to accept decisions that had not been made by themselves.

In order to capture participants’ perceptions of the “internal ward-scenario“ several variables were measured by self-constructed items (difficulty of the tasks, mood, attributions) before and after the “internal ward-scenario“.

Scenarios in the work and non-work context

After participants had finished the internal ward-scenario they were requested to plan and organise a ward celebration (work-non-work context: ward celebration-scenario; Appendix 3), and subsequent to that, they were asked to report on how they would organise and conduct a sight seeing tour for unexpectedly arrived relatives (leisure context: sight seeing tour-scenario). Both situations embraced demands comparable to the internal ward-scenario, i.e. social skills like managing contradicting interests of relatives/colleagues, and coping with situational complications such as a strike in public transportation. Yet these two scenarios differed from the internal ward-scenario in that no professional knowledge was required.
Pre and post questionnaire

Besides questions regarding the perceived difficulty of the tasks, commitment and strain several other scales with possible moderating effects were used in order to explore interactions of certain action orientated personality traits with the performance in the nursing-scenario (for details see chapter 4.3).

Test of professional knowledge in nursing

In co-operation with three nursing schools we developed a test that allowed to compare the levels of professional knowledge in nursing with the participants. The test consisted of multiple-choice items (three degrees of difficulty) based on exam questions. The tests were scored using an ex post constructed marking system.

3.5 Dependent measures

Internal ward-scenario

Participants’ reported actions in the presented situations were measured against model solutions generated and evaluated by nursing experts. Thus, the quality of participants’ solutions as the central set of dependent variables in the protocols could be analysed in terms of

- **outcome-related** quality, i.e.
  - (a) necessary and optional actions, (b) effect of actions, (c) typical errors
- **process-related** quality, i.e.
  - (d) take-up of necessary and optional information, (e) search for information

**Necessary actions** are those actions for each situation that should be performed at least, whereas actions exceeding the necessary are understood as **optional**. The **effects** of the reported action steps (“What would be the result of the action steps reported by the participant in the given situation?”) as well as **typical errors** defined as inadequate actions or omissions of necessary actions leading to negative effects of actions (e.g. if the doctor is not informed about the admission of a new patient and, therefore, the patient does not receive an adequate medical treatment in time) were further indicators of outcome-related quality. Again, we distinguished between the take-up of information, which was **necessary** for planning one’s actions, and **optional** information (for examples see table 4). Log-files complemented those verbal data, and allowed to determine which information participants actively searched for by clicking the menus of the computer supported “internal ward-scenario“.
Table 4: Examples for categories and codes for analysing the verbal protocols

<table>
<thead>
<tr>
<th>Situation No. 3 from the “Internal ward-scenario”: New admission</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>necessary actions</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>optional actions</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>necessary information</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>optional information</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>resulting effects of actions</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>typical errors</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Scenarios in the work and non-work context

Participants’ reported actions in the two non-work scenarios were measured using categories comparable to the ones applied in the internal ward-scenario. Note, however, that in contrast to the internal ward-scenario there were no expert-generated model solutions for handling the situations in the non-work scenarios. Therefore, the set of categories used in the internal ward-scenario was adapted and reduced for the non-work scenarios. Thus, the quality of participants’ solutions for actions as the central dependent variables in the protocols was analysed in terms of outcome-related quality (performed actions, effect of actions) and process-related quality (take-up of information, search for information).

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For more information on the “internal ward-scenario” see the figure in Appendix 2.
3.6 Data analysis

On the basis of these quality indicators all protocols were analysed with regard to reported actions and their effects, the take-up of and search for information. These indicators reflected essential variables in the action process (orientation and take-up of information, planning and deciding; see Frese & Zapf, 1994) which can be measured in all three scenarios. Figure 3 gives an overview of data sources, dependent variables, their operationalisations and categorisations.

Protocols were analysed following the method of qualitative inquiry as proposed by Miles and Huberman (1984). The system of categories was concept-based (see the indicators of the quality of reported actions above) and developed in co-operation with nursing-experts. At first, for each of the nine work situations and the two non-work situations passages in the transcribed protocols were systematically categorised and coded before they were quantified and aggregated for each scenario.

In order to increase objectivity and reliability 25% of the transcripts were rated by two of the authors independently. Codings were compared, corrected if misapplied and discussed in case of disagreement. Raters agreed in more than 90% of the codings. For the cases of disagreement no systematic reasons were identified and the codings of the rater, who coded the other transcripts, were chosen.

Data were collected by both qualitative (protocols from the scenario, card-based method) and quantitative methods (questionnaires, log-files).

Statistical analyses were conducted using exact test procedures where available. Exact tests for univariate and multivariate data analysis were developed by Willmes (1987; see also Edgington, 1995, where tests procedures of Willmes are presented and discussed). Two sample tests for main effects and simple main effects are computed on the basis of Pitman’s statistics with a Monte Carlo procedure using 20,000 permutations. However, tests for interaction are only reported for parametric tests, since a test for interaction of a completely randomised two-factorial design (CR-2F) is mathematically unsolvable. Exact permutation testing can do without the normality and homogeneity of variance assumptions. Moreover, exact permutation tests offer opportunities for testing even with very small samples while parametric asymptotic tests are likely to be not very robust; however, both - exact and parametric - testing procedures are asymptotically equivalent under conditions of normality and homogeneity of variance (see Pyhel, 1980). Apart from the analyses of variance contingency tables using exact test procedures (see Büsning & Jansen, 1988) and distribution-free Spearman rang correlation coefficient were calculated.

All testing results are calculated against an error rate of $\alpha=.10$ since the detection of relevant effects in the sense of an explorative data analyses and not a statistical generalisation was our interest.
4 Results

4.1 Manipulation checks

Forms of work satisfaction

Forms of work satisfaction (resigned vs. constructive) were established on the basis of three methods. At a first step, from 482 potential participants 74 were selected on grounds of results from a k-means cluster analysis across the items of the “Arbeitszufriedenheits-Kurzfragebogen” (AZK; Work Satisfaction Questionnaire-Short Form; Bruggemann, 1976; Büssing, Bissels, Fuchs & Perrar, 1998). From these 74 potential participants 20 subjects were needed in the experiment according to the design. Therefore, the interview and the card-based method were applied to
further select subjects and validate the screening results. Finally, we came up with 18 participants matching the requirements for an allocation into the two forms of work satisfaction under study.

Results from the interview at the beginning of the experimental session showed that resigned satisfied and constructive dissatisfied recruited on basis of the cluster analysis differed only with regard to their global assessment of satisfaction ($M_{\text{resigned}} = 3.61$, $M_{\text{constructive}} = 3.22$; exact $p$-value = .087). Moreover, global judgements could often only be made with restrictions, since participants maintained different perspectives on the work situations (e.g. on the positive side, working with patients and cooperating with colleagues and on the negative side, working conditions and cooperation with superiors). In contrast, the global assessments of the core variables in the card-based method differed significantly for the two forms in terms of satisfaction (exact $p$-value = .045) and changes in the level of aspiration (exact $p$-value = .0003) as tested by exact contingency tables using StatXact 3 (Cytel, 1995)$^{11}$.

As the discriminatory power of the three methods apparently differed the participants were assigned to either resigned satisfaction or constructive dissatisfaction if at least two out of three methods indicated the same form of work satisfaction. A final check across those items of the AZK representing distinct forms of work satisfaction showed significant differences between the resigned satisfied and constructive dissatisfied (all exact $p$-values $<.10$).

**Latitudes at work**

The experimental manipulation of latitudes at work (low vs. high) was checked in two ways, first by assessing role acceptance and delegation/acceptance of responsibility, second by measuring perceived latitudes.

**First.** Participants in the condition of higher and lower latitudes were requested to rate to what degree they were able to adopt their role (ward nurse or registered beginner) and how realistic the scenario was compared to the job of a nurse. Ratings were clearly above the mean of both 7-point scales ($M_{\text{role adoption}} = 6.11$, $s=.96$; $M_{\text{realism}} = 5.39$, $s=1.20$) indicating that participants readily adopted their role in this realistic work sample of the “internal ward-scenario”. In the same line, the experimenter’s assessments of participants’ difficulties with the assigned role noted after the session showed that no participant experienced serious difficulties.

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$^{11}$ Since the ratings in the card-based method were noted down in agreement with the participant, no check for interrater reliability was required.
Additionally, we analysed the reported actions with respect to the acceptance or delegation of responsibility in the scenario. As the acceptance or delegation of responsibility should correlate with the degree of latitudes in the “internal ward-scenario“ (participants in the role of the ward nurse should accept more responsibility than participants in the role of the beginner), acceptance or delegation of responsibility can be considered an indirect check, which confirmed the manipulation’s effect for the delegation of responsibility ($M_{\text{low latitude}} = 3.0, M_{\text{high latitude}} = 1.2$; exact $p$-value = .027), i.e. participants in the role of the beginner delegated more responsibility than participants in the role of the ward nurse. This effect did not hold for the acceptance of responsibility.

Second. At the end of the performance phase participants rated latitudes at work for the scenario as perceived on self-developed items: one global item (“How do you rate your latitudes when you were working on the Internal Ward?“) and one item each for the three dimensions of latitudes at work (see table 1). Although all differences were headed in the expected direction, no significant differences between the higher and lower condition were noted.

### 4.2 Effects of forms of work satisfaction and latitudes at work in the internal ward-scenario

Firstly we analysed forms of work satisfaction and latitudes at work on outcome-related and process-related indicators of the quality of reported actions in the “internal ward-scenario“ (see table 5). Interaction of forms of work satisfaction with latitudes at work and the corresponding simple main effects will be reported first before turning to the main effects.

**Interaction of forms of work satisfaction and latitudes at work**

**Outcome-related quality.** As expected the parametric two-way ANOVA for testing the interaction of forms of work satisfaction and latitudes at work yielded four significant interactions on the outcome-related indicators of the quality of reported actions in the “internal ward-scenario“ (table 5); however, they were not headed in the hypothesised direction as shown by the simple main effects reported in tables 6a and 6b.

The interaction for necessary actions emerged because constructive dissatisfied reported significantly more actions under low latitudes than high latitudes, while no difference was observed for resigned satisfied in the high and low latitude condition (table 6a). For optional actions as a dependent variable, again, the constructive dis-
satisfied reported significantly more actions under low latitudes than high latitudes. Additionally, in the low latitude condition constructive dissatisfied reported more actions than the resigned satisfied (table 6b). This pattern of results was also observed for action total and the resulting effects of actions as dependent variables (tables 6a, 6b). Moreover, regarding the resulting effects of actions the resigned satisfied tended to accomplish more effects in the high latitudes condition than in the low condition.

Process-related quality. For the indicators of process-related quality no interaction effects were noted. Instead, several main effects for latitudes were observed on this set of indicators (see below).

Main effects of latitudes at work

Process-related quality. For all indicators of process-related quality we found main effects (table 5). In contrast to our hypotheses, information take-up and search for information were stronger in the low latitudes condition than in the high condition. With regard to the delegation of responsibility the difference was as expected, i.e. nurses in the low latitudes condition delegated responsibility for nursing or medical decisions more strongly than in the high condition.

Outcome-related quality. Because of significant interaction effects for all of these indicators no main effects and instead simple main effects reported above were calculated (table 6a).

Main effects of forms of work satisfaction

Process-related quality. As expected we found a marginal main effect for the delegation of responsibility: Constructive dissatisfied delegated work less often than resigned satisfied; they also tended to open more menus (table 5).

Outcome-related quality. Again no main effects were calculated because of interaction. Yet, the simple main effects of forms of work satisfaction for the low latitudes condition were significant and headed in the expected direction (table 6b).
Table 5: Effects of forms of work satisfaction and latitudes at work on indicators of the quality of reported actions (process, outcome) in the “internal ward-scenario”

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Resigned satisfied</th>
<th>Constructive dissatisfied</th>
<th>Form of ws</th>
<th>Latitude</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lat+ n=5</td>
<td>Lat– n=4</td>
<td>Lat+ n=5</td>
<td>Lat– n=4</td>
<td>Exact p-value</td>
</tr>
<tr>
<td>Process-related quality:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary information</td>
<td>7.0 10.5</td>
<td>7.4 13.0</td>
<td>.67</td>
<td>.038</td>
<td>.21</td>
</tr>
<tr>
<td>Optional information</td>
<td>4.8 7.8</td>
<td>4.6 8.3</td>
<td>≈1</td>
<td>.019</td>
<td>.07</td>
</tr>
<tr>
<td>Information – total</td>
<td>11.8 18.3</td>
<td>12.0 21.3</td>
<td>.69</td>
<td>.002</td>
<td>.33</td>
</tr>
<tr>
<td>Number of opened menus</td>
<td>7.4 11.8</td>
<td>11.2 19.0</td>
<td>.12</td>
<td>.078</td>
<td>.33</td>
</tr>
<tr>
<td>Acceptance of responsibility</td>
<td>1.0 .75</td>
<td>1.6 1.0</td>
<td>.50</td>
<td>.50</td>
<td>.12</td>
</tr>
<tr>
<td>Delegation of responsibility</td>
<td>2.0 3.8</td>
<td>.40 2.3</td>
<td>.060</td>
<td>.027</td>
<td>.01</td>
</tr>
<tr>
<td>Outcome-related quality:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary actions</td>
<td>20.2 20.0</td>
<td>16.8 27.8</td>
<td>*</td>
<td>3.83</td>
<td>.070</td>
</tr>
<tr>
<td>Optional actions</td>
<td>16.0 18.8</td>
<td>17.6 30.5</td>
<td>*</td>
<td>6.94</td>
<td>.020</td>
</tr>
<tr>
<td>Actions – total</td>
<td>36.2 38.8</td>
<td>34.4 58.3</td>
<td>*</td>
<td>6.34</td>
<td>.025</td>
</tr>
<tr>
<td>Resulting effects of actions</td>
<td>19.2 15.8</td>
<td>17.0 22.0</td>
<td>*</td>
<td>6.12</td>
<td>.027</td>
</tr>
<tr>
<td>Typical errors</td>
<td>4.0 4.5</td>
<td>4.8 3.8</td>
<td>≈1</td>
<td>.79</td>
<td>.77</td>
</tr>
</tbody>
</table>

* Because of significant interactions see simple main effects in tables 6a,6b.
Table 6a: Simple main effects for latitudes at work on indicators of outcome-related quality of reported actions in the “internal ward-scenario”

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Low latitude at work, n=4</th>
<th>High latitude at work, n=5</th>
<th>Exact test n-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor level: Resigned satisfied</td>
<td>M</td>
<td>s</td>
<td>M</td>
</tr>
<tr>
<td>Necessary actions</td>
<td>20.0</td>
<td>7.16</td>
<td>20.2</td>
</tr>
<tr>
<td>Optional actions</td>
<td>18.8</td>
<td>5.06</td>
<td>16.0</td>
</tr>
<tr>
<td>Actions - total</td>
<td>38.8</td>
<td>9.57</td>
<td>36.2</td>
</tr>
<tr>
<td>Resulting effects of actions</td>
<td>15.8</td>
<td>1.5</td>
<td>19.2</td>
</tr>
<tr>
<td>Factor level: Constructive dissatisfied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary actions</td>
<td>27.8</td>
<td>9.18</td>
<td>16.8</td>
</tr>
<tr>
<td>Optional actions</td>
<td>30.5</td>
<td>4.80</td>
<td>17.6</td>
</tr>
<tr>
<td>Actions - total</td>
<td>58.3</td>
<td>13.6</td>
<td>34.4</td>
</tr>
<tr>
<td>Resulting effects of actions</td>
<td>22.0</td>
<td>3.16</td>
<td>17.0</td>
</tr>
</tbody>
</table>

Table 6b: Simple main effects for different forms of work satisfaction on indicators of outcome-related quality of reported actions in the “internal ward-scenario”

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Resigned satisfied, n=4</th>
<th>Constructive dissatisfied, n=4</th>
<th>Exact Test n-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor level: Low latitude at work</td>
<td>M</td>
<td>s</td>
<td>M</td>
</tr>
<tr>
<td>Necessary action</td>
<td>20.0</td>
<td>7.16</td>
<td>27.8</td>
</tr>
<tr>
<td>Optional action</td>
<td>18.8</td>
<td>5.06</td>
<td>30.5</td>
</tr>
<tr>
<td>Action total</td>
<td>38.8</td>
<td>9.57</td>
<td>58.3</td>
</tr>
<tr>
<td>Resulting effects of actions</td>
<td>15.8</td>
<td>1.50</td>
<td>22.0</td>
</tr>
<tr>
<td>Factor level: High latitude at work</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary action</td>
<td>20.2</td>
<td>3.83</td>
<td>16.8</td>
</tr>
<tr>
<td>Optional action</td>
<td>16.0</td>
<td>2.92</td>
<td>17.6</td>
</tr>
<tr>
<td>Action - total</td>
<td>36.2</td>
<td>6.60</td>
<td>34.4</td>
</tr>
<tr>
<td>Resulting effects of actions</td>
<td>19.2</td>
<td>4.97</td>
<td>17.0</td>
</tr>
</tbody>
</table>
4.3 Moderating and control variables

Besides the hypothesis described in chapter 2 we explored the question if the quality of reported actions is stronger determined by situational than by habitual personality variables. Therefore, before and after the scenarios a number of potential moderating variables were examined via questionnaire. These variables can be seen as activity-related habitual personality traits, as for example action vs. state orientation (“Handlungs-Lage-Orientierung“, HAKEMP 90; Kuhl, 1990). In this chapter we analyse in a first step the influences of the potential moderating variables as covariates, i.e. within the method of two-factorial analysis of covariance the variables are considered as moderating in general. Further analysis are planned to determine specific moderating or mediating effects as well as the percent of explained variance of these variables. Besides the moderating variables a number of control variables such as the level of professional knowledge or the different kinds of latitudes at work are taken into consideration and are also analysed by means of an analysis of covariance.

Table 7 presents the internal consistencies of the moderating and control variables (Cronbachs α based on the selection sample of N ≤ 482) as well as the correlations of these scales with the dependent variables of the “quality of reported actions“. Only if the correlation reached r_s > .40 (Spearman Correlation Coefficient) the variable was put as covariate into analysis.

To begin with, the results of the dependent variables of the outcome-related quality of reported actions in the “internal ward scenario“ are reported. The points in the test of professional knowledge correlate positively with the resulting effects of actions, i.e. the higher the level of professional and methodical knowledge of the test persons the more effects of actions in the scenario were achieved. A positive correlation could also be observed between the resulting effects of actions and the tenacious goal pursuit - scale (Brandstädter & Renner, 1990) as well as the occupational self-efficacy scale (Schultz-Gambard, Lauche & Volke, 1996), i.e. the stronger the tenacious goal pursuit and the occupational self-efficacy the more effects of actions were achieved. A negative correlation was found between the resulting effects of actions and the scale “work involvement“ (Kanungo, 1982); a low degree of work involvement was related with more effects and vice versa. Moreover, work involvement is negatively correlated with the number of necessary actions. The number of necessary actions is also negatively correlated with the HAKEMP-scale (Kuhl, 1990) regarding the decision-related action orientation, i.e. the stronger the action orientation of a test person in planning his/her actions the less necessary actions were reported.

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12 With fixed sample size and an error rate of α=.10 this equals a p-value ≤.10 at the most.
Table 7: Correlation of dependent variables for “Quality of reported actions” with potential moderating or control variables

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Process-related quality of reported actions</th>
<th>Outcome-related quality of reported actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>necess. info.</td>
<td>option. info.</td>
</tr>
<tr>
<td>inclination for planning</td>
<td>.74</td>
<td>3.7</td>
</tr>
<tr>
<td>functionalism of planning</td>
<td>.44</td>
<td>4.3</td>
</tr>
<tr>
<td>width of planning</td>
<td>.59</td>
<td>3.7</td>
</tr>
<tr>
<td>tenacious goal pursuit</td>
<td>.78</td>
<td>3.4</td>
</tr>
<tr>
<td>flexible goal adjustment</td>
<td>.79</td>
<td>3.4</td>
</tr>
<tr>
<td>failure-related action/state orientation</td>
<td>.66</td>
<td>6.8</td>
</tr>
<tr>
<td>decision-related action/state orientation</td>
<td>.50</td>
<td>6.9</td>
</tr>
<tr>
<td>performance-related action/state orient.</td>
<td>.65</td>
<td>8.2</td>
</tr>
<tr>
<td>general self-efficacy</td>
<td>.84</td>
<td>3.5</td>
</tr>
<tr>
<td>occupational self-efficacy</td>
<td>.79</td>
<td>3.4</td>
</tr>
<tr>
<td>control motivation</td>
<td>.58</td>
<td>3.2</td>
</tr>
<tr>
<td>negative affectivity</td>
<td>.84</td>
<td>2.5</td>
</tr>
<tr>
<td>moral commitment</td>
<td>.83</td>
<td>2.9</td>
</tr>
<tr>
<td>Calculative commitment</td>
<td>.85</td>
<td>2.9</td>
</tr>
<tr>
<td>Alienative commitment</td>
<td>.77</td>
<td>2.3</td>
</tr>
<tr>
<td>Job involvement</td>
<td>.78</td>
<td>2.5</td>
</tr>
<tr>
<td>Work involvement</td>
<td>.61</td>
<td>2.7</td>
</tr>
<tr>
<td>Professional knowledge (points)</td>
<td>-10.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Professional knowledge (missings)</td>
<td>-1.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Professional knowledge (errors)</td>
<td>-6.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Latitudes for action</td>
<td>.86</td>
<td>2.9</td>
</tr>
<tr>
<td>Decision latitudes</td>
<td>.82</td>
<td>3.2</td>
</tr>
<tr>
<td>Design latitudes</td>
<td>.87</td>
<td>3.1</td>
</tr>
<tr>
<td>Latitudes at work (total scale)</td>
<td>.84</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* p-value < .10; ** p-value < .05; *** p-value < .01; scale names in italics = control variables.
A significant negative correlation was observed between the number of optional actions and control motivation (Büssing, 1992a). A higher value on this trait was accompanied by a smaller number of optional actions in the scenario. This effect also held up for the total number of actions reported. The occurred typical errors were negatively correlated with the “inclination for planning” (Heisig, 1996) and the occupational self-efficacy, i.e. the higher the inclination for planning or the occupational self-efficacy of a test person the less mistakes were made during the scenario and vice versa. Regarding the control variables a positive correlation between the typical errors and the design latitude the test persons experienced on their wards could be observed (for all scales of latitudes see Büssing & Glaser, 1998): A high design latitude on the ward co-occurred with more errors in the scenario, meanwhile with a lower design latitude a smaller number of typical errors was made.

Among the dependent variables of the process-related quality of reported actions in the “internal ward scenario” search for and take-up of information (number of opened menus) correlate positively with the moderating variable “tenacious goal pursuit” and negatively with the control variable “decision latitude” on the ward of the respective test person. This control variable also showed a negative correlation with the total of information that was used during the scenario, i.e. a higher perceived decision latitude on the ward was related with a smaller take-up of information as well as a lower use of information in the nursing-scenario. Further correlations with potential moderating variables were as follows: The total amount of used information related negatively with the “inclination for planning”. The stronger this variable was developed the less information was used by the test person in the “internal ward scenario”. Significant correlations could also be found for the variable “acceptance of responsibility“. A negative correlation with “functionalism of planning” (SEPOD, Heisig, 1996) was observed - meaning that a higher functionalism of planning co-occurred with a smaller degree of acceptance of responsibility and vice versa. At the same time “acceptance of responsibility“ correlated positively with performance-related action orientation, i.e. the higher the points of the test persons on this scale, the more responsibility for medical and nursing decisions in the “internal ward scenario” was taken.

The results of the analysis’ of covariance are presented in table 8. To avoid results with little or no meaning the selection of variables was led by the following precondition: Analysis’ of covariance were only conducted in cases where the potential moderating or control variables showed a $r > .40$ (see table 7) and on the other side the dependent variables in table 5 showed significant differences between the experimental groups. The covariates were put in the first step into a hierarchical analysis, i.e. before entering the factors, allowing the determination of the adjusted, independent impact of factors. Since only the scale “work involvement” had a substantial correlation with occupational self-efficacy ($r_s = .48$) and decision-related action orientation ($r_s = .47$) the influences of the covariates are largely independent. For the clarification of effects of moderating and control variables the bracketed values in italics present the results of an univariate, two factorial analysis of variance.
All covariates show the expected “significant” relation with the respective dependent variables so that the results are generalisable for the correction through the covariates (see table 8).

Table 8: Analysis of covariance with factors “forms of work satisfaction“ and “latitudes at work“ as well as potential covariates ($r_s > .40$ in table 7)$^{13}$

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Co-variate</th>
<th>Factors</th>
<th>Forms of ws</th>
<th>Latitudes</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>F</td>
<td>p-v.</td>
<td>F</td>
<td>p-v.</td>
</tr>
<tr>
<td>Outcome-related quality of reported action:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Necessary actions</td>
<td>decision related action orientation</td>
<td>-.50</td>
<td>6.75</td>
<td>.022</td>
<td>.20</td>
</tr>
<tr>
<td>Necessary actions</td>
<td>Work involvement</td>
<td>-.50</td>
<td>6.65</td>
<td>.023</td>
<td>.78</td>
</tr>
<tr>
<td>Optional actions</td>
<td>Control motivation</td>
<td>-.58</td>
<td>22.40</td>
<td>=0</td>
<td>8.91</td>
</tr>
<tr>
<td>Action total</td>
<td>Control motivation</td>
<td>-.53</td>
<td>12.65</td>
<td>.004</td>
<td>2.64</td>
</tr>
<tr>
<td>Effects of actions</td>
<td>Tenacious goal pursuit</td>
<td>.43</td>
<td>4.06</td>
<td>.067</td>
<td>.36</td>
</tr>
<tr>
<td>Effects of actions</td>
<td>Occupational self-efficacy</td>
<td>.44</td>
<td>5.11</td>
<td>.042</td>
<td>5.04</td>
</tr>
<tr>
<td>Effects of actions</td>
<td>work involvement</td>
<td>-.51</td>
<td>6.29</td>
<td>.026</td>
<td>1.56</td>
</tr>
<tr>
<td>Effects of actions</td>
<td>professional knowledge (points)</td>
<td>.63</td>
<td>9.88</td>
<td>.008</td>
<td>1.66</td>
</tr>
<tr>
<td>Process-related quality of reported actions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information total</td>
<td>inclination for planning</td>
<td>-.41</td>
<td>5.88</td>
<td>.032</td>
<td>.31</td>
</tr>
<tr>
<td>Information total</td>
<td>decision latitudes</td>
<td>-.47</td>
<td>5.53</td>
<td>.035</td>
<td>.10</td>
</tr>
<tr>
<td>Opened menus</td>
<td>Tenacious goal pursuit</td>
<td>.47</td>
<td>4.61</td>
<td>.053</td>
<td>1.37</td>
</tr>
<tr>
<td>Opened menus</td>
<td>decision latitudes</td>
<td>-.48</td>
<td>5.08</td>
<td>.042</td>
<td>2.40</td>
</tr>
</tbody>
</table>

$^{13}$ Group means are presented in Appendix 4.
a) Outcome-related quality

Following results can be summarised for the dependent variables belonging to the outcome-related quality of reported action: The moderating variables decision-related action orientation (HAKEMP; Kuhl, 1990), work involvement (Kanungo, 1982), control motivation (Büssing, 1992a), tenacious goal pursuit (Brandstädtter & Renner, 1990), and occupational self-efficacy (Schultz-Gambard et al., 1996) have an effect on the dependent variables necessary and optional actions, action–total and effects of actions.

Two interactions from table 5 (see the dependent variables necessary actions and effects of actions) between forms of work satisfaction and latitudes at work vanish under the influence of the respective covariates. That is, the postulated interaction between forms of work satisfaction and latitudes at work confirmed by uncorrected two-way analysis of variance depends at least in parts on the moderating variables work involvement and occupational self-efficacy that mirror action related personality traits (see table 8).

Moreover, the control variable professional knowledge seems to have an intervening effect on the dependent variable effects of actions; in other words if the points from the test of professional knowledge are included in the analysis the interaction between forms of work satisfaction and latitudes at work regarding the effects of actions vanishes, the differential advantage of constructive dissatisfied over the resigned satisfied gets “lost”.

b) Process-related quality

For the dependent variables from the realm of process-related quality of reported actions in the “internal ward scenario” the following results can be found after entering covariates in the analysis:

Altogether less influences of moderating variables can be stated for the dependent variables of the process-related quality than for the outcome-related quality. Moreover - with the exception of tenacious goal pursuit - other moderating and control variables are of importance with respect to outcome-related quality of reported actions in the “internal ward scenario”, namely the inclination for planning (SEPOD; Heisig, 1996) and the decision latitude (Büssing & Glaser, 1998). However, including these three moderating and control variables into analysis none of the interactions is substantially altered, i.e. - according the simple two-way analysis of variance (see table 5) - differential effects of forms of work satisfaction and latitudes
at work are neither found by entering moderating variables into the analysis. Considerable effects of the moderating variables occur only regarding the dependent variable “number of opened menus”: Here, tenacious goal pursuit and decision latitude lead to a disappearance of the weak main effects of forms of work satisfaction on the one side and of induced latitudes at work on the other side (see table 8).

Regarding the scope of outcome and process-related quality of reported actions in the “internal ward scenario” no final conclusion on the possible moderating influences can be drawn since further and more specific analyses would be required. Nevertheless a tendency is discernible: All in all, only a small number of relations between dependent and independent variables are moderated by habitual traits in this design, whereby the involved dependent variables mostly stem from the area of outcome-related quality of reported actions. Besides, among the intervening variables not only person-related habitual variables but also situational variables from the concrete working situation of the test persons can be found (e.g. perceived decision latitude on the ward).

Considering these results a first tentative answer to the question if the performance in the “internal ward scenario” is stronger determined by situational factors (the experimental induced latitudes) as by habitual personality traits can be given: The dominant effects of the induced latitudes at work remain generally stable (see table 8). Thereby it seems likely that situational factors on the whole have a greater impact on performance than personality traits.

4.4 Effects of forms of work satisfaction in three scenarios: What are their relationships?

In order to make scores on the relevant dependent variables (take-up of information, search for information, actions, effects of actions) comparable across the three scenarios they were z-standardised. Interactive effects from a split (scenarios) –plot (forms of work satisfaction) MANOVA with scenarios as the repeated measurement factor are presented in table 9. Main and simple main effects were calculated with an exact randomised block 1-factorial test (effect: scenario) and Pitman’s exact two-

14 With respect to the nature of the task in the two non-work scenarios no differentiation between optional and necessary action respectively information can be made in the comparison. Therefore, only the totals of action and information from the internal-ward scenario are used.

15 This procedure is equivalent to a parametric 2 (forms of work satisfaction) x 3 (scenarios) MANOVA with scenarios as a within-subjects factor.
sample test (effect: forms of work satisfaction). The analyses yielded one interactive effect and two significant main effects for forms of work satisfaction.

Concerning the performed actions across the three scenarios we observed a noticeable but not significant interaction (exact p-value = .13; also see figure 4) between the forms of work satisfaction and the three scenarios. While in the internal ward-scenario constructive dissatisfied performed notably more actions than resigned satisfied, the trend in the two other scenarios is vice versa: The resigned satisfied perform more actions in the scenarios ward celebration and sight seeing tour than in the internal ward-scenario, whereas the constructive dissatisfied perform fewer actions in those two scenarios than in the internal ward-scenario. That is, differences between resigned satisfied and constructive dissatisfied in terms of performed actions observed in the work context (internal ward-scenario) converge if the context is changed, and, the interaction here turns non-ordinal, i.e. the number of performed actions of the resigned satisfied slightly exceeds the one of the constructive dissatisfied in the two scenarios ward celebration and sight seeing tour. Significant main effects for forms of work satisfaction emerged with respect to effects of actions and the search for information. Constructive dissatisfied achieved more effects with their actions and searched for more information than the resigned satisfied across the three scenarios. That is, we found similar patterns of differences between the forms of work satisfaction in all three scenarios (for a detailed presentation of these results see Büssing, Bissels, Herbig & Krüsken, 1998b).

Summing up, for the forms of work satisfaction we found two types of interrelations between effects in the work and in non-work contexts. Apparently, resigned satisfied are more active in the leisure or in the work-non-work context than in a work setting, whereas the constructive dissatisfied are more active in a work setting than in the two other contexts. On the other hand, for effects of actions and search for information we observed the same pattern of differences between the constructive dissatisfied and resigned satisfied across the three scenarios.
Table 9: Effects of forms of work satisfaction and scenarios ("Internal ward", "Ward celebration", "Sight seeing tour") on the "quality of reported actions"*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Exact p-value</td>
<td>Exact p-value</td>
<td>Exact p-value</td>
<td>ME***:</td>
<td>SME***:</td>
<td>ME: ME:</td>
</tr>
<tr>
<td>Take-up of information</td>
<td>Resigned</td>
<td>-.222</td>
<td>.069</td>
<td>-.176</td>
<td>ME: .37</td>
<td>SME: .38</td>
<td>ME: .99</td>
</tr>
<tr>
<td></td>
<td>Constructive</td>
<td>.278</td>
<td>.000</td>
<td>.176</td>
<td>SME 1: .171</td>
<td>SME 2: .37</td>
<td>SME 3: .50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SME 2: ≈1</td>
<td>SME 3: .50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SME 3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Search for information (number of opened menus)</td>
<td>Resigned</td>
<td>-.472</td>
<td>-.171</td>
<td>-.180</td>
<td>ME: .023</td>
<td>SME 1: .069</td>
<td>ME: .97</td>
</tr>
<tr>
<td></td>
<td>Constructive</td>
<td>.489</td>
<td>.341</td>
<td>.339</td>
<td>SME 2: .37</td>
<td>SME 3: .40</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SME 3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actions</td>
<td>Resigned</td>
<td>-.232</td>
<td>.163</td>
<td>.137</td>
<td>ME: .98</td>
<td>ME: .88</td>
<td>ME: .88</td>
</tr>
<tr>
<td></td>
<td>Constructive</td>
<td>.429</td>
<td>-.247</td>
<td>-.137</td>
<td>SME 1: .23</td>
<td>SME 2: .43</td>
<td>SME 3: .70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SME 3:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effects of actions</td>
<td>Resigned</td>
<td>-.266</td>
<td>-.196</td>
<td>-.375</td>
<td>ME: .038</td>
<td>ME: .98</td>
<td>ME: .98</td>
</tr>
<tr>
<td></td>
<td>Constructive</td>
<td>.387</td>
<td>.174</td>
<td>.375</td>
<td>SME 1: .21</td>
<td>SME 2: .57</td>
<td>SME 3: .22</td>
</tr>
</tbody>
</table>

* z-values; ** Resigned (R): resigned satisfied; Constructive (C): constructive dissatisfied; *** ME: main effects; SME: simple main effects.
Analysis of forms of work satisfaction... Büssing, Bissels, Herbig & Krüsken

5 Discussion

The discussion is organised in two parts. First, the results for the internal ward-scenario, their limitations and lines of further research are discussed before, second, the same is done for results of the joint analysis of all three scenarios.

In support of our hypothesis derived from the extended model of different forms of work satisfaction (Büssing, 1991; Büssing, Bissels, Fuchs & Perrar, 1998) we found an interactive influence of forms of work satisfaction and latitudes at work on the outcome-related quality of reported actions and, therefore, the assumed differential effects of forms of work satisfaction on work-related action were confirmed. Unexpectedly, however, the constructive dissatisfied showed higher outcome-related quality of reported actions in the low latitudes condition, but not in the high condition. Also, in line with our hypothesis, latitudes at work influenced the process-related quality of reported actions; again, its influence was higher in the low latitudes condition than in the high condition. We found partial support for direct effects of forms of work satisfaction on the quality of reported action. Regarding process-related indicators of quality constructive dissatisfied delegated tasks less often and
tended to search for information more strongly than resigned satisfied. Constructive dissatisfied also displayed more optional actions, total actions and resulting effects of actions, but this effect was restricted to the low latitudes condition.

The observed interactive influence of forms of work satisfaction and latitudes at work emerged because constructive dissatisfied reported more actions under low latitudes than high latitudes, while no differences were noted for resigned satisfied. Our interpretation is as follows. The instruction for the “internal ward-scenario“ in the low latitudes condition explicitly restricted participants latitudes. This may have been interpreted as constraining one’s resources. According to reactance theory (Brehm & Brehm, 1981), this may in turn have strengthened the need to inform oneself more comprehensively in order to make optimal use of restricted resources. However, it was only the constructive dissatisfied who transformed information into actions. This difference in constructive dissatisfied’s and resigned satisfied’s reactions to low latitudes may be due to a linkage of perception of given latitudes and personal aspirations. Whether given latitudes are perceived as low or high in part depends on what the person’s aspirations in that situation are. Since it is the constructive dissatisfied who maintain their level of aspiration despite of problematic situations at work they may perceive given latitudes as lower compared to the resigned satisfied with a reduced level of aspiration and consequently increase their activities to attain their personal standards (Büssing, Bissels, Herbig & Krüsken, 1998a, 1998c).

The hypothesised main effect of latitudes at work was found. Concerning the unexpected direction of this effect the question arises why low latitudes at work led to a higher quality of reported actions than high latitudes. It may be that the situations chosen for the “internal ward-scenario“ imply fewer differences in perceived latitudes for ward nurses and registered nurses (all participants worked as registered nurses) than expected. In particular with respect to latitudes for action, there seems to be a relatively high level for both groups at work for example compared to industrial workers (see Büssing, 1988; Büssing & Glaser, 1991). In contrast to this ceiling effect, the restriction of latitudes in the low condition (experimental condition: registered beginner on the internal ward) may have produced the effects on the indicators for process-related quality.

Forms of work satisfaction do influence indicators of process-related quality of reported action directly; however, their influence on outcome-related indicators in the low latitudes condition is even stronger. Apparently, the effects of forms of work satisfaction on reported actions are not independent of situational variables like lati-
tudes at work. Moreover, this finding also implies that although both forms of work satisfaction take-up comparable amounts of information (although the constructive dissatisfied tend to search for information more actively), the resigned satisfied transformed this information less strongly into actions. This should be due to the resigned satisfied’s reduced level of aspiration compared to the constructive dissatisfied. These results emphasise the relevance of concepts such as controllability or latitudes at work for the extended model of work satisfaction. They also suggest that different forms of work satisfaction are linked to reported actions in a work sample and that latitudes at work play an important role in this relationship.

In sum, the findings support the assumption of motivational differences between the two investigated forms of work satisfaction resulting in different performance-related actions, particularly if latitudes at work were varied. While resigned satisfied performed all the necessary actions and did not differ from the constructive dissatisfied in this respect, they did, however, show fewer optional actions than the constructive dissatisfied when latitudes were low, i.e. the resigned satisfied only did the necessary. Data also suggest that these differences between the two forms of work satisfaction do not only exist in terms of the quality of reported actions, but also in terms of transformation of information into action. Thus, the extended model of different forms of work satisfaction opens up a new perspective on the debate about the relationship of satisfaction and performance.

The results of the manipulation check of latitudes at work provided mixed support, yet they revealed important facets of the concept of latitudes at work. On the level of single items we found no significant differences for the high versus low latitudes conditions. This may in part be due to the unspecific character of the term latitudes. In contrast, the check for acceptance of the role in the scenario indicated no problems. Recall that roles were described to the participants along the dimensions of latitudes at work. That is, latitudes may have been inherent to the respective role so that they were not perceived differentially, yet the participants acted accordingly.

The methods for measuring forms of work satisfaction (cluster analysis, a standardised interview and a card-based method) differed in their classificatory power. The interview rarely allowed an unequivocal assignment of participants to one of the two forms, while participants could in most cases be assigned to one of the two forms using the card-based method. Therefore, we combined the results from cluster analysis used as a screening device with results from the card-based method to finally assign participants. The modest classificatory power for the standardised interview may be due to the fact that at the beginning of the experimental session
nurses were not yet familiarised with the rather complex constituent variables, when at the same time they were requested to produce differentiated judgements.

In terms of appropriate statistical analyses results indicated that, with rare exceptions, the exact p-values for the main effects and the simple main effects are in line with parametric p-values which for the sake of shortness were not reported here. Referring to Pyhel (1980) we conclude that this indicates asymptotic equivalence of parametric and exact testing; violation against normality and homogeneity should be not severe and, therefore, the parametric p-values should also be acceptable for the tests of interaction.

There are some limitations to the present study. An obvious limitation is the restriction to reported actions in an experimental setting. A replication study conducted in an organisational setting with some form of observation of employees’ work behaviour as part of work analysis (Büssing & Glaser, 1998), for instance, could strengthen the validity of the experimental findings.

The research reported in this paper aimed at showing that forms of work satisfaction and latitudes at work have a significant effect on behaviour in a computer-aided work sample, and, indeed, effects of latitudes on the quality of reported actions in the “internal ward-scenario“ were shown. Yet the underlying psychological mechanisms remained largely unrevealed. A test of different explanations for the effects of latitudes on performance behaviour (e.g. motivational or cognitive) is required to reveal relevant mechanisms (see Frese, 1989). Likewise, an examination of further forms of work satisfaction would contribute to identifying those constituent variables of the extended model that determine the forms’ different propensities to act.

Moreover, in the “internal ward-scenario“ only task-related behaviours were assessed in terms of performance. There is by now a body of literature (for an overview Motowidlo, Borman & Schmit, 1997) emphasising the importance of contextual performance for organisational goal accomplishment i.e. “... activities that promote the viability of the social and organisational network and enhance the psychological climate in which the organisation’s core technical processes are embedded; activities such as helping and cooperating with others, endorsing and defending organisational objectives...“ (Motowidlo et al., 1997; p. 76). In fact, the effects of different forms of work satisfaction and latitudes may not be restricted to task-related behaviour like optional actions in the “internal ward-scenario“ but also affect contextual activities which typically are not a formal part of the job. This would be in line with evidence
from Bateman and Organ (1983) indicating a relationship between attitude-type work satisfaction and several contextual behaviours (e.g. loyalty).

In this research we also explored the interrelation of effects of forms of work satisfaction on the quality of reported actions in computer-aided scenarios from three different contexts. The presented data suggest that different types of interrelations exist. Evidence for what is called the “spillover thesis“ (sometimes also called generalisation thesis) was noted on the search for information and effects of actions. The thesis postulates that behaviour or experiences in both spheres of life are characterised by the same pattern. The well-known study by Meissner (1971), for instance, showed that constraints imposed on behaviour at work were linked to restricted and strongly receptive behaviour in leisure. However, we also found evidence for a competing thesis, that of “compensation“ (e.g. Miller & Weiss, 1982; Staines, 1980). The compensation thesis argues that behaviour and experiences in the two spheres of life are in contrast to one another in the sense that if work is experienced as restrictive, the individual will use leisure as a positive compensation for it. Concerning performed actions the resigned satisfied presumably compensated for lower levels of activity in the work context by increasing their level of activities in non-work contexts.

The underlying assumption for both the compensation and generalisation theses generally is that the direction of influence runs from the work to the non-work context. Although the study is a cross-sectional one, two arguments support the assumed direction of influence. First, forms of work satisfaction are motivational states predominantly reflecting the individual’s experiences made at work. Thus, the effects caused by this variable in other than work contexts are likely to be determined by work experiences. Second, controlling for dispositional variables (e.g. action vs. state orientation by Kuhl & Beckmann, 1994) in the internal ward-scenario the effects of forms of work satisfaction were not significantly affected, suggesting that performance-related behaviour in the work context is more strongly affected by work-related variables such as forms of work satisfaction than personality-related variables. Thus, this first evidence emphasises that socialisation processes at work, i.e. forms of work satisfaction, may influence behaviour in the sphere of non-work both in a compensatory and in a generalising way (see Büssing, 1992c; Hoff, 1992).

Still, these lines of argument have their limitations. The evidence presented so far was gathered in laboratory experiments. While this is, to our knowledge, the only experimental study examining the interrelation of the work and non-work context, at the same time it poses the question whether the emerged effects also hold true for the
field, for instance when observing behaviour at work and in non-work contexts. For a rigorous test of the nature of the relationship between the effects of different forms of work satisfaction in the work context and their effects in other contexts (leisure, work-non-work) a longitudinal study looking for this transactional dynamic seems indispensable. It is only a longitudinal design that offers the possibility to trace the direction of influences in the interrelation of the work and non-work spheres adequately.

Our findings are in line with results by Büssing (1992c, 1995) showing that compensation and spillover are two subjective concepts of the interrelation of the spheres of work and non-work (also see Hoff, 1992) with nurses; however, in contrast to other studies (e.g. Kabanoff, 1982), they fail to show support for a “neutral-Ity“ of the two spheres of life, i.e. the thesis that feelings, thoughts and behaviour in both spheres can be experienced to be independent of one another. The neutrality thesis differs from generalisation and compensation in that it excludes the possibility of an interaction between work and non-work. Not surprisingly, it has been criticised for being less of a scientific concept rather than a subjective concept of the interrelation of the spheres of work and non-work (e.g. Büssing, 1992c; Hoff, 1986). While it does not seem plausible that there are no objective relations between these two spheres of life, subjectively it makes sense for a person to try to separate work and non-work. Indeed, this separation or segmentation as a strategy in stress management has been found in narrative interviews with nurses (Büssing, 1995). Further experimental research, therefore, should investigate if and under which conditions people try to separate their behaviour at work from their behaviour outside the work context.

The findings presented may have implications for human resource management, not only in hospitals. Resigned satisfied apparently do not transform information into actions as readily as the constructive dissatisfied. Also, the resigned satisfied seem to react less sensitively to situational factors (latitudes at work), whereas the constructive dissatisfied varied their activities depending on the situational circumstances. Single human resource management techniques (e.g. work design, monetary reward systems, corporate identity programmes) targeting the employee’s motivation should hardly have an impact on resigned satisfied, since resignation probably is the result of a mid or long-term conflict of the employee on the one hand and the organisation or specific work conditions on the other hand. In this case, preventive measures e.g. continuous professional supervision or realistic job previews to prevent inadequate expectations (Premack & Wanous, 1985) seem appropriate. The constructive dissatisfied, on the other hand, principally present an innovative potential for an organisa-
tion. Due to their higher work-related level of aspiration and their higher propensity to act the constructive dissatisfied should be more supportive of work or organizational changes, unless personal aspirations and organisational goals conflict significantly. Thus, the constructive dissatisfied will probably be more responsive to goal-oriented management techniques such as goal setting, and more likely to engage themselves in health circles or autonomous forms of work organisation than resigned satisfied.

Another major aspect of human resource management - the field of training and development - is related to the experimental method used in this study. In contrast to work sample tests (e.g. Arthur, Barrett & Dooverspike, 1990), the “internal ward-scenario“ rather can be used as a training tool. The “internal ward-scenario“ and its situations were rated as realistic corroborating the claim of its ecological validity (Kvale, 1989). That is, the situations from the “internal ward-scenario“ correspond to everyday nursing situations of our participants to a high degree. Content validity was ensured through the joint development and design by researchers and nursing experts. Thus, the scenario offers a learning environment, in which aspects of the acquisition and processing of knowledge, of decision-making and acting in nursing may be thought through and practised under conditions quite close to reality.

6 References


Büssing, A. (1996b). Zur Rolle von Tätigkeitsspielräumen und Kontrolle am Arbeitsplatz für die Gesundheitsförderung [The role of latitudes at work and control at the working place for health promotion]. In U. Brandenburg, K. Kuhn, B. Marschall & C. Verkoyen (Eds.), Gesundheitsförderung im Betrieb [Health promotion in the company] (pp. 53-77). Bremerhaven: Wirtschaftsverlag NW.


Appendix 1: Example from the scenario “Internal ward“

Map of the Scenario "Internal Ward"

Episodes from the scenario "Internal Ward"

You are on the early morning shift on an internal ward with 35 beds. All beds are occupied.

There are three persons present this morning: Beside yourself there are two more nurses and a new pupil, who is seeking job experience and who is allocated to your ward for that day. You are responsible for nine patients. It is 10.00 a.m. on a Wednesday. The head physician starts his doctor’s round with your patient Mr. Blue.

At about 10.20 a.m. Mrs. Silver, who was taken to hospital on the suspicion of gastritis, experiences an asthma attack. Since the patient did not suffer from asthma attacks during the last 12 months, no oxygen apparatus is in her room.

⇒ If you need more information, please inform yourself by using the menus above!
⇒ Tell us what you will do in this situation and why!
⇒ Remember to think aloud!
Appendix 2: Structure of the computer-aided “internal ward-scenario“

Phase I: Exploration

- instruction and trial
- description of the ward
  - familiarisation with clickable menus

- ward
  - map of the ward rooms:
    - no. 308
    - no. 309
    - no. 310
    - no. 311

- patients
- colleagues
- services
- doctors
  - Blue
  - Green
  - Black
  - Yellow
  - Red
  - Grey
  - White
  - Brown
  - whereabouts
  - characterisation
  - services (e.g. transport)
  - others

Phase II: Performance

- admission

- situation 1
- situation 2
- situation 3
- situation 4
- situation 5
- situation 6
- situation 7
- situation 8
- situation 9

manipulation of latitudes at work by
- description of chosen role
- decision alternatives

repeating the description of the chosen role (i.e. manipulating latitudes at work)
Appendix 3: Structure of the non-work scenarios: “Ward celebration” and “sight seeing tour”

### Ward Celebration
- **2.00 p.m.**
  - **description of the task**
  - **circumstances**
    - **venues**
      - Italian restaurant
      - local pub
      - camping ground
      - cafeteria in the hospital
    - **doctors**
      - preferences and suggestions
      - characterisations
    - **colleagues**
      - preferences and suggestions
      - characterisations
  - **instructions**
  - **clickable menus**

### Sight seeing tour
- **3.30 p.m.**
  - **description of the task**
  - **circumstances**
    - Munich
      - weather forecast
      - traffic condition
      - mobility
    - uncle
      - preferences and suggestions
      - characterisations
    - aunt
      - preferences and suggestions
      - characterisations
  - **instructions**
  - **clickable menus**
### Appendix 4: Group means of analysed moderating and control variables

<table>
<thead>
<tr>
<th></th>
<th>Resigned satisfied</th>
<th></th>
<th>Constructive dissatisfied</th>
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<tbody>
<tr>
<td></td>
<td>low latitude at work</td>
<td>high latitude at work</td>
<td>low latitude at work</td>
<td>high latitude at work</td>
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<td></td>
<td>M</td>
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<td>M</td>
<td>s</td>
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<tr>
<td>Inclination for planning</td>
<td>1;7*</td>
<td></td>
<td>3.33</td>
<td>.62</td>
</tr>
<tr>
<td>Functionalism of planning</td>
<td>1;7</td>
<td></td>
<td>3.92</td>
<td>1.1</td>
</tr>
<tr>
<td>Tenacious goal pursuit</td>
<td>1;5</td>
<td></td>
<td>3.33</td>
<td>.47</td>
</tr>
<tr>
<td>Decision-related action vs.</td>
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<td></td>
<td>7.25</td>
<td>2.5</td>
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<tr>
<td>state orientation</td>
<td></td>
<td></td>
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<tr>
<td>Performance-related action</td>
<td>1;12</td>
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<td>6.00</td>
<td>1.63</td>
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<tr>
<td>vs. state orientation</td>
<td></td>
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<tr>
<td>Occupational self-efficacy</td>
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<td>3.36</td>
<td>.11</td>
</tr>
<tr>
<td>Control motivation</td>
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<td></td>
<td>3.04</td>
<td>.21</td>
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<td>.55</td>
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<td>Professional knowledge</td>
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<td>9.25</td>
<td>2.06</td>
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<td>(points)</td>
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<td>2.7</td>
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* ≅ Range; scale names in italics ≅ control variables.