

# Theories of Organizational Stress

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Cary L. Cooper

Manchester School of Management  
The University of Manchester Institute of Science and  
Technology (UMIST)  
Manchester  
UK

## 8

## Stressors, Innovation, and Personal Initiative:

### Are Stressors Always Detrimental?

Doris Fay, Sabine Sonnentag and Michael Frese

#### Introduction

This chapter will focus on the relationship between stressors, innovation, and personal initiative. Both innovation and initiative are theoretically and practically important concepts. Personal initiative can be conceptualized to be part of the general research area of contextual performance (Organ, 1997), which has received much attention due to its relevance for organizational effectiveness and improvement of production procedures or services (Frese *et al.*, 1997; Podsakoff and Mackenzie, 1997). Likewise, with increasing global competition the pressure to innovate is becoming stronger. Research on stressors has consistently proved their negative effects on health, performance, and satisfaction (Kahn and Byosiere, 1991; Zapf *et al.*, 1996).

In this chapter we want to establish a link between the separate lines of research on innovation and personal initiative on the one hand and stressors on the other. The relationship of stressors, innovation, and personal initiative will be discussed from various perspectives: we shall consider the negative effects of stressors on both activities and we shall also explore the potential positive effects of stressors. Literature will be reviewed for both approaches.

#### Central Concepts

##### Innovation and Personal Initiative

**Innovation** Innovation is a rather broad term that may refer to a product, to an outcome or to a process (Anderson and King, 1993). West and Farr (1990) defined innovation as 'the intentional introduction and application within a role, group, or organisation of ideas, processes, products or procedures, new to the relevant unit of

adoption, designed to significantly benefit the individual, group, organisation or wider society' (p. 9). Amabile and her co-workers conceptualized innovation as the successful implementation of creative, i.e. novel and useful ideas within an organization, even though these creative ideas do not necessarily come from within that organization but may also include ideas produced elsewhere (Amabile, 1988; Amabile *et al.*, 1996).

Innovation has to be differentiated from creativity. Creativity is related to generating novel ideas for the individual while innovation refers to ideas that are new for the organization, the work group or work role, but not necessarily for the individual putting these ideas forward. Furthermore, creativity comprises only the production while innovation requires also the implementation of novel ideas (Amabile, 1988; Anderson and King, 1993; West and Farr, 1990). This implies that innovation always affects others directly or indirectly; thus, innovation has been conceptualized as a social process, while creativity is an intraindividual cognitive process (West and Farr, 1990).

In general, individual, group, and organizational level innovations can be differentiated (Staw, 1984). Here, we will focus on the individual level view and will mainly concentrate on individuals as innovators. One important type of innovation at the individual level is work role innovation. Role innovation is characterized by 'the intentional introduction within one's work role of new and useful ideas, processes, products, or procedures' (Farr and Ford, 1990: 63; cf. also Nicholson, 1984). It is crucial that such an 'innovation must be brought about by the role incumbent and not from a mandate from others' (Farr and Ford, 1990: 63). Role innovation has often been examined in the context of organizational socialization of newcomers (Allen and Meyer, 1990; Ashforth and Saks, 1996; Nicholson, 1984). However, role innovation is also possible for persons who have already been working a longer time within their jobs (West, 1987a).

**Personal Initiative** 'Personal initiative is a behavior syndrome resulting in an individual's taking an active and self-starting approach to work and going beyond what is formally required in a given job' (Frese *et al.*, 1996: 38). This implies that a person pursues self-set extra-role goals, which are consistent with the organization's overall mission; those goals are pursued persistently in spite of barriers and setbacks, and have a long-term focus on work.

At work, people do not usually self-start their actions. Job holders carry out the tasks demanded in their job descriptions, follow additional assignments given by the supervisor, or complete favors asked by colleagues. These activities are not self-started as they are carried out on the basis of external requests and of expectations to fulfill the work role. If, however, an individual develops an additional goal and executes it without being asked to do so, this is an act of initiative. Imagine, for example, the computer expert of a department, who is formally responsible for error-free functioning of personal computers and printers. If this expert implements a method for saving paper for printing (e.g. by installing a gadget that allows the printing of drafts on used paper), he or she has developed an extra-role goal whose execution was self-started—this is an act of initiative.

A further important feature of initiative is that the action is characterized by a long-term focus: initiative often aims at removing and preventing re-occurring problems, anticipating future demands, or increasing efficiency.

The definition of personal initiative makes no specific assumptions on the content of initiative—with one exception: personal initiative comprises only actions that are in accordance with the company's goals. Harmful activities such as stealing the company's resources are self-started, but deliberately excluded from the category 'personal initiative'; this is not the focus of our interest here.

Although the organization profits from initiative, not all organizational members may support initiative unconditionally and immediately: colleagues and supervisors may fear the changes because of initiative. Additional obstacles may appear because of technical problems. These social and physical barriers make achievement of the self-set goal difficult. Thus, persistence is crucial for initiative.

Pursuing a self set goal can—for some time—be in conflict with assigned goals. Thus, when taking initiative, an employee might act against an order of the supervisor or violate company rules to eventually reach a pro-company goal. Hence, initiative can include an element of disobedience or rebellion.

### Differentiation Between Innovation and Personal Initiative

In the past, creativity and innovation have been successfully differentiated (Amabile, 1988; Anderson and King, 1993; West and Farr, 1990). Personal initiative has been differentiated from other, related concepts such as organizational citizenship behavior or achievement motivation (Fay *et al.*, 1998; Frese *et al.*, 1997). The question arises whether and how innovation and personal initiative are different from each other. In a first step, the differentiation between innovation and personal initiative will be discussed; in a second step we will focus on the special case of role innovation.

Both innovation and personal initiative are actions that refer to the implementation of ideas within a given work setting. Therefore, a wide range of events or phenomena can be subsumed under both terms. Imagine a catering service confronted with customer complaints. Within the normal work procedure, there is no way of dealing with those complaints except sending a letter of apology. If a member of the catering team suggests and organizes regular meetings in which customer complaints are to be discussed and when this person insists in finding solutions to typical complaints—this activity is both innovation and personal initiative. The idea of complaint meetings is both new to the catering team and it is a self-started activity aimed at improving the service in the long run.

However, innovation and personal initiative do not overlap completely. First, innovation implies that the idea, procedure, or process is new to the context in which it is to be implemented. In contrast, personal initiative does not need to be novel. Second, a crucial characteristic of personal initiative is that it is self-started and that it goes beyond the formal requirements of the job. This does not necessarily apply to innovation: innovation can be both self-started or part of an assigned task. The latter, for example, is the case when designing new products (Ancona and Caldwell, 1992).

Role innovation refers to the implementation of new ideas, behaviors, or procedures in one's *work role*. Therefore, there is some overlap between personal initiative and role innovation, but again, both concepts should not be equated as they differ in two aspects. First, role innovation refers to innovating some aspects of one's role by fulfilling *role requirements differently*; for example by choosing other methods for achieving work targets or by rearranging the order in which different parts of the job are done (West, 1987a). In contrast, personal initiative pursues *extra-role* goals. Second, role innovation is a rather descriptive concept focusing on *doing one's job differently* from others (West, 1987a), irrespective of the time-frame or goals associated with these innovative behaviors. Role innovation does not necessarily include features crucial for personal initiative such as a long-term focus and persistence when confronted with barriers and setbacks. Imagine a newcomer in an organization who adjusts some features of her job so that they fit her personal working style better. This is clearly role innovation but—in the absence of a long-term goal—no act of personal initiative.

### Predictors of Innovation

A considerable number of studies examined possible predictors of individual innovation (for reviews see Ford, 1996; King, 1990). Research addressed both individual and situational characteristics. With respect to individual characteristics the most prominent predictors of innovation are intrinsic motivation, domain-relevant skills, and creativity-relevant skills (Amabile, 1988). A consistent finding with respect to situational factors is that control at work, availability of resources, and supportive leadership are positively related to innovation (Amabile *et al.*, 1996; Scott and Bruce, 1994; West, 1987b). The effects of stressors in the work situation on innovation were relatively seldomly examined. We will refer to these studies later in this chapter.

### Predictors of Personal Initiative: Job Characteristics, Individual Characteristics and their Relationship to Initiative

Frese (1997) developed a comprehensive prediction model of initiative. This theoretically driven model distinguishes between environmental supports, skills, individual characteristics, and orientations as predictors of initiative. Some parts of the model have been empirically tested. Results indicate that resources such as job control and complexity are relevant environmental supports (Frese *et al.*, 1996; Frese and Hilligloh, 1994). Control at work—opportunities to make relevant decisions about one's work and one's working conditions—is assumed to support initiative as it has an impact on employee's motivation to redefine their tasks in a broader way (thus, including extra-role goals), and on their sense of responsibility for their job. Furthermore, control at work makes it easier to leave the routine tracks of one's work. Job complexity advances the development of a high level of skills and knowledge which in turn helps to conceive of alternative ways of doing one's job (Frese *et al.*, 1996).

With respect to individual characteristics job qualification (Frese and Hilligloh, 1994), low psychological conservatism (Fay and Frese, in press) and achievement

motivation (Frese *et al.*, 1997) have been found to be predictors of initiative. Finally, motivational variables such as control aspirations (Frese *et al.*, 1994), change orientations (Frese and Plüddemann, 1993, Frese and Hilligloh, 1994), and self-efficacy (Speier and Frese, 1997, Frese and Hilligloh, 1994) support the unfolding of initiative.

Thus, initiative requires a minimum of control at work, otherwise independent action is impossible. A certain degree of qualification is necessary, otherwise there is a lack of ideas on alternatives to the usual procedures. Control aspirations are important as low control aspirations imply a rejection of responsibility: no out-of-the-ordinary action is taken when responsibility is perceived as threatening. Furthermore, initiative will only be taken when an individual is ready to cope with the potential changes in the environment that his actions are likely to evoke, and when the individual believes that she or he can affect the environment.

### Stressors at Work: Action Theory as a Framework

We will use action theory as a framework to describe stressors (Hacker, 1986; Frese and Zapf, 1994). Within action theory actions are central and the way they are regulated in work processes. An action can be defined as a behavior that is oriented towards a goal. On a conceptual level, several phases within the action process are distinguished. An action starts with a goal, which is followed by orienting oneself and acquiring information, developing plans and deciding on one, executing the plan and monitoring its execution, and finally relating feedback to the goal in order to test whether the goal has been achieved.

Furthermore, action theory assumes that actions are regulated at various hierarchical levels (Frese and Zapf, 1994; Hacker, 1986), such as the sensorimotor level, level of flexible action pattern, intellectual and heuristical level. The levels of regulation differ in the degree to which conscious or non-conscious automated processes are involved.

Stressors are defined in relation to the regulation of actions: anything which *disturbs the regulation* of the action process is a stressor (Frese and Zapf, 1994; Semmer, 1984). A taxonomy of regulation problems distinguishes between three different factors resulting in disturbed regulation: (1) regulation obstacles; (2) regulation uncertainty; (3) overtaxing regulations (Frese and Zapf, 1994; Leitner *et al.*, 1987; Semmer, 1984).

**Regulation Obstacles** Regulation obstacle (Leitner *et al.*, 1987) is any event or condition 'that makes it harder or even impossible to pursue a goal or to regulate an action' (Frese and Zapf, 1994: 311). Without this obstacle, the action is 'intact'. Generally, regulation obstacles are stressors because they require additional efforts for task completion. Obstacles necessitate repetition of the action, force the actor to make detours, or they use up regulation capacity, subtracting it from the main task.

One can distinguish between interruptions and regulation difficulties. An interruption can be caused by disruptions of functions such as a computer breakdown, by people for example through phone calls, or by blockages. These interruptions are

regulation obstacles because one has to restart the task again, or parts of the task already executed may be lost. Regulation difficulties appear when accessibility of relevant information is more difficult than necessary, or when movements need additional effort, for example due to inadequate tools.

Organizational problems can be regarded as regulation obstacles: material that fails to come in time or in the required quality causes interruptions of the action process. Social stressors such as hostile, arbitrary behavior of a supervisor or other social tensions are regulation obstacles as well: They divert attention from the main task to thoughts and worries about the relationships; therefore social stressors consume regulation capacity (Dunckel, 1991).

**Regulation Uncertainty** The working individual experiences regulation uncertainty when goals are badly specified, or when it is unknown which plans lead to the goal, what feedback is relevant, or when there is no or inadequate feedback. Instances of regulation uncertainty are qualitative overload (Frankenhaeuser and Gardell, 1976), role conflict, and role ambiguity (Kahn, 1973). Receiving contradicting assignments (such as: do your job extremely fast, but do not fall below the quality standards) causes a situation in which it is not clear which operations are able to accomplish both requirements; likewise, unclear task assignments make adequate goal development difficult.

**Overtaxing Regulations** Regulations are taxed (and may be overtaxed) when actions have to be regulated with high speed or intensity. Typical strains on regulation are time pressure or quantitative overload, such as information overload. To ensure task accomplishment, more processing resources have to be allocated to regulation, which means that energy or concentration have to be increased.

Research on stressors and actions has predominantly used a framework that investigates the *negative effect of stressors on action*. Schönplflug and his co-workers however, turn the table around and consider the *stress producing effect of actions* (Schönplflug, 1985, 1986). Actions consume energy and require effort to set goals, plan, and process feedback, therefore, actions have to be regarded as potential stressors themselves (Frese and Zapf, 1994).

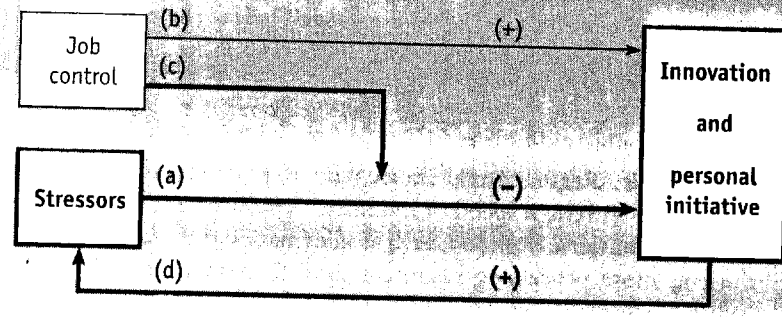
### The Relationship between Stressors, Innovation, and Personal Initiative

The relationship between stressors, innovation and initiative will be described from three different perspectives: in a first approach we look at the detrimental effects of stressors by discussing how stressors impair the regulation of actions, hence, also the regulation of innovative and initiative actions. Second, we look at the reverse effect by considering in what respect innovation and initiative themselves can cause stressors, for example by evoking additional time pressure or organizational problems. Both relationships—stressors' negative effect on innovation and initiative and the reverse effect of actions on stressors—are depicted in Figure 8.1. Third, a model is developed that considers stressors to lead to the option for being innovative or taking initiative; this is shown in Figure 8.2. As a final point in this section, this submodel will be discussed in the framework of coping theory.

## Stressors Reducing Innovation and Personal Initiative

Stressors can be detrimental to actions (arrow (a) in Figure 8.1). Generally, acts of innovation and initiative aim at improving work processes and procedures or preparing for future problems or demands. Thus, before innovation or initiative is started, opportunities for such actions have to be identified. Spotting these opportunities, for example by anticipating future circumstances, happens presumably in the course of long-term planning and of scanning processes. In the presence of a certain degree of stressors, all of the limited regulation capacity is needed to accomplish the task requirements and to deal with the stressors. This diminishes scanning and long-term planning (Frese and Zapf, 1994).

**Fig. 8.1** Stressors as a hindrance to innovation and personal initiative, and the reverse effect of innovation and personal initiative on stressors



Farr and Ford (1990) pointed out that stressful work situations can impede role innovation. They argued that an organization must provide some 'slack' that allows an individual to think about the future. In situations of extreme workload in which one is only *re-acting* on immediate requests no time and possibilities are left for innovative, long-term thinking.

West and Altink (1996) described 'psychological safety' as an important prerequisite of individual innovation. They argue that in work situations in which employees feel unsafe, insecure, and threatened, innovation will be less likely to occur. Stressors might contribute to such unfavorable feelings; therefore, they can be seen as indirect barriers to innovation.

Thus, one mechanism suggests that stressors reduce the likelihood of identifying opportunities for innovation and initiative, thereby impeding these actions.

Furthermore, if we assume that stressors make action regulation generally more difficult, this should also apply to innovative and initiative actions. Innovation and initiative imply non-routine kind of actions. Next to goal development, it is necessary to engage in planning, which needs resources as no ready made action plans are available. These actions require a high amount of regulation capacity, which are especially vulnerable to regulation impairments.

Imagine a receptionist of a medical doctor's practice who has frequent difficulties with her computer. Busying herself with the time-consuming necessity of retrieving data and carrying on with her everyday work leaves her no room for initiative, for example for implementing changes in scheduling patients, which she might have already planned with her colleagues. Amabile *et al.* (1996) similarly suggest workload pressures and organizational impediments, such as conservatism and formal, rigid management structures, as obstacles to creativity and innovation. They argue that the production of novel ideas requires time for the exploration of alternative possibilities. If workload produces time constraints, creativity suffers.

Thus, a further way in which stressors are assumed to negatively affect innovation and initiative is by impeding the development and execution of plans.

Turning now to the environmental supports for innovation and initiative, we have pointed out that control at work is an important support for both activities. In addition, there may be interactions with stressors: high control at work allows a change of environmental conditions in order to reduce or remove the stressors (Frese, 1989). Thus, the negative effects of stressors on innovation and initiative are less severe under high job control conditions. Consequently, job control has a direct, positive effect on innovation and initiative (arrow (b) in Figure 8.1) and a moderating effect for the relationship between stressors and both actions (arrow (c) in Figure 8.1).

## The Reverse Effect: Innovation and Personal Initiative Causing Stressors?

Schönpflug and colleagues argued that actions are factors that may themselves produce stressors and other problems: actions are effortful as they consume resources for preparation and execution, and actions can unintentionally aggravate problems or give rise to new ones (Schönpflug, 1985, 1986; Schulz and Schönpflug, 1982; also Frese and Zapf, 1994). In this section we follow this line of argumentation and apply it to innovative and initiative actions.

Stressors caused by actions can appear simultaneously with the action, or afterwards, with different duration (arrow (d) in Figure 8.1). First, we consider stressors that emerge concomitant with the action. We pointed out that all actions require cognitive resources, effort, and time; hence this applies also to innovation and initiative (Frese and Zapf, 1994). As a consequence of performing innovation or initiative as additional actions to the regular tasks, less time is left for accomplishing those. This can lead to time pressure, which is one case of overtaxing the regulation. If it is not possible to compensate for the time dedicated to such an additional action, an individual is forced to make a decision between the pursuit of the extra goal and the regular task. Then, the individual experiences role-conflict, which is an instance of regulation uncertainty. A further factor contributing to regulation uncertainty is novelty of the action: the individual knows what he or she wants to achieve with innovation or initiative, but not *how* to achieve it. This might cause organizational problems or other disruptions.

Furthermore, the social environment's evaluation of innovation and initiative is uncertain. Even when the outcomes are favorable, the implemented changes can cause undesired side effects, affecting colleagues or oneself; even simple changes of

working routines can be a cause of annoyance. Worrying about the opinions of others or others' negative responses tax the regulation capacity. Additionally, initiative implies the pursuit of an extra-role goal. This frequently involves the acting individual going beyond its bound of authority which can give rise to conflicts with the supervisor.

Negative long-term effects of innovation and initiative are also possible, for example, initiative can cause role overload in the long term. If some initiative turned out to be successful and appreciated, and if the circumstances that induced this activity reoccur, it is quite possible that the person shows the same initiative again. Imagine your colleague starts to check your mail while you are on vacation. She prevents the breaking of deadlines, she informs the affected people about delayed answers. Since you valued this highly, it becomes likely that she will integrate what was initially an extra-role task into her role definition. Accepting several additional tasks can cause role overload. Beneficiaries of initiative develop expectations about future actions of the active colleague, which lead to a situation in which the active person cannot simply drop the additional tasks.

To summarize, innovation and initiative can both cause a wide array of stressors, independent of the success of the intended goal, emerging at different points in time in relation of the action and with a different duration. Thus, innovation and initiative can produce considerable costs for the acting individual.

### Stressors as Options for Innovation and Personal Initiative

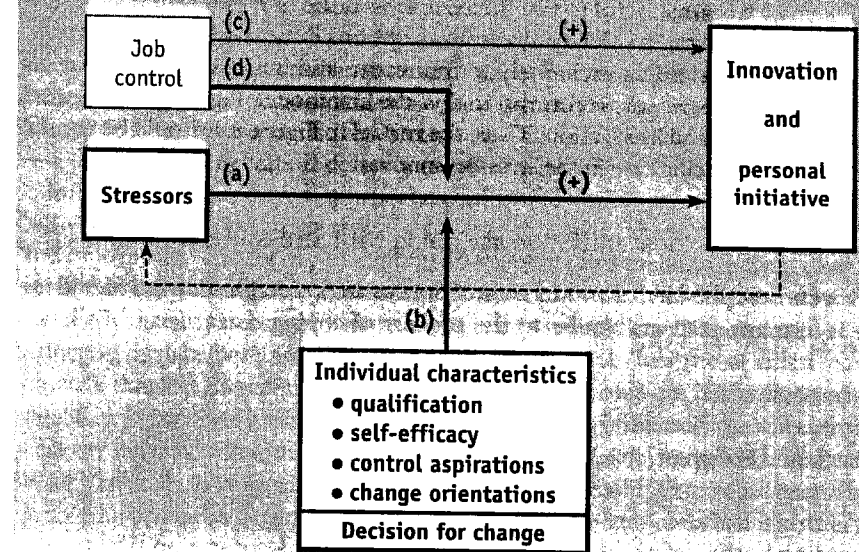
Stress research has demonstrated the detrimental effects of stressors on health, performance, and satisfaction (Kahn and Byosiere, 1991; Zapf *et al.*, 1996). Without denying the negative effects of stressors, we now take the point of view that stressors can also have a positive effect because stressors are signals indicating that a process or environment is not optimal. Objectively, this signal points to the fact that something can be improved, that there is an option to intervene in order to change any facet of the situation related to the stressor. With the development of this model we enlarge the model of Farr and Ford (1990) on role innovation. Figure 8.2 describes how stressors might lead to innovation or initiative.

The appearance of a stressor is the starting point (arrow (a) in Figure 8.2). Farr and Ford (1990: 64, Figure 1) referred to this as 'perceived need to change'; here, we call it 'option for innovation and initiative'. Subsequent to recognizing the stressor as an option for intervention, a conscious goal can be developed to change the environment in order to eliminate or reduce the stressor.

Actions against the stressor can be taken by the person experiencing the stressor or by someone else who only observes the stressful encounter. There can be a considerable time lag between the perception of the option and the time of action: actions are not necessarily taken in the actually stressful situation; this is more likely to happen when the stressor is not operative, when there is room for thought and action. Thus, people can become active after the mere *anticipation* of a recurrent stressor.

Whether the stressor is actually *used* as an opportunity for intervention depends on several individual and situational characteristics. As already pointed out, qualifica-

Fig. 8.2 Stressors as options for innovation and personal initiative



tion and motivational variables such as self-efficacy, change orientations and control aspirations are important individual prerequisites for innovation and initiative. This applies also to this specific incident of innovation or initiative. For example, an individual will only consider an innovative or initiative action against a stressor *under the condition* that she or he believes in her or his ability to manage the situation, thus, if she or he has sufficient self-efficacy. We suggest that these individual characteristics function as moderators in the relationship between the *option* for activity and *making use* of this option (arrow (b) in Figure 8.2).

Furthermore, the explicit wish to change the situation is a crucial precondition for action. The 'perceived payoff from change', as Farr and Ford (1990) named it, can be regarded as the major determinant of the decision. Even if the person shows all the important individual characteristics, he or she can make a deliberate decision against becoming active. One reason may be the anticipation of subsequent stressors as described above. The payoff is too small when the anticipated stressors outweigh the benefits.

A further variable influencing whether a stressor is used as an option for innovation and initiative is job control. The smaller the degree of job control, the more difficult it is for the individual to leave the working routine in order to intervene against a stressor. Thus, job control has both a direct positive effect on innovation and initiative (arrow (c) in Figure 8.2) and a moderator effect (arrow (d) in Figure 8.2).

In the previous section we described how innovation and initiative can give rise to stressors. The effect of innovation and initiative on stressors is here assumed to be

different: as the activities are intended to remove the stressors, stressors should decrease in the long run, given that the innovative or initiative activities are successful. A deteriorating effect however, is—as a short-term consequence—also likely.

At this point it seems useful to take a closer look at the outcome variable—initiative and innovation: the model on stressors as options for innovation and personal initiative (Figure 8.2) refers exclusively to innovative and initiative actions that are directed against the stressor; in contrast to this, the first model (Figure 8.1) comprises any act of initiative and innovation. Thus, the model in Figure 8.2 should be considered as one very specific case in the stressor–innovation/initiative relationship.

### Innovation and Personal Initiative as Coping with Stressful Encounters

The process described in the model on stressors as an option for innovation and initiative is in many respects similar to the process of coping. Lazarus and Folkman (1984: 141, italics in original) define coping as the person's 'constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person'.

Lazarus and Folkman (1984) differentiate between two coping strategies: *emotion-focused coping* seeks to regulate emotions that emerge with a stressor. *Problem-focused coping* is directed at changing the stressful person–environment relation.

According to the definition of coping, and supported by some empirical results, initiative and innovation in stressful situations can be regarded as instances of problem-focused coping. Problem-focused coping is often used when people experience work-related stress (Folkman *et al.*, 1986).

Folkman and colleagues (Folkman and Lazarus, 1980; Folkman *et al.*, 1986) suggested that problem-focused coping is used more strongly when an encounter is appraised as changeable; emotion-focused coping is more strongly employed when the troublesome situation is perceived as unchangeable. However, both forms of coping appear simultaneously in both changeable and unchangeable situations. This is similar to our notion that innovation or initiative taking can appear as a result of work stressors if the individual believes he or she has adequate means to manage them. Thus, innovation and initiative can be regarded as specific cases of problem-focused coping, a perspective also taken by Bunce and West (1996: 210, 211): 'Coping encompasses a broad range of responses which involve . . . dealing with the problem giving rise to the strain.'

However, there are also differences between innovation, initiative, and coping: first, innovative and initiative actions also occur when there is no stressor. Innovation and initiative can take place with the goal of making things better, or to improve any imperfection, irrespective of the existence of stressors.

Second, not every problem-focused coping strategy implies innovation or initiative. Imagine a production worker, who increasingly suffers from time pressure due to frequent machine breakdowns. When the machine stops functioning again, he uses problem-focused coping if he concentrates on things such as: 'Where am I going to find the toolsetter as quickly as possible? Is any colleague around who might be of help?' and searches then for help. But this is definitely not innovation (as it is not novel

to the unit) nor initiative (as it is in-role behavior). If that very person, however, calls the toolsetter and asks to be *taught* how to repair the machine, then he takes initiative *and* uses problem-focused coping.

This example points to another crucial difference between initiative and coping. The person striving to be able to repair the machine himself to be independent from the toolsetter's service has a long-term focus: he prevents a loss of time in the future. Whereas long-term focus—in this case preventing the reoccurrence of the stressor—is one of the features of initiative, this is not necessarily true for coping: coping can be restricted to dealing with a currently manifest stressor.

Initiative and innovative approaches are usually taken when the stressor is not 'active'. Anticipation of a stressor and taking preventive means are forms of initiative and innovation. The theory of coping, however, relates the anticipation of stressors predominantly to negative emotions that need to be dealt with; preventive actions have only recently become an issue of interest (Aspinwall and Taylor, 1997)

Empirical data from a longitudinal study in East Germany (Frese *et al.*, 1997) support the overlap between innovation, initiative, and coping. The discussion above implies a positive relationship of both activities with problem-focused coping and a negative one with emotion-focused coping. Frese *et al.* (1997) report for an East and a West German sample correlations between a global measure of initiative and problem focused coping of  $r = .19$  ( $p < .05$ ) and  $r = .20$  ( $p < .01$ ), respectively; the respective correlations with passive, emotion-focused coping are  $r = -.17$  and  $r = -.25$  (both  $p < .01$ ). In the same samples, the specific measure of initiative at work has relationships of  $r = .19$  and  $r = .22$  with problem-focused coping, and  $r = -.14$  and  $r = -.18$  with emotion-focused coping (all  $p < .01$ ); similar relationships were obtained for measures of interest in work innovation and executed innovations (with problem-focused coping:  $r = .15$  to  $r = .29$  (both  $p < .01$ ); with emotion-focused coping:  $r = -.09$ , *ns*, to  $r = -.18$   $p < .01$ ).<sup>1</sup>

### Empirical Studies on Stressors, Innovation, and Initiative

Until now empirical research paid relatively little attention to possible relationships between stressors, innovation, and initiative. In this paragraph we want to review those few studies.

#### Innovation as Part of an Assigned Task

Amabile (1988) interviewed a total of 161 R&D scientists and marketing employees. Within a critical incident approach, respondents were asked to report cases of high and low creativity. By using content analysis, individual and environmental factors promoting and inhibiting creativity were identified. Twelve percent of the respondents mentioned the environmental factor 'pressure' as a promoter of creativity. In this context, pressure refers to 'a sense of urgency that is internally generated from

<sup>1</sup> Unpublished data: data on innovation stems from two different waves, assessed only in the East German sample.

competition with outside organizations, or from a general desire to accomplish something important' (Amabile, 1988: 147). At the same time, 33 percent of the respondents described time pressure (i.e. insufficient time for creative thinking; unrealistic time frames for the amount of work to be accomplished; high frequency of 'fire-fighting', Amabile, 1988: 148) as an inhibitor of creativity. Thus, this study suggests that pressure can have both positive and negative effects. Amabile concluded that pressure is a factor that has to be balanced: 'if there is no sense of time urgency, people may feel that their project is unimportant. If time pressure is too great, it may force people to take the simplest, most unimaginative route' (Amabile, 1988: 149).

Other studies examined the relationship between stressors and innovation with a correlational approach. Most of these studies concentrated on time pressure and workload pressure as the most prominent stressors.

Andrews and Farris (1972) examined the effect of time pressure on innovation in a sample of 78 scientists and engineers. Analysis revealed a positive correlation of  $r = .25$  between experienced time pressure and innovation five years later. One might conclude that time pressure enhances innovation. However, average experienced time pressure was relatively low with 92 percent of the sample reporting no more than a moderate level of pressure. Furthermore, the scientists and engineers indicated how much experienced pressure deviated from subjectively optimal pressure. Analysis showed that innovation was highest for those persons in which experienced pressure matched the desired optimal level. When both too much or too little pressure were experienced, innovation was substantially lower. Stahl and Steeger (1977) studied the relationship between stressors and innovation in 154 US Air Force R&D scientists and engineers. No substantial relationships between various perceived pressure measures and peer ratings of innovation were found. All correlations were non-significant and did not exceed  $r = \pm .15$ .

Scott and Bruce (1994), examining innovative behavior in 172 technicians, engineers, and scientists reported a similar result. They found a correlation of  $r = -.02$  between resource supply—including absence of time pressure—and innovation.

A study by Amabile *et al.* (1996) addressing team innovation provided some findings on the relationship between stressors and innovation. Managers were asked to nominate projects with the highest and lowest creativity they had been involved in during the previous three years. Subsequently managers evaluated—among other work environment variables—workload pressure in these projects. Within 141 pairs of high and low creativity projects work pressure was rated significantly higher in the low creativity projects. However, this finding could not be replicated in a smaller subsample in which only those 23 projects were included which met a more narrow innovation criterion. Furthermore, the effect size was small in both analyses.

Taken together, these results are rather inconsistent and suggest that there is neither a clear-cut negative nor a clear-cut positive relationship between time pressure and innovation. The weak correlations might be due to both negative and positive effects of time pressure on innovation (Amabile, 1988) or the curvilinear nature of the relationship (Andrews and Farris, 1972). These weak correlations do not speak against our model in which stressors were conceptualized both as hindrances and options for innovation and initiative. Rather, these studies indicate that it is worthwhile search-

ing for possible moderators, such as control at work, that might affect the relationship between time pressure and innovation.

## Role Innovation

In a study with 344 managers, Tsui and Barry (1986) examined the relationship between role stressors and managerial role behavior. Managerial role behavior was evaluated by managers' superiors, subordinates, and peers. Across all three rating groups, there was a negative relationship between role ambiguity and managerial entrepreneurship. Entrepreneurship included behaviors such as planning and implementing changes, initiating controlled changes, and solving problems by instituting needed changes (Tsui, 1984). Thus, entrepreneurship is conceptually relatively close to innovation and initiative. Role conflict was not related to managerial entrepreneurship.

In a longitudinal study, Munton and West (1995) studied the role innovation of job relocators. Role innovation (three months after moving) was predicted by self-esteem (three months before) and additionally related to concurrent mental health. Role innovation (six months after moving) was associated with concurrent self-esteem and concurrent mental health. Relocators with higher self-esteem and better mental health showed more role innovation than did relocators with lower self-esteem and low mental health scores.

The authors interpret their findings within a coping framework and suggest that 'role innovation might be an effective coping mechanism' (Munton and West, 1995: 372). However—since stressors were not explicitly measured in this study—two alternative explanations are plausible as well. First, a low strain level, i.e. high self-esteem and good mental health, might be a prerequisite for role innovation. Second, stressors might function as a third variable both resulting in high strain and impeding role innovation.

Ashforth and Saks (1996) examined the effects of socialization tactics on role innovation, role stressors (i.e. role conflict and role ambiguity), and stress symptoms. They reported a positive relationship between initial role conflict and role innovation six months later of  $r = .22$ . The correlation between initial role innovation on subsequent role conflict was  $r = .16$ . All correlations between role ambiguity and perceived stress symptoms on the one hand and role innovation on the other hand were small and non-significant. However, Ashforth and Saks (1996) interpret their findings in an organizational socialization framework with institutionalized (versus individualized) socialization tactics both resulting in low role conflict and low role innovation.

Bunce and West (1996) compared the effects of a traditional stress management program, focusing on cognitive-behavioral and arousal reduction techniques, to an innovation promotion program, encompassing the identification of work-related stressors and development of innovative responses to the stressors such as introducing new procedures. Three months after the program participants of the innovation promotion program showed less work-related strain than the stress management program participants. One year after intervention there was no more difference in



strain between the two groups, but a significant increase in the level of innovation in the innovation promotion program group.

This study suggests that innovative responses towards stressors are possible and teachable with an innovation promotion program intervention. The effects on strain are less promising: one way of interpreting the lack of an effect on job strain is that changing work procedures, introducing new methods, improving skills etc., can represent a stressor itself, as we proposed as the 'reverse effect' of innovation and initiative (arrow (d) in Figure 8.1). This would reduce the potentially relieving effect of innovation. The authors themselves pointed out that an organizational performance measure would be an interesting additional dependent variable, as innovation might not produce an observable effect on strain, but on performance.

By summarizing the studies on stressors and role innovation, including managerial entrepreneurship, no clear-cut picture emerges. Role stressors were found to be both positively and negatively related with role innovation. There is a clear need for further research in which moderators including specific sample and task characteristics should be examined. Furthermore, it is necessary to include stressors other than role stressors into the empirical analyses.

### Personal Initiative and Self-Reported Innovation

In a longitudinal study Fay and Sonnentag (1998) examined the relationship between stressors, job control, innovation and personal initiative. According to the stressors as options for innovation and personal initiative model (Figure 8.2), they hypothesized that stressors lead to an increase in innovation and initiative, with job control as a moderator. Unlike the model in Figure 8.2, individual characteristics were not included. Furthermore, they tested the effects of innovation and initiative on stressors, by relating both activities to changes in stressors (reverse effect).

Subjects were blue and white collar employees from former East Germany ( $n=128-163$ ). Stressors were operationalized as time pressure and concentration demands, job ambiguity, and organizational problems. Innovation was a questionnaire measure, asking for interest in innovation and executed innovation (Patchen, 1965), initiative was an interview measure assessing initiative at work (Frese *et al.*, 1996).

The 'stressor as option' hypothesis was examined using a hierarchical regression analysis approach: it was tested whether stressors at time  $n$  have a significant effect on changes of innovation and initiative from time  $n$  to time  $n+1$ . Furthermore, the effects of job control and its moderating effect on stressors were tested. Based on four waves of the longitudinal study, the analyses were executed for three time periods with initiative as the dependent variable, and for one time period with innovation as the dependent variable (this measure was only available for two waves). Two consecutive waves with time lags of one to two years were used.

Stressors were positively related to increases in initiative and innovation. The stressors explained 4.5 percent ( $p < .05$ ) of the variance in changes in initiative, beyond what was explained by covariates (age, gender, socioeconomic status, job qualification), job control, and prior initiative. Stressors also had a positive effect on innova-

tion: they explained an additional 2 percent ( $p = .07$ ) of variance in changes in innovation beyond the covariates, job control, and the previous innovation. Both job control and the interaction terms (job control  $\times$  stressors) had no significant effect, when controlling for the covariates.

The reverse effect was tested with the same hierarchical regression analyses approach, with stressors as the dependent variable and innovation and initiative as predictors. However, there was no effect of either activity on stressors.

This study lends support to the model of stressors being an option for innovative and initiative actions, while there was no evidence for the negative effects of these actions.

### Implications for Future Research

We described the relationship between stressors, innovation, and initiative both in terms of a 'stressors as a hindrance' and a 'stressors as options' model. Furthermore, we always discussed the reverse effects of innovation and initiative on stressors. The combination of both models implies that there should be *both* positive and negative effects of stressors on innovation and initiative, and *both* positive and negative effects of those activities on stressors.

The studies reported on the relationship between stressors, innovation, and initiative gave altogether mixed results. Relating the studies to the two models presented, most studies used a rationale that is closest to the 'stressors as a hindrance' model. Given the complexity of the proposed relationships, most studies fall short of taking account of the reverse effects of innovation and initiative on stressors, or of a possible *positive* effect of stressors. Research that aims at disentangling these effects needs to use design methods different from those used in the studies presented above. For this, a more specific assessment of the dependent variables, innovation and initiative, is important.

First, studies placed within the stressors as a hindrance framework, looking for the proposed negative relationship between stressors, innovation, and initiative, need to confine the assessment of these activities to those that are *not* a response against a stressor; activities *directed against a stressor* should be excluded. We assume that innovation and initiative generally reduce under stressors, whereas concomitantly specific innovation or initiative actions against stressors increase. Therefore, these two types of innovation and initiative—directed against a stressor or not directed against one—have to be separated. Otherwise, the detrimental effects of stressors are undetectable due to the complex interplay of stressors and activities. Second, studying stressors from the perspective that they are 'options' for innovation and initiative likewise requires a specific dependent variable: only those innovative and initiative activities should be used as a dependent variable that are *directed against the specific stressor*.

According to both models, the reverse effects of innovation and initiative on stressors need to be included in empirical studies. In order to capture the consequences of these activities, short-term and long-term effects have to be examined. Specifically in

the context of innovative and initiative actions carried out *against* a stressor, various variables are potentially affected: the initial stressor (which is expected to reduce), other stressors (possibly emerging or increasing), strain reactions and performance.

These suggestions pose high demands on researchers: they require a repeated measurement design; research participants indicating whether and what actions have been taken against a given stressor; whether and what effects these had on the environment; relating this highly subjective information to objective measures. Furthermore, several individual and job characteristics have to be taken into account as moderators.

Our approach is open to some enlargement. So far, we have only looked at *direct* effects of stressors on actions and vice-versa. Additionally, one might assume that stressors cause low mental health that in turn reduces the likelihood to show innovation or to take initiative. Thus, the descriptions of the rather complex interplay of stressors and activities left out the potential *mediating* variables: an individual's emotional reactions to stressors and activities, experience of strain, and effects on mental health. Future studies should take that into consideration.

With this chapter we want to encourage research with the rather uncommon perspective on 'stressors as options for innovation and personal initiative'. The study by Fay and Sonnentag (1998) indicates this to be a promising approach. Further support for this notion, however, should not tempt practitioners to feel free to ignore stressors as job holders themselves can deal with them. Instead, job design might actually need to focus more on the crucial moderators that support this active approach towards stressors.

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