Not Without my Fellow Patient! – The Influence of Fellow Patients in Hospitals on Patient Satisfaction and Self-rated Health

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Fellow patients are the people with whom hospital patients spend the most time. Research has shown that the fellow patient influences anxiety, pre- and post-operative stress, compliance, and negative feelings. A few studies have even shown that contact with other patients influences long-term satisfaction with the hospital, and self-rated health. These different factors influence each other via complex interactions. In this study, we analyze these complex interactions by building a theory-based model and testing the model using two empirical studies. The results provide relevant implications for further research and for hospital management.

1. Introduction

Hospitals today face various challenges. In particular, they have to create shareholder value and meet the quality standards of the health care industry. However, they also are expected to generate high patient satisfaction and improve the long-term health status of patients (Kennedy et al. 2014; Sacks et al. 2015). One of the most important factors in generating patient satisfaction and good long-term health is contact with fellow patients. Indeed, Hantel and Benkenstein have shown that fellow patients have a strong impact on perceived hospital service quality and patient satisfaction (Hantel and Benkenstein 2019; 2020).

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The aim of this research is to deepen our understanding of how fellow patients influence patient satisfaction and self-rated health. Past studies have shown that the fellow patient is able to reduce anxiety of the focal patient, and help them to cope with hospitalization. Anxiety is a stressor that negatively influences patient satisfaction and recovery. Kulik et al. (1993) found that patients with a post-operative fellow patient were more satisfied and less anxious. Contact with other patients in the unit also reduces negative feelings (Isaksen et al. 2003; Kulik et al. 2000). Reasons for the influence of the fellow patient include the role model function, and the fact that the patient can provide support in case of problems and additional information about illnesses and processes in the hospital (Birkelund and Larsen 2013). These characteristics of the fellow patient not only positively influence the focal patient's anxiety, but also affect the focal patient's means of managing problems. Comparison and interaction can help patients to cope with stressors. The fellow-patient literature has referred to the fact that patients orientate themselves toward others during hospitalization, and that patients motivate each other. This suggests that the presence of a fellow patient influences the focal patient's attitudes toward treatments, situations, and feelings (Birkelund and Larsen 2013; Larsen et al. 2013).

Overall, research has indicated that the fellow patient is able to influence anxiety, coping, and compliance, and that there are interactions between these constructs. However, studies have so far paid little attention to the complex interrelations between these effects. Furthermore, research has not yet analyzed whether the influence of the fellow patient is far-reaching and can influence patient satisfaction and self-reported health. In this paper, the relations between the fellow patient and anxiety, seeking social support as a coping strategy, patient satisfaction, and self-rated health are analyzed. Furthermore, the literature is used to formulate hypotheses on the various relationships between these constructs. Subsequently, the hypotheses are tested using two studies. Study one examines mediation relationships between the fellow patient, anxiety, seeking social support, patient satisfaction, and self-rated health. Study two includes compliance as a moderator. The results of the studies are discussed, and conclusions are formulated.

2. Theoretical background

2.1. Main effects

Literature has indicated that self-rated health is an important health outcome that could be an indicator of mortality and morbidity (Burström and Fredlund 2001; Idler and Benyamini 1997). Furthermore, good self-rated health could speed up recovery, and an optimistic evaluation can produce other positive health outcomes (Burström and Fredlund 2001; Rohrer et al. 2007). Self-rated health indicates how a person rates their health, and the body of evidence has shown that it is a stable predictor of illnesses and mortality (Otani et al. 2015; Rohrer et al. 2007)

The fellow patient literature has found that the presence of the fellow patient can both increase and decrease patients' evaluation of their health (Birkelund and Larsen 2013; Larsen et al. 2013). Particular evidence of this has been found in qualitative studies on patient interaction in the hospital room. When patients meet in their room, they tend to compare themselves with each other. This comparison may lead to an assessment of health status, which can be explained by social comparison theory (Isaksen and Gjengedal 2006). In a downward comparison, the health of the fellow patient is seen to be worse than that of the focal patient, and in an upward comparison the health is seen to be better. Both can increase self-rated health. If the state of health of the fellow patient is considered worse than that of the focal patient, the focal patient sees how bad it could be and rates their health condition higher (Bennenbroek et al. 2002; Taylor and Lobel 1989). If the fellow patient's health status is considered better, it may motivate the focal patient and change their attitude toward their health, such that their self-rated health also increases (Rohrer et al. 2007). Additionally, studies have shown that the presence of informative, supportive, and helpful behavior influence patients' health positively, and possibly increase patients' self-rated health (Birkelund and Larsen 2013; Larsen et al. 2014). Thus, we can assume that:

H1: Satisfaction with the fellow patient has a significant positive influence on the focal patient's self-rated health.

The connection between fellow patient and self-rated health can additionally be explained with reference to other constructs that are connected to the fellow patient as well as to self-rated health. The hospital literature has indicated that, for example, patient satisfaction, anxiety, and the coping strategy of seeking social support could be possible mediators in this relationship (Austenfeld and Stanton 2004; Brenes et al. 2005).

2.2. Patient satisfaction as a mediator

Next to self-rated health, the fellow patient literature has indicated that contact with a fellow patient in a hospital room also influences the focal patient's evaluations of the hospital. During hospitalization, patients meet, in addition to physicians and nurses, other patients in the unit, and are influenced by them (Isaksen and Gjengedal 2000). The fellow patient is often the person with whom the focal patient spends most of their time. Being together in a patient room is a difficult situation, and several researchers have investigated the coexistence of patients and the influence of the fellow patient. For example, Album (1989) investigated patients' interactions in a general hospital. The observations and interviews showed that patients typically exchanged information about the staff and the patients' illnesses. Difficult conversations about private matters were avoided. In a further study, Album (1989) found that patients had rituals to cope with hospitalization and their experiences in the unit. Seriously ill patients were left alone, patients engaged in a lot of small talk for distraction, and negative feeling were suppressed. These results have been confirmed by other investigations. Interviews with patients have indicated that the presence of a fellow patient can be both positive and negative. Being in a room with another patient represents a forced situation, which patients often perceive as entailing a loss of privacy and control (Isaksen and Gjengedal 2006; Larsen et al. 2014). Furthermore, patients sharing a room could have different health statuses, with the result that the fellow patient is perceived as a burden (Birkelund and Larsen 2013; Wilson and Luker 2006). On the other hand, interactions with the fellow patient lead to distraction, reduction of uncertainty, and feelings of support and affiliation (Kulik et al. 2000; Larsen et al. 2013). The influence of the fellow patient has also been found to have a significant effect on patients' evaluations regarding their care. For example, Kulik et al. (2000) demonstrated that patients who had high levels of contact with other patients were more satisfied with the quality of care. Moreover, the knowledge and support they received from their fellow patients led to higher satisfaction with the information provided by public health services (Isaksen et al. 2003). Additionally Luther et al. (2016) found that similarities between patients, and the resulting attraction between them, improved patients' perceived quality of the hospital. Given these studies, a direct relationship between presence of a fellow patient and the focal patient's satisfaction can be assumed.

Studies that have investigated the relationship between patient satisfaction and self-rated health have indicated that the two constructs can be connected in both directions, meaning that patient satisfaction can produce self-rated health and vice versa (Marshall et al. 1996; Tevis et al. 2016). The current study concentrates on the direction of the effect of patient satisfaction on self-rated health. Literature on this relationship has found that higher patient satisfaction leads to higher self-rated health. A study of neurological outpatients showed that the state of health of

satisfied patients was significantly better than that of dissatisfied patients (Covinsky et al. 1997. In addition, Fitzpatrick and Hopkins (1983) investigated the relationship between changes in health status from admission to discharge, and patient satisfaction. Their results showed that patients reporting higher satisfaction recorded better health at discharge, and vice versa. Another study examined the relationship between older patients' satisfaction and health status also confirmed the link between these health outcomes, with greater satisfaction associated with better self-assessed health (Hall and Dornan 1990). Similarly, Ren et al. (2001) interviewed 10,615 veterans using a health status and patient satisfaction questionnaire and found that the coordination of care is significantly related to health status. Furthermore, they showed that higher patient satisfaction leads to better health status, although the effect was small.

The studies discussed above show that both the fellow patient and patient satisfaction are related to self-rated health. Therefore, it is assumed that there is a mediation effect between the constructs:

H2: Satisfaction with the hospital mediates the relationship between satisfaction with the fellow patient and self-rated health.

2.3. Anxiety as a mediator

The literature has indicated that, alongside the positive effect of the fellow patient on self-rated health and patient satisfaction, contact with other patients influences the psychological and social problems patients face. This connection was investigated by Van Den Borne et al. (1987). Using a quasi-experiment, they found that contact between fellow patients decreases negative feelings, such as anxiety, and increases self-esteem. This can be explained using social comparison theory, according to which patients tend to compare their own options and abilities with those of fellow patients to reduce their own negative feelings (Van Den Borne et al. 1987). Anxiety is particularly associated with a need for social comparison. Patients want to know how similar others are doing, and seek information on feelings about and the management of diseases (Bennenbroek et al. 2002). This was also confirmed by Kulik et al. (1993), who examined roommate effects on preoperative anxiety and social interactions. They found that patients felt less anxious if they had a post-operative fellow patient in the hospital room than if the fellow patient was preoperative, though they were more likely to interact with preoperative fellow patients (Kulik et al. 1996). Recent studies have also indicated that fellow patients can reduce the focal patient's anxiety (Birkelund and Larsen 2013; Yakusheva 2011).

The connection between the fellow patient and anxiety may also influence patients' evaluations of hospital services. For example, it has been found that anxiety is negatively correlated with the perceived effectiveness of care (Wyshak and Barsky 1995). Furthermore, anxious patients are more likely to have unmet expectations post-visit, and to report persistent psychiatric symptoms (Kroenke et al. 1997). Patient satisfaction has also been found to be negatively affected by negative emotions, such as anxiety (Vinagre and Neves 2008). This negative influence on patients' evaluations could also lead to a decrease in other patient outcomes. Accordingly, studies have examined whether dissatisfied patients also rate their health as being worse, and recover more slowly (Rahmqvist and Bara 2010). This could increase health costs and put strain on the health care system. For this reason, practitioners and researchers have attempted to find ways to reduce hospital anxiety. As already demonstrated, the presence of a fellow patient decreases anxiety, but studies have not yet investigated whether the fellow patient is able to reduce anxiety while improving satisfaction. Therefore, this study tests whether anxiety can be a mediator between the fellow patient and patient satisfaction, and thus whether anxiety contributes to explaining the influence of fellow patients.

H3a: Anxiety mediates the relationship between satisfaction with the fellow patient and satisfaction with the hospital.

Studies concerning self-rated health have found that anxiety is associated with poor self-rated health. For instance, Consedine and Moskowitz (2007) examined the influence of various emotions on health outcomes, finding that fear aggravates diseases and is associated with behavior that is detrimental to health. In addition, many other studies on specific diseases have shown that anxiety leads to poorer health outcomes (Eisner et al. 2010; Joulaei et al. 2016).

This relationship between fellow patient, fear, and self-rated health has also yet to be investigated by previous research, and is thus also be considered in this study:

H3b: Anxiety mediates the relationship between satisfaction with the fellow patient and self-rated health

2.4. Seeking social support and coping strategy as a mediator

Research has indicated that a reduction in anxiety may be able to explain the relationship between the fellow patient and patient satisfaction. However, another construct mentioned in hospital roommate studies could also help to explain the influence of the fellow patient on patients' evaluations: the social support that the fellow patient delivers during time spent with the focal patient in the hospital room. Social support is a characteristic that is valued by patients (Birkelund and Larsen 2013; Isaksen and Gjengedal 2006;). The fellow patient is often able to give helpful advice and listen to worries and fears if there is no one

else around. Social support emphasized by the literature include emotional, esteeming, distracting, motivational, companionship, and informational (Larsen et al. 2014; Larsen et al. 2013). The seeking of social support serves as a kind of coping strategy for patients. Lazarus and Folkman (1987) defined coping as a cognitive and behavioral effort to manage specific external and/or internal demands. Additionally, coping strategies include efforts such as regulating emotions. Social support as a special form of coping means that patients seek out people in their environment (the hospital) to help them solve problems or reduce stressors (Cohen et al. 2001; Östberg and Lennartsson 2007). These people could be family, relatives, friends, or strangers such as fellow patients. Based on these studies, we assume that satisfaction with the fellow patient leads to increased seeking of social support and thus to a positive relationship between these two constructs. Social comparison theory forms the theoretical basis for the direct effect between the fellow patient and seeking social support as a coping strategy (Isaksen and Gjengedal 2006).

The seeking of support comprises a proactive action by the patient, and can be seen as a protective factor that reduces negative effects (Sarason et al. 2001). Additionally, Karabulutlu et al. (2010) found that patients benefit from a strategy of seeking social support. Studies have indicated that social support has an indirect positive effect on patient satisfaction (Da Costa et al. 1999; Nambisan et al. 2016). This was demonstrated by Da Costa et al. (1999), who investigated the relationship between social support and patient satisfaction for patients with systemic lupus erythematosus. Furthermore, social support can increase service quality and, by implication, patient satisfaction (Nambisan et al. 2016). Social support as a coping strategy is also positively related to better patient evaluations when patients feel supported and cared for (Sørlie et al. 2000). The literature has indicated that there may be an indirect effect between fellow patient, seeking social support, and patient satisfaction; thus, the following hypothesis is proposed:

H4a: Seeking social support mediates the relationship between satisfaction with the fellow patient and satisfaction with the hospital.

Alongside the positive effect on patient satisfaction, it has also been found that supportive coping positively influences health. In a literature review, Cohen and Wills (1985) showed that social support has a "buffering" effect on health and health-related outcomes. Another literature review examined links between social support and health-relevant cardiovascular alterations, neuroendocrine and immune function, and biological mechanisms (Uchino 2006). In many studies, social support has been found to have a beneficial influence on various diseases and, therefore, on health status. Veenstra et al. (2006) examined the extent to which patient experiences with information are interrelated with coping behaviors and health in chronic illness. Furthermore, Uchino (2009) indicated that coping models, such as seeking social support, represent a potential resource for patients to handle diseases and health problems. However, thus far, no study has investigated the relationship between the fellow patient, seeking social support, and self-rated health, despite indications that there could be a relationship between them. Thus, the following hypothesis is proposed:

H4b: Seeking social support mediates the relationship between satisfaction with the fellow patient and self-rated health.

2.5. Compliance as a moderator

In this paper, relationships between fellow patient, anxiety, seeking social support, patient satisfaction, and self-rated health are investigated in both study one and study two. However, study two is also devoted to considering another major problem for health care services: compliance. By compliance, we mean "the extent to which the patients' behavior (including medication-taking) coincides with medical or healthcare advice" (Lam and Fresco 2015, p. 1). A report by the World Health Organization (WHO 2003) showed that 50 percent of patients do not take their medication regularly (De Geest and Sabaté 2003). This figure could be even higher depending on the disease. Furthermore, research has shown that poor compliance leads to a serious financial burden and poor clinical outcomes (Lam and Fresco 2015; Vermeire et al. 2001). The priority of recent literature has been to identify constructs that influence compliance (Gudjonsson and Sigurdsson 2003; Wagner et al. 2016). However, compliance is not only an outcome; it is also a preconfiguration of patients that can influence effect relationships. Thus, study two aimed to reveal how patients' compliance influences the assumed relationship between the fellow patient and anxiety, seeking social support, and patient satisfaction.

The fellow patient literature has verified that the presence of a fellow patient can change the focal patient's attitudes toward treatment, illness, and coping (Larsen et al. 2013). Moreover, Vermeire et al. (2001) commented that "collaborations between patients possibly [lead] to better adherence." In terms of patient satisfaction and compliance, most studies have shown that the two constructs correlate positively with each other. For example, Biderman et al. (2009) surveyed 630 diabetes patients on their satisfaction with treatment, compliance, health status, and other factors. They found that difficulties with compliance led to lower satisfaction, and that compliance correlates with high mental and physical health. Chrystyn et al. (2014) showed that if patient-rated inhaler satisfaction increases, physician-assessed treatment compliance also increases,

and that compliance affects the health status of patients. Based on this positive correlation, it is hypothesized that:

H5a: The positive effect of satisfaction with the fellow patient on satisfaction with the hospital is moderated by compliance, such that the effect will be strengthened by compliance, leading to higher satisfaction with the hospital.

Studies on anxiety have also indicated that low compliance is associated with high anxiety (Kjelsberg et al. 2005), and that anxious people are more compliant because they want to avoid conflicts (Gudjonsson et al. 2008). Anxiety can lead to patients becoming overwhelmed by emotions and diagnoses, and thus unable to act (Clark et al. 1999). Hence, it can be hypothesized that:

H5b: The negative effect of satisfaction with the fellow patient on anxiety is moderated by compliance, such that the indirect effect will be strengthened by compliance, leading to a reduction in anxiety.

In this regard, Farley et al. (2003) found contradictory results: in their study, non-compliance occurred with greater anxiety. The reason given for this was that the coping behavior of patients can also influence compliance. Some studies have investigated whether compliant patients use dysfunctional coping strategies (Ferrari and Louw 2012; Wagner et al. 2016). A study of 424 patients from Iceland found that compliance is associated with negative coping strategies, such as denial and avoidance (Gudjonsson and Sigurdsson 2003). However, various studies have shown a strong positive correlation between social support and compliance (Clark et al. 1999; Wagner et al. 2016), leading to the following hypothesis:

H5c: The positive effect of satisfaction with the fellow patient on seeking social support is moderated by compliance, such that the effect will be strengthened by compliance, leading to a greater incidence of seeking social support.

3. Study one

3.1. Methods

Study one measures the following constructs: satisfaction with the fellow patient; anxiety; seeking social support as a coping strategy; patient satisfaction with the hospital; and self-rated health. In order to achieve the largest possible sample size, the questionnaire was distributed via health care forums. Forums are considered an effective platform for reaching and consulting with hospital patients throughout an entire country (Nambisan et al. 2016)

The questionnaire asked former hospital patients to evaluate their past hospital visits. These visits had to have taken place no more than five years ago, and patients had to have had at least one fellow patient during their hospitalization. To ensure that the same fellow patient was always remembered, questions about the person were asked at the beginning and before evaluation of fellow patients. This was to remind the respondent to focus on one person, and to help prevent missing memories. When completing the survey, respondents were first made aware of the purpose of the study and data protection issues. In addition, they were asked about memories of their visit to the hospital (which hospital, which ward, length of stay, patient room) and the other patient (name, age, duration of time spent rooming together). This was followed by questions relating to the other relevant constructs.

To evaluate satisfaction with the hospital, we used a single-item scale. Past studies have indicated that patients often have difficulties defining every sub-process. This applies in particular to health services, where patients' cannot assess the whole service and it is easier to pass a global judgment (Lee et al. 2000). To evaluate satisfaction with the fellow patient, a global item was also used. To date, no valid measurements for fellow patients exist in the literature; studies have simply demonstrated positive or negative characteristics of fellow patients (Larsen et al. 2014; Larsen et al. 2013). Furthermore, patients can have difficulties making judgments after several years have gone by. The Spielberger state-trait anxiety inventory was used to measure patients' anxiety. The scale consists of six items that express feelings in a special situation. The measurement has often been used by researchers and represents a valid method to evaluate anxiety. The coping strategy of emotional support comprised four items containing questions about interactions with others to cope with the situation in the hospital (for example: "Sought out others for comfort"). Items related to instrumental support comprised three questions about exchange of experiences and asking for help (for example: "Asked friends with similar experiences what they did"). There were high correlations between both scales and a factor analysis showed that the two scales were not distinct. For this reason, we put the scales together and formed the construct of seeking social support. To measure self-rated health, patients were asked about evaluations of their health after hospitalization, and their current health status (Eriksson et al. 2001). All items were measured on a 7-point Likert scale.

For control variables, the questionnaire included questions about the gender and age of the focal patient and fellow patient. Past studies have identified differences in judgment between men and women, where the evaluations of men have been more positive. Furthermore, research often shows that younger patients are more critical than older ones (Johansson et al. 2002; Naidu 2009). Further control variables were hospital unit and time spent together in a room.

For our analysis, we used SPSS Statistics 22 Process, which is a regression-based method. To examine study one, Model 6 was used.

3.2. Results

Altogether, 315 hospital patients answered the first questionnaire. Because of missing values, we had to delete 51 questionnaires, so that 264 were used for the analysis. The average age of the focal patients was 30 years (*SD*=11.55), and the average stay in hospital was eight days (*SD*=19.35). Women constituted 71 percent of participants, and 60 percent of participants had an operation during their hospitalization. Their fellow patients were on average 44 years old (*SD*=21.24).

The mean score for satisfaction with fellow patients was 4.70 (*SD*=1.86). It became apparent that the longer the patients spent together, the higher the evaluation of their fellow patient (*p*-value=0.047). Women were more satisfied with their fellow patient than were men, but the difference was not significant (*p*-value=0.217). Neither the age of the focal patient nor that of the fellow patient had a significant influence on the results (*p*-value=3585, *p*-value= 0.3154, respectively). Additionally, the control variables of operation status and hospital unit had no significant impact (*p*-value=0.0704, *p*-value=0.7126, respectively). The anxiety mean score was 4.02 (*SD*=1.33). Women were significantly more anxious than men (*p*-value=.000), with internal consistency shown via a Cronbach's alpha value of 0.842. The social support coping mean score was 3.95 (*SD*=1.35); internal consistency was shown with a Cronbach's alpha value of 0.831. Patients' satisfaction with the hospital was quite high (mean score 5.05, *SD*=1.58), as in many health care studies. The mean score of self-rated health was 5.27 (*SD*=1.48), with a Cronbach's alpha value of 0.870.

Fig. 1 shows the results of study one in a path model, and *Tab. 1* shows the direct relationships and the results of the moderation. H1 stated that the fellow patient is positively related to self-rated health; however, the results show that the fellow patient is not significantly related to self-rated health, so H1 is not supported. Nevertheless, both the direct relationship from fellow patient to patient satisfaction and the mediation through patient satisfaction on self-rated health were found to be significant, so H2 is

	b	SE	95% CI for ß		p-value
			Lower	Upper	
Fellow patient → self-rated health	0.024	0.050	-0.074	0.123	0.627
Fellow patient → patient satisfaction	0.144	0.053	0.040	0.248	0.007
Fellow patient → anxiety	-0.106	0.043	-0.191	-0.022	0.014
Fellow patient → seeking social support	0.116	0.045	0.028	0.204	0.010
Patient satisfaction → self-rated health	0.374	0.061	0.254	0.494	0.000
Anxiety → patient satisfaction	-0.427	0.081	-0.587	-0.268	0.000
Anxiety → self-rated health	-0.063	0.080	-0.220	0.095	0.432
Seeking social support → patient Satisfaction	0.159	0.076	0.009	0.309	0.038
Seeking social support → self-rated health	0.018	0.072	-0.123	0.160	0.798

b = unstandardized coefficient; SE = standard error; CI = confidence interval

Tab. 1: Direct relationships between the measured constructs – study one

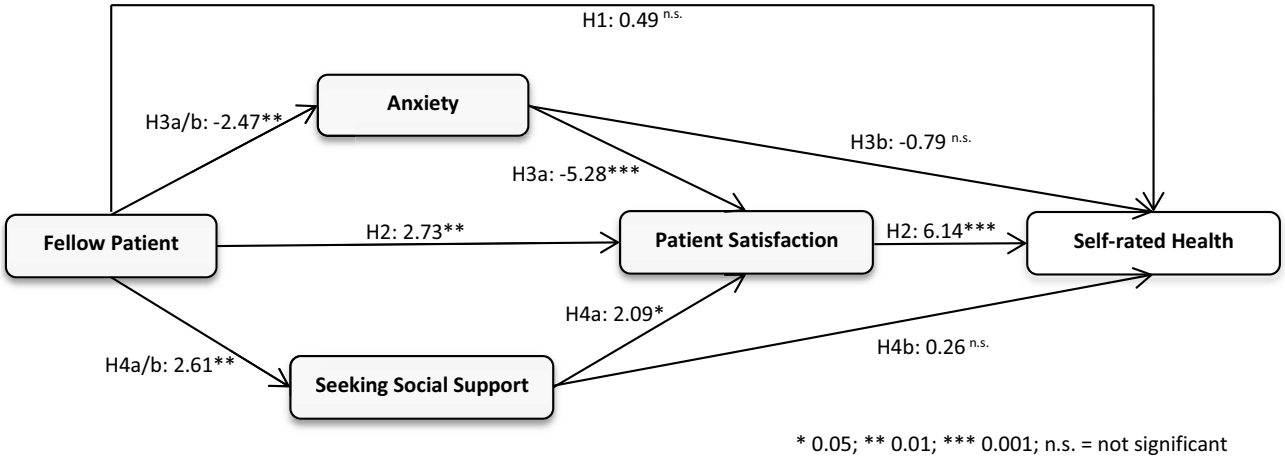

Fig. 1: Measurement model of study one with t-values

supported. Female patients were more satisfied with the hospital than were male patients (b=0.520; p=0.020), and no other control variables had an influence on patient satisfaction. Furthermore, it was assumed that the fellow patient is negatively related to anxiety. In addition to the fellow patient, the control variable age of the fellow patient (b=0.009; p=0.017), time spent together (b=0.038; p=0.004), and gender of the fellow patient (b=0.841; p=0.000 had a significant influence on anxiety. The results show that patient anxiety tends to increase with the age of the fellow patient, with more time spent together, and when the fellow patient is female. The mediation hypothesis, H3a, can also be accepted because there is a direct effect of anxiety on patient satisfaction. The mediation hypothesized by H3b is rejected, because there is no effect of anxiety on self-rated health.

As with anxiety, a direct relationship occurs from fellow patient to seeking social support and mediation via seeking social support. This is a positive direct effect. The results show no influence by any control variable on seeking social support. The mediation through seeking social support is also significant, and is again mediated mediation via patient satisfaction on self-rated health. However, there is no mediation on self-rated health here either. Therefore, only H4a is supported; H4b is not. All direct effects are shown in *Fig. 1*.

Next to the main effects, the control variable of age of the patient has a significant negative influence on self-rated health (b=-0.021; p=0.010). This indicates that older patients rated their health more negatively than did younger patients.

4. Study two

4.1. Methods

For study two, the same questionnaire was used, with the addition of a scale for measuring compliance. Patients' compliance as a moderator was measured with two items ("I was compliant after hospitalization"; "I will be compliant beyond 12 months after hospitalization") using a 7-point Likert scale from 1 ("not at all") to 7 ("entirely"). This measurement was based on the theory of planned behavior by Ajzen (1991). The questionnaire was published on different health forums to those used in study one. Again, the former patient was asked to remember one fellow patient from their hospitalization, as well as the ward on which the patient was hospitalized and the duration of their stay at the hospital.

For the analysis, we again used SPSS Statistics 22 Process. To examine study two, Model 8 was used.

4.2. Results

Altogether, 320 hospital patients answered the questionnaire. Because of missing values we had to delete 41 questionnaires, resulting in 279 being used for the analysis. The average age of the focal patients was 35 years (SD=13.15), and their average length of stay in hospital was 9 days (SD=14.18). Women accounted for 76 percent of the participants, and 62 percent had an operation during their hospitalization. Their fellow patients were on average 45 years old (SD=19.93). The fellow patients' mean score was 4.59 (SD=1.99). The control variables had no influence on fellow patient evaluations. The mean score for anxiety was 4.22 (SD=1.37), with internal consistency shown via a Cronbach's alpha value of 0.819. The social support coping mean score was 4.10 (SD=1.49); internal

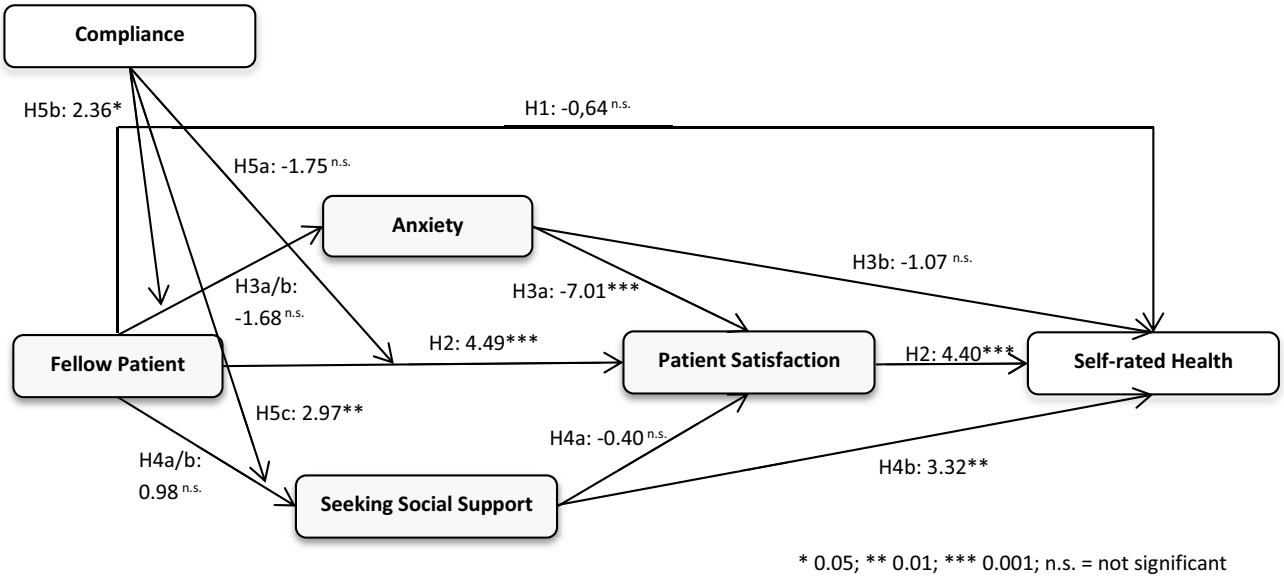

Fig. 2: Measurement model of study two with t-values

	b	SE	95% CI for ß		p-value
			Lower	Upper	
Fellow patient → self-rated health	-0.025	0.0393	-0.102	0.052	0.5247
Fellow patient → patient satisfaction	0.242	0.054	0.136	0.349	0.000
Fellow patient → anxiety	-0.106	0.043	-0.191	-0.022	0.014
Fellow patient → seeking social support	0.116	0.045	0.028	0.204	0.010
Patient satisfaction → self-rated health	0.231	0.052	0.127	0.334	0.000
Anxiety → patient satisfaction	-0.505	0.072	-0.648	-0.363	0.000
Anxiety → self-rated health	-0.066	0.061	-0.187	0.055	0.286
Seeking social support → patient Satisfaction	-0.028	0.071	-0.168	0.111	0.689
Seeking social support → self-rated health	0.181	0.054	0.072	0.288	0.011
Fellow patient x compliance→ patient satisfaction	-0.05	0.031	-0.116	0.007	0.082
Fellow patient x compliance → anxiety	0.063	0.027	0.010	0.115	0.019
Fellow patient x compliance → seeking social support	0.081	0.027	0.027	0.1340	0.003

Tab. 2: Direct relationships between the measured constructs – study two

consistency was shown with a Cronbach's alpha value of 0.858. Patients' satisfaction with the hospital was quite high (mean score 4.91, *SD*=1.74). The mean score of self-rated health was 5.35 (*SD*=1.32) with a Cronbach's alpha value of 0.5, and the mean score of compliance was 5.04 (*SD*=1.70) with a Cronbach's alpha value of 0.896. *Fig. 2* shows the results of study two in a path model, and *Tab. 2* shows the direct relationships and the results of the moderation.

Again, H1 is not supported: the fellow patient had no positive significant impact on self-rated health. Moreover, none of the control variables had an impact on the outcome. Satisfaction with the fellow patient had a significant positive impact on patient satisfaction, as did patient satisfaction on self-rated health. Thus, H2 is accepted. H3a and b and H4a and b, which assumed mediations through patient satisfaction, anxiety, or seeking social support, are rejected because of the missing significance of at least one direct path.

However, the addition of compliance as a moderator shows interesting results. First, *H5a* is rejected, since the assumption that compliance increases the influence of fellow patients on patient satisfaction was not supported. However, H5b and H5c are accepted: the compliance of the patient has an influence on the relationship between the fellow patient and anxiety or seeking social support. A closer look at the moderation relationship also shows that the moderating effect of compliance is reflected in the mediation of fellow patients on anxiety and on patient satisfaction. This moderated mediation effect, however, only arises for patients who are less compliant (*b*=0.091; *CI* 0.032, 0.166). Moderation of the relationship between fellow patient and seeking social support, in contrast to anxiety, is reflected in self-rated health. This moderated mediation is only found in highly compliant patients (*b*=0.032; *CI* 0.009, 0.071).

The influence of the control variables on the health constructs was similar to that found in study one. Female patients were significantly more anxious than male patients (*b*=0.686; *p*=0.003), and anxiety increased with more time spent with a fellow patient (*b*=0.033; *p*=0.031). In study two, with more time together patients sought more social support (*b*=0.041; *p*=0.008), and this was true especially for women (*b*=0.450; *p*=0.053). In addition, patients who had an operation felt more satisfied with the hospital (*b*=-0.694; *p*=0.002) compared to those who did not have an operation. There were no significant influences of the control variables on self-rated health.

5. Discussion

The present studies were conducted to identify the impact of fellow patients on health-related constructs. To look more deeply into the complex relationship between the different constructs, the studies investigated mediations through patient satisfaction, anxiety, and seeking social support. Additionally, the impact of patients' compliance as a moderator was investigated because it was suspected that compliance is not only an outcome, but also a preconfiguration of the patient. Besides considering the explanatory role of influences from the fellow patient, the studies also examined whether the fellow patient affects patient satisfaction and self-rated health in cases of low, middle, and high compliance. Study one focused on relationships

between the different health-related constructs, and study two investigated the relationships with compliance as a moderator.

The studies also investigated the impact of the fellow patient on self-rated health, which represents a major health care outcome and an indicator of morbidity and mortality (Burström and Fredlund 2001). The results reveal no direct influence of the fellow patient on self-rated health; however, both studies confirm indirect effects. In study one, mediation was found through patient satisfaction and mediated mediation via anxiety and patient satisfaction, and seeking social support and patient satisfaction. Thus, the assumed direct relationship between fellow patient and self-rated health was not supported. However, the fellow patient was found to have an indirect influence through other constructs; thus, this construct cannot be neglected.

In both studies, the fellow patient was found to have positive outcomes for both the patient and the hospital. As per H2, in both studies it was found that the fellow patient leads to higher patient satisfaction with the hospital. This confirms the suggestion posited in many qualitative studies that the fellow patient can have a positive influence on the evaluation of the hospital. In turn, this impacts self-rated health. For hospitals, this could mean not only that their own value in the hospital market can be increased, but also that the patient's health can be better assessed after their stay. Since an increase in satisfaction has an additional effect on loyalty and word-of-mouth, it has further positive effects for the hospital, which can strengthen positive effects in the health market. Moreover, with increased self-rated health come additional positive outcomes, such as a reduction in mortality. Hospitals can also use this as a positive point in quality reports to further strengthen their position. The finding that compliance does not influence the relationship here should be further investigated in future research.

The mediation effect found via anxiety also proves that reducing anxiety can increase patient satisfaction. A reduction of anxiety often means a decrease in stress and thereby a better initial situation for treatment and recovery. Thus, the fellow patient not only has a direct effect on the focal patient's hospital evaluation, but the fact that the fellow patient reduces the focal patient's anxiety can help the hospital to improve the focal patient's stay and facilitate the treatment. As mentioned above, anxiety increases stress, which is an additional burden for patients who have to cope with the unfamiliar environment in hospitals and could lead to an increase in, or further, illness (Consedine and Moskowitz 2007; Laursen et al. 2014). With a reduction in anxiety, these negative effects might be reduced. The fact that the fellow patient in study two only leads to higher patient satisfaction in relation to the mediation through anxiety when the patient is not compliant could be explained with reference to person-environment fit theory. This theory considers how well people's abilities and perceptions fit their present environment, and suggests that people prefer environments that conform to their characteristics, since such environments reduce stress (Quick et al. 2001). If the patient is non-compliant, the instructions of hospital staff are not followed and a worse person-environment fit results. However, patients cannot change their situation or may not want to change their mindset. In this case, they have to search for other environmental sources to increase their fit and prevent stress. The results of the study indicate that the fellow patient, as part of the hospital environment, is able to improve person-environment fit so that anxiety decreases and patient satisfaction and self-rated health increase. This also strengthens the market value of the hospital, and leads to positive effects such as increased loyalty, positive word-of-mouth, and positive statistics for health outcomes.

The mediation of seeking social support only strengthened patient satisfaction in study one. In study two, the coping behavior was found to be strengthened via the addition of compliance; it was also found that highly compliant patients assess their health more positively if their coping behavior is strengthened by the fellow patient. In light of person-environment fit theory, we can assume that, alongside physicians and other hospital staff, the fellow patient can improve the focal patient's person-environment fit by enabling the focal patient to use social support as a strategy to handle their problems (Quick et al. 2001; Searle et al. 2001). This has also been confirmed by various studies that have ascribed different characteristics to the fellow patient. Above all, fellow patients are informants, supporters, and role models (Isaksen and Gjengedal 2006; Larsen et al. 2013). When fellow patients satisfy these aspects, focal patients may attribute greater value to them as supporters and use them as a resource for coping. An improved ability to cope with the hospital situation can facilitate treatment of the patient, since the patient can control his or her emotions better and avoid becoming overwhelmed by the situation. The limited ability of patients to act is a challenge for hospitals; the findings of this study suggest that this challenge can be mitigated via the fellow patient. Nevertheless, these are presumptions and further research should investigate which fellow patient characteristics lead to higher instances of seeking social support for compliant patients. Therefore, measuring satisfaction with fellow patients would also be useful.

Alongside the coping strategy of seeking social support, other coping strategies could be associated with the fellow patient. However, these were not considered in our research. Through comparison with fellow patients, focal patients could see what others do differently and whether this leads to better or worse health. For example, a fellow

patient who accepts their conditions and seems satisfied and healthier could activate the focal patient to accept his or her own conditions as well. This could also work for other coping strategies; for instance, some fellow patients might use humor as a coping strategy. On the other hand, negative strategies, such as avoidance or restraint, could also be adopted by the fellow patient, and attention should be paid to the fact that patients tend to avoid downwards comparison whereby they see themselves as doing better than the fellow patient (Bennenbroek et al. 2002). Thus, if the fellow patient is doing worse than the focal patient, it could increase feelings of uncertainty, burden, and anxiety (Larsen et al. 2013). Further studies should include other coping strategies to see whether the fellow patient also influences these strategies; in addition, they should investigate whether such influence depends on similarity or on better environmental fit.

Alongside the findings regarding the independent and dependent constructs, the control variables provide interesting results. Both studies showed that increased time together also increases anxiety and coping. This could imply that time spent with a fellow patient should not be limited. A reason for this could be increased loss of control and privacy. More time together also indicates a longer duration of stay in the hospital, which could indicate a longer recovery, leading to uncertainty about health and anxiety about remaining ill. Future studies should investigate how long patients can spend together for the effects to be positive; whether the reason for negative effects from time spent together include increased anxiety resulting from loss of control and privacy; and whether the effect occurs because of the time spent together or a longer hospitalization overall. Since increased time together also increases coping, which could lead to a reduction in anxiety, the effects may cancel each other. However, if hospital management expects a long hospitalization for a patient, they should try to bring together patients with similar planned durations of stay to benefit from the positive effect, which will also improve patient satisfaction, as indicated in study two.

Study one verified that patients who did not have an operation were more anxious. Because of the positive influence of the fellow patient, the presence of a roommate could be helpful for these patients. As per Kulik et al.'s (1993) study, post-operative fellow patients in particular could reduce anxiety. By focusing on the fellow patient, future research could also identify additional indicators as to the types of patients that could reduce anxiety for those who are not having an operation. In addition to the negative impact of operation status on anxiety found in study one, study two showed that the influence on patient satisfaction was negative. Again, the fellow patient could be used to improve patients' evaluations and thus also to stimulate relevant outcomes such as word-of-mouth.

Our research showed no significant group differences between the hospital units on an outcome variable, so it seems that the fellow patient could improve anxiety, coping in the form of seeking social support, patient satisfaction, and self-rated health in any unit. Nevertheless, future research should investigate this further by including more participants from every unit. Recent studies have indicated that fellow patients could be helpful for focal patients in units that treat serious illnesses (Larsen et al. 2014; Wilson and Luker 2006). The type of disease and the seriousness thereof were neglected in our study, but these factors could also affect patient outcomes. On the one hand, the health status of the patient could lead to different evaluations. For example, patients with serious illnesses may not want to have a roommate and rather be left alone. On the other hand, the seriousness of the illness of the fellow patient could be a burden and lead to anxiety (Larsen et al. 2013). In this case, patients may make a downward comparison (Ell et al. 1992; Poole et al. 2001). Hence, future studies should ascertain the reason for hospitalization and the seriousness of the illness.

6. Limitations

Despite the strengths of our study, there are several limitations that imply the need for further research. As already noted, some additional possible constructs could explain the influence of the fellow patient in more detail. The reason for the positive influence could pertain to a reduction in uncertainty and boredom, as well as increased knowledge about hospital life and illnesses (Larsen et al. 2013). However, the presence of a fellow patient also leads to negative effects, such as loss of privacy, worries about health, and feelings of being burdened, and these were not considered in this research. Future research should include these constructs and investigate whether the negative impact of the fellow patient leads to a reduction in patient satisfaction. Additionally, such constructs can provide detailed insights into the relationship between the fellow patient and health outcomes, thereby completing the model.

Another limitation pertains to the measurement of the fellow patient. Although use of a global item is an accepted device to measure a construct without scales, future research should develop a suitable measurement to assess the fellow patient. Researchers could examine, for example, which characteristics make someone a good fellow patient, and which are decisive for a positive or negative influence of the fellow patient.

The self-evaluation of respondents in connection with self-rated health and compliance could also be regarded as a limitation. Studies have indicated that patients' evaluations of their health status are often appropriate (Bur-

ström and Fredlund 2001; Rohrer et al. 2007), but additional assessment by a physician would be of benefit. Furthermore, a detailed breakdown of health attributes could provide additional information about the areas in which health is rated as good or bad. The same is true for the evaluation of compliance. In our investigation, compliance was measured through two items that asked about compliance with taking medicine. Considering the growing interest of patients in participating in treatment, future research should investigate adherence in addition to compliance. Adherence is defined as a partnership between patient and physician where the patient is free to follow physicians' instructions (Vermeire et al. 2001). Respondents' self-assessment of compliance could have been biased because they were conducting the evaluation up to five years after their hospitalization. Furthermore, respondents may not have wanted to admit that they were not compliant and that they did not follow their physicians' instructions.

A further limitation is the implementation of the survey with former patients. Given that the respondents' hospitalization occurred years ago, their evaluation could have been biased. Respondents might have had confused or unreliable memories, which could have lead to inaccurate evaluations. Additionally, for some respondents it might have been difficult to remember everything. On the other hand, the gap between their hospitalization and taking the survey could have led to more exact decisions, because factors such as thankfulness and fear of poor treatment were not at the forefront. Therefore, patients' evaluations could have been more reliable given the amount of time since their hospitalization.

Additional possible constructs that could be investigated include personal characteristics of the patient, to identify what kind of person prefers a fellow patient. Moreover, feelings of thankfulness toward hospital staff and fellow patients could be considered in future studies. Empathy and compassion for the fellow patient might also impact evaluations of the fellow patient. In addition, Bennenboeck et al. (2002) found that dissatisfaction with information from hospital staff increases the seeking of information from fellow patients.

7. Practical implications

This study shows that the positive influence of the fellow patient can increase the focal patient's satisfaction with the hospital. This finding should be useful for hospitals and their individual units because other patients are omnipresent and part of the hospital environment. Hospital staff tend to put patients of similar ages and with similar illnesses together, as it has been shown that these similarities can lead to satisfaction (Luther et al. 2016). Our findings show that other attributes should also be considered. For example, behavior patterns such as compliance can be recorded in patient discussions, which would then enable anxious patients or patients with negative coping habits to be brought together with fellow patients. In addition, patients in single rooms who are very anxious and want to improve their coping behavior could also be roomed with other patients. This may lead to an improvement in satisfaction and thus to a positive evaluation of the hospital.

Our research also shows that the fellow patient has a positive influence on self-rated health. As with patient satisfaction, hospital staff could bring together patients with similar self-rated health. Studies have shown that with better self-rated health, morbidity and mortality rates decline (Burström and Fredlund 2001; Eriksson et al. 2001). In addition, high self-rated health leads to patient satisfaction (Jackson et al. 2001; Rahmqvist and Bara 2010). The positive impact of the fellow patient should be used by hospital management, especially for female patients. Both our studies found that women are more anxious, more likely to seek social support, and more satisfied with the hospital, which is in line with findings revealed in other research (Rahmqvist 2001; Tuncay et al. 2008).

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Keywords

Fellow Patient, Patient Satisfaction, Self-rated Health, Health Care Quality, Hospital Satisfaction

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Research in individual services and service industries is of central importance in national as well as international contexts. However, there is still a need for further research, as concepts and theories developed for the analysis of (manufacturing) industrial activities do not apply to the service sector, which is characterized by immaterial commodities.

Therefore, the research focus of the Institute of Business Administration of the University of Rostock is dedicated to 'Service Management and Service Markets'. To further the scientific exchange on these topics, the institute hosts a conference in Rostock, covering recent developments in service research. The conference serves business economists, economists, business psychologists, sociologists or other service-oriented researchers.

We would like to invite all interested parties to participate in the seventh Rostock Conference on Service Research, presenting their research results. Formats will include oral (30 min. plus 15 min. for referent discussant and discussion) as well as poster presentations. **Contributions** from all areas of business administration and all disciplines researching in the field of services are welcome. The contributions could cover, but are not limited, to topics regarding the functional aspects of services (e.g. work system design, customer-employee interactions, the design of innovative services, services controlling) or research taking an institutional perspective on specific services such as financial services providers, tourism enterprises, tax advisors, auditors, or logistics companies. In line with the last conferences on service research in Rostock, the research committee will award the best poster. The opening keynote speech will be given by Prof. Dr. Andreas Pfingsten (Finance Center Münster, Institut für Kreditwesen, Westfälische Wilhelms-Universität Münster).

Within the framework of the conference, the annual meeting of the scientific commission service management within the German Academic Association for Business Research (VHB) will be held as a separate track. The conference language is German as well as English.

Please submit your contribution as an **extended abstract** (1.000 words max.), either in English or German before **March 31st 2021** via https://www.conftool.net/dl-tagung-2021/. The extended abstract should cover the research questions, the research method as well as the essential results. You will be notified whether your submission is accepted or rejected during May 2021. Further information about the conference as well as a format template for the extended abstract is available on the internet at

http://www.dl-tagung.de.

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SMR JOURNAL OF SERVICE MANAGEMENT RESEARCH

Call for Papers
Emotional Labor and Service

Special Issue Journal of Service Management Research

Guest Editors:
Andrea Fischbach, PhD., Professor of Social, Work, and Organizational Psychology at German Police University
Benjamin Schneider, PhD., Professor Emeritus of Psychology at University of Maryland, College Park

Deadline: November, 29th, 2020

Emotional Labor and Service

When Arlie Hochschild introduced the concept of emotional labor in her seminal book „The Managed Heart" (Hochschild 1983), she connected the construct to service work with two key observations. First, service organizations manage their service workers to engage in emotional labor in order to benefit customers' service experiences, satisfaction, and retention. Second, while emotional labor is beneficial for customers it may be costly for service workers. Since then, emotional labor has been an area of expanding research interest in organizational psychology and organizational behavior, as illustrated by recent reviews and meta-analyses (e.g., Grandey & Melloy 2017; Hülsheger & Schewe 2011). Current research has focused on the theoretical perspective on emotional labor as emotion regulation, which is defined as „the process by which individuals influence which emotions they have, when they have them and how they experience and express these emotions" (Gross 1998, p. 275). The core of emotional labor as emotion *regulation* is that service workers regulate their own emotions in order to display appropriate emotions in service encounters. Obviously, appropriate emotions are those emotions in line with the customer service role.

However, the emotional labor as emotion regulation perspective vis a vis customers may overlook other aspects involved in emotional labor in service work (Bowen & Schneider 2014; Zapf 2002), specifically the dissonance created for workers between their own inner feelings and the positive behaviors (emotion-rule dissonance) in pursuit of appropriate service behavior. That dissonance may yield detrimental negative felt emotions as a source of stress (Semmer, Messerli, & Tschan 2016). Those emotions may be triggered by negative customer behaviors (Fischbach & Zapf 2004; Rupp & Spencer 2006) but context variables like the service climate and the internal service quality emphases may also be a source of service workers' negative feelings (Bowen & Schneider 2014; Hong, Liao, Hu, & Jiang 2013). Unfortunately, little is known to date about the effects of a service organization's service climate and internal service on emotional labor and its effects on either customers or service workers. In order to broaden our understanding of emotional labor research beyond the emotional labor as emotion regulation focus, this special issue seeks to explore the role of emotional labor with a particular focus on the service context in which it occurs.

We welcome interdisciplinary contributions from disciplines like service management, organizational behavior, and occupational health psychology that consider emotional labor in context. Thus, exploration of issues such as the following are welcome: automatization (Paluch & Wirtz 2020), demographic changes (Dormann, Brod, & Engler 2017; Lichtenthaler & Fischbach 2016), proactive service behaviors (Lichtenthaler & Fischbach 2018), detangling negative affect from the surface acting concept (Semmer et al. 2016), low-cost service industries (Rajaguru 2016), violence, aggression and lack of respect in service encounters (Rupp & Spencer 2006), or customers' roles and activities in service delivery coproduction and cocreation (Anderson & Ostrom 2015).

We seek contributions that approach these kinds of issues vis a vis emotional labor in context:

- Theory development (e.g., models and conceptual frameworks that integrate emotional labor in the service context, like integrating emotional labor in the service climate research framework).
- Methodological advancements (e.g., studies that validate advanced measures of emotional labor task characteristics and emotion regulation strategies).
- Interplay between service climate characteristics/internal service characteristics and emotional labor (e.g. studies that demonstrate how service oriented leadership, HR practices, and system support affect emotional labor antecedents and consequences).

– Simultaneous effects of service work design and redesign on service workers and customers (e.g., studies that demonstrate how service characteristics affect service worker health and well-being and in turn emotional displays in service encounters).
– Expanding emotional labor research on unit-levels, organizational-levels and occupational levels (e.g., determinants and consequences of unit-level emotional labor; explaining emotional labor characteristics and consequences across occupations).
– Expanding emotional labor concepts (e.g., determinants and consequences of detachment strategies in emotional labor; external emotion regulation and sensitivity as an emotional labor requirement).
– Exploring the possible effects of context to mitigate the potential negative consequences of emotion regulation.

Submission

All manuscripts submitted must not have been published, accepted for publication, or be currently under consideration elsewhere. Manuscripts should be submitted in accordance with the author guidelines available on the journal homepage https://rsw.beck.de/zeitschriften/smr/for-authors.

All submissions should be made via https://www.openconf.org/smr/.

Submission Deadline: 11/29/2020, Expected Publication: Issue 4–2021

Please direct any further inquiries to the editors, listed below.

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