

Crossover of burnout: An experimental design

Arnold B. Bakker

*Institute of Psychology, Erasmus University Rotterdam, Rotterdam,
The Netherlands*

Mina Westman

Faculty of Management, Tel Aviv University, Tel Aviv, Israel

Wilmar B. Schaufeli

*Department of Social and Organizational Psychology, and Research School
Psychology and Health, Utrecht University, Utrecht, The Netherlands*

Two studies tested the hypothesis that burnout may cross over from one person to another. In Study 1, teachers were randomly exposed to a bogus newspaper article in which a colleague expressed himself negatively about his work (burnout condition), or about a topic unrelated to work (control condition). The results showed that participants' burnout (exhaustion and depersonalization) was higher in the burnout condition compared to the control condition. In Study 2, soldiers were randomly exposed to a videotape of a burned-out or an engaged colleague who was either similar in profession and status (soldier), or who had a considerably higher status (squadron leader). The results were partly consistent with those of Study 1, and confirmed the crossover of burnout (cynicism and reduced professional efficacy). In line with predictions, a significant interaction effect for cynicism revealed that the crossover of burnout is moderated by similarity with the stimulus person.

The process that occurs when psychological strain experienced by one person affects the level of strain of *another person* who shares the same social

Correspondence should be addressed to Arnold B. Bakker, Erasmus University Rotterdam, Institute of Psychology, Woudestein, T12-47, PO Box 1738, 3000 DR Rotterdam, The Netherlands. E-mail: bakker@fsw.eur.nl

This research was financially supported by Dutch Organization for Scientific Research (NWO) grant # 310014 "Burnout Contagion" to Arnold Bakker. We are grateful to Eva Demerouti for her helpful comments on an earlier draft of this article, and to Katharina Duijndam, Jan-Willem van Dijk, Petra Evers, Marjolein Klompe, Annemarie Knol, Yteke Kuipers, Carien Stuart, and Marnix Willems for their help with data collection.

© 2007 Psychology Press, an imprint of the Taylor & Francis Group, an Informa business
<http://www.psypress.com/ejwop> DOI: 10.1080/13594320701218288

environment is referred to as crossover (Bolger, DeLongis, Kessler, & Wethington, 1989; Westman & Etzion, 1995) or transmission (Jones & Fletcher, 1993a, 1993b; Rook, Dooley, & Catalano, 1991). Crossover is an *interindividual* transmission of stress and strain. Findings suggest that one partner's strain affects the well-being of the other so that one's strain is often a stressor to the other (Burke, Weir, & DuWors, 1980; Jones & Fletcher, 1993a, 1993b).

As previous crossover research was based on the work-family interface, researchers primarily focused on the family (mainly the wife) as the "victim" of the job incumbent's strain (Jackson & Maslach, 1982). However, Westman (2001) has suggested a broadening of the scope of research and the investigation of the crossover of strain within work settings. What happens to one member of a dyad, whether a family member or a work-group member, when exposed to a person who experiences considerable strain? In their field study, Westman and Etzion (1999) found crossover of work-induced strain from school principals to teachers and vice versa, after controlling for their job stressors. Similarly, evidence for crossover of burnout was found among nurses (Bakker, LeBlanc, & Schaufeli, 2005; Groenestijn, Buunk & Schaufeli, 1992), general practitioners (Bakker, Schaufeli, Sixma, & Bosveld, 2001), high school teachers (Bakker & Schaufeli, 2000), and constabulary officers (Bakker, van Emmerik, & Euwema, 2006).

HYPOTHETICAL MECHANISMS OF THE CROSSOVER PROCESS

The crossover literature is not characterized by a systematic theoretical and empirical approach that specifies the mechanisms underlying crossover effects. Few researchers consider how one's strain affects the other's strain. A better understanding of the processes involved will enable the identification of effective strategies for coping with the crossover of strain. Westman and Vinokur (1998) specify three main mechanisms that may account for the crossover process, namely, common stressors, an indirect mediating interaction process, and direct empathic crossover. The current study focuses on the latter possible mechanism.

Direct crossover implies that strain is transmitted from one partner to another directly, most probably as a result of empathic reactions. Literally, the root meaning of the word empathy is "feeling into". Starcevic and Piontek (1997) define empathy as interpersonal communication that is predominantly emotional in nature. It involves the ability to be affected by the other's affective state, as well as to be able to read in oneself what that affect has been. Similarly, Lazarus (1991) defined empathy as "sharing another's feelings by placing oneself psychologically in that person's

circumstances” (p. 287). The core relational theme for empathy would have to involve a sharing of another person’s emotional state, distressed or otherwise. Accordingly, strain in one partner produces an empathetic reaction in the other that increases his or her own strain, by way of what may be called *empathic identification*.

Social learning theorists (e.g., Bandura, 1969; Stotland, 1969) support this view, and have explained the transmission of emotions as a conscious processing of information. They suggest that individuals imagine how they would feel in the position of another—empathic identification—and thus come to experience and share the other’s feelings. Eckenrode and Gore (1981) suggested that the effect of one’s strain on the spouse’s distress might be the result of empathy as expressed in reports such as “We feel their pain is our own” (p. 771).

The following strains have been frequently investigated as affected by the crossover process (see Westman, 2001, for a review): anxiety (Westman, Etzion, & Horovitz, 2003; burnout (Bakker & Schaufeli, 2000; Bakker et al., 2001, 2006; Pavett, 1986; Westman & Etzion, 1995, 1999), depression (Katz, Beach, & Joiner, 1999; Vinokur, Price, & Caplan, 1996; Westman & Vinokur, 1998), and dissatisfaction (Westman, Vinokur, Hamilton, & Roziner, 2004).

The current research focuses on the crossover of burnout. Burnout is defined as a psychological syndrome of emotional exhaustion, depersonalization (also termed cynicism), and reduced personal accomplishment (Maslach, 1993; van Dierendonck, Schaufeli, & Buunk, 2001). Emotional exhaustion refers to mental fatigue or the draining of emotional resources (Demerouti, Bakker, Nachreiner, & Ebbinghaus, 2002). Depersonalization or cynicism refers to the development of negative, cynical attitudes towards the recipients of one’s services or towards work in general. Finally, lack of personal accomplishment is the tendency to evaluate one’s own work with recipients negatively, an evaluation that is often accompanied by feelings of insufficiency and poor self-esteem. Previous findings from field research suggest that individuals suffering from burnout may communicate their symptoms to their colleagues (Bakker & Schaufeli, 2000), and that social comparison processes may play a role in the transmission of burnout symptoms among employees (Groenestijn et al., 1992). It is the central aim of the present research to test the hypothesis that burnout may cross over from one individual to another.

THE PRESENT RESEARCH

Most crossover studies are descriptive or inductive, offering post hoc explanations. According to a literature review (Westman, 2001), no studies have explicitly tested the crossover of burnout hypothesis using an experimental design. We tried to fill this gap by conducting two studies.

The first study will test the hypothesis that burnout crosses over from one person to another (Hypothesis 1). The second study will test the hypothesis that similarity between sender and receiver intensifies the crossover of burnout effect (Hypothesis 2).

The proposed studies will: (1) increase confidence in the general direction of crossover findings, since the experimental design enables us to validate causality. The clear-cut causal interpretation should serve to reassure the larger community of crossover researchers who must rely on theory and causal modelling to anchor their causal interpretations; (2) investigate the impact of similarity (profession and rank) on the crossover process (Study 2). This would offer a preliminary validation of the explanation that crossover occurs via empathic identification and would help to fill an important gap in crossover research. The theoretical background for this hypothesis will be discussed in the introduction to Study 2.

STUDY 1

Method

Design and participants

Participants were 24 male and 16 female teachers recruited at three different high schools in the northern part of The Netherlands, with a mean age of 43 years ($SD = 8.93$). The average number of years teaching experience was 18 years ($SD = 8.67$). It was randomly determined whether the teachers were exposed to a burned-out colleague, or to a colleague who expressed himself negatively about a topic unrelated to work (between-subjects design). Dependent variables were the three burnout dimensions, i.e., emotional exhaustion, depersonalization, and (reduced) personal accomplishment. In order to rule out the possibility that negative affect may be responsible for the experimental effect on burnout, this variable was included in the design as a covariate.

Procedure

Two research assistants approached 60 teachers during free hours between classes. In total, 40 teachers volunteered to participate in the study (response = 67%). The assistants introduced the study as research on "health and well-being". They explained to the participants that they would have to read a newspaper article first, and instructed them on how to fill in the questionnaire. The confidentiality and anonymity of the answers was emphasized. The participants were randomly assigned to one of two conditions: They were exposed to a bogus newspaper article in which a male

teacher endorsed a cynical attitude towards teaching (burnout condition), or to an article in which a male teacher endorsed a cynical attitude towards a topic unrelated to work (control condition). The teachers were given as much time as they desired to read the message (approximately 10 minutes). Following article exposure, participants completed an affect scale, and the Maslach Burnout Inventory—Educators Survey (MBI-ES; Maslach, Jackson, & Leiter, 1996). After the study, the teachers were debriefed as to the study's design and purposes and thanked for participating.

Independent variable

Burnout status of stimulus person. Two bogus newspaper articles were constructed, both including approximately 600 words. In the *burnout condition*, the article started with a reference to a study showing that the quality of Dutch high school teaching is declining. It continued by stating that many teachers are exhausted and dissatisfied with their work, and that the newspaper had asked Mr Brandsma, a teacher from the language department in one of these schools, for a reaction. This teacher explained that most teachers who start their careers have certain ideals: to teach students, to evoke their interest in important topics, etc. He continued by saying that, after a while, he had noticed that his investments were unreciprocated by students. Inventive teaching methods turned out not to work, and students proved to be uninterested, and not motivated to learn anything. Mr Brandsma emphasized his cynical attitude toward students and teaching in general by such statements as: "After all these years, I don't care anymore whether the students learn anything. Sometimes I even ask myself why I have chosen for a career in teaching. It is extremely rare that I have fun in teaching"; "I have learned that a teacher should not have any illusions. Students do not attend classes because they think your lessons are interesting, but only because they have the obligation to do so"; and "To be honest, I must say that I really hate my students and the teaching profession."

In the *control condition*, the bogus article referred to an event that is unrelated to work, namely the escape of several prisoners. In the introduction, it was explained that the newspaper had conducted a survey study among its readers regarding their opinions about this event, and about the Dutch constitutional state. It was stated that the majority of the respondents were indignant about the escape. The article continued by explaining that the newspaper had asked Mr Brandsma, a teacher from the language department at a school in the northern part of The Netherlands, for a reaction. This teacher reacted furiously: "How is it possible that nowadays things like these happen? I was really shocked when I heard the news. Why are they not capable of keeping prisoners behind bars, while they can use such sophisticated technologies?"; "These crazy people are now

walking around freely. I really feel unsafe now. Yesterday, I heard that some of those escaped prisoners have been seen in the north"; "By the way, I heard that some of these prisoners are pretty disturbed. They received punishment for rape, murder and manslaughter"; and "I am really disappointed in the Dutch constitutional state. Every year, we pay a lot of taxes, and the government invests a lot of money in the improvement of prisons. And still it appears to be possible to simply walk out of prison!"

Dependent variables

The three burnout dimensions were measured with a Dutch translation of the MBI-ES (Maslach et al., 1996). Several studies have shown that this instrument shows good internal validity and reliability (e.g., Schaufeli, Daamen, & van Mierlo, 1994; Schaufeli & van Dierendonck, 1994).

Emotional exhaustion was measured with nine items, including "I feel tired when I get up in the morning and have to face another day on the job". This scale had a good internal consistency: Cronbach's alpha was .89. *Depersonalization* was measured with five items. An example item is: "I don't really care what happens to my students"; Cronbach's alpha was .76. Finally, *personal accomplishment* was measured with eight items, including "I think I accomplish many valuable things through my work"; Cronbach's alpha was .74. All items were scored on a 7-point rating scale, ranging from (0) "never" to (6) "every day". The items of each of the three scales were summed to form an overall index of emotional exhaustion, depersonalization, and personal accomplishment. High levels of emotional exhaustion and depersonalization, and a low level of personal accomplishment, are indicative for burnout.

Manipulation check and control variable

To control our manipulation of the burnout status of the stimulus person, participants were asked to indicate their agreement with four items, namely: "The person who is interviewed, Mr Brandsma, is burned-out by his work", "The article reports on a burned-out teacher", "Mr Brandsma is negative about his students", and "Mr Brandsma has a negative attitude towards working in education" (1 = totally disagree, 7 = totally agree). The four items were summed to provide one index for the burnout-manipulation check. The internal consistency of this measure was high: Cronbach's alpha was .93.

Negative affect. Participants also received a list of 20 adjectives describing different feelings. Of these adjectives, 7 concerned positive affect, and 13 concerned negative affect. The adjectives for positive affect were: calm, pleasant, relaxed, cheerful, satisfied, energetic, and balanced.

The adjectives for negative affect were: tense, restless, nervous, agitated, down, exhausted, irritated, sad, unhappy, angry, listless, depressed, and grumbling. These adjectives were in part a translation of the multiaffect adjective checklist (Zuckerman, 1960; Zuckerman, Lubin, Vogel, & Valerius, 1964). Each of the 20 adjectives concluded a statement starting with "I feel...". The participants were asked to indicate the extent to which they agreed with each statement (1 = totally disagree, 7 = totally agree). The items were coded such that higher scores refer to more negative affect, and were combined in one index (Cronbach's alpha = .94).

Results

Manipulation check

An ANOVA using burnout status of the stimulus person as the independent variable, and the manipulation check measure as the dependent variable, showed that our manipulation had been highly effective, $F(1, 38) = 61.00$, $p < .001$. Participants who were exposed to a burned-out teacher indeed believed that he was burned-out ($M = 5.32$), whereas those who were exposed to a healthy teacher who endorsed negative opinions toward the Dutch constitutional state did not ($M = 2.50$).

Crossover of burnout

To test the crossover of burnout hypothesis, we conducted a multivariate analysis of variance (MANOVA), using burnout status of the stimulus person as the independent variable, the three burnout dimensions as the dependent variables, and negative affect as a covariate. The stimulus person's level of burnout had a marginally significant multivariate effect on participants' levels of burnout, $F(3, 35) = 2.28$, $p < .10$. The univariate results showed that the effect was significant for emotional exhaustion, $F(1, 37) = 6.43$, $p < .05$, and for depersonalization, $F(1, 37) = 4.40$, $p < .05$, but not for personal accomplishment, $F(1, 37) = 1.56$, *ns*.

Table 1 presents the mean burnout scores for the experimental and control condition. Findings demonstrate that participants who had read the interview with a burned-out teacher reported higher levels of exhaustion than did participants who had read the interview that was unrelated to work. In addition, participants reported more negative attitudes towards their work when they had been exposed to the interview with the burned-out teacher than when they had been exposed to the interview with the teacher who was not burned-out. In summary, the hypothesis that burnout may cross over (Hypothesis 1) is confirmed for emotional exhaustion and depersonalization, and rejected for personal accomplishment.

TABLE 1
 Mean scores on emotional exhaustion, depersonalization, and personal accomplishment as a function of the burnout status of the stimulus person
 (Experiment 1)

<i>Burnout status stimulus person</i>	<i>EE</i>	<i>DP</i>	<i>PA</i>
Not burned-out (<i>n</i> = 20)	11.85 (7.05) ^a	5.55 (4.19) ^a	29.08 (6.35) ^a
Burned-out (<i>n</i> = 20)	17.89 (9.72) ^b	8.50 (4.58) ^b	26.50 (6.73) ^a

EE = emotional exhaustion, DP = depersonalization, and PA = personal accomplishment. Means with unequal superscripts differ significantly per column at the .05 level.

Discussion

The findings of Study 1 provide evidence for the crossover of burnout hypothesis. Teachers who were exposed to an interview with a burned-out colleague showed higher levels of emotional exhaustion and depersonalization than teachers who were exposed to an interview with a colleague who endorsed a negative opinion about something unrelated to work.

However, except for direct crossover via a process of empathy, the *priming* phenomenon may have been responsible for our findings. Priming refers to the effects of prior context on the interpretation of currently attended information, and causes recently (or frequently) activated ideas to come to mind more easily than ideas that have not been activated. For example, it has been shown that exposing people to positive or negative trait terms causes them soon afterward to interpret ambiguous behaviour as correspondingly positive or negative because of the meaning that had been primed (Bargh, Bond, Lombardi, & Tota, 1986; see Higgins, 1989, for a review). Moreover, priming effects can even operate automatically, without one's conscious awareness of the initial prime (Bargh & Pietromonaco, 1982). As respondents were teachers, it is conceivable that they themselves had experienced high levels of distress or burnout in the past (Cooper & Kelly, 1993; Friedman, 1991; Mearns & Cain, 2003). Reading the article may have primed previous experiences, and triggered memories of times when participants experienced stressful situations. As a consequence, their awareness or vigilance to their own feelings of burnout may have increased. Thus, the increase in teachers' feelings of exhaustion and depersonalization may have been caused by empathy with their fellow teacher, but may also have been evoked by their increased awareness to their own burnout due to priming.

Importantly, the results showed that the crossover of burnout effects were significant after controlling for negative affectivity. Thus, the first study offers preliminary support for the hypothesis that burnout can be

communicated from one person to another, even if the behaviours and opinions of the stimulus person are presented in printed form. The type of symptoms that are indicative of burnout can cross over from one person to another through empathy or priming. An important next question is: Which conditions increase the probability that burnout is communicated from one employee to another?

Classic social comparison theory regards uncertainty as the main motive for social comparison activity (Festinger, 1954; Schachter, 1959). Festinger stated that people have a drive to evaluate their motives and opinions. He argued that when objective sources of information for self-evaluation are lacking, people would turn to others in their environment. Schachter stated that when individuals feel uncertain about the appropriateness of their emotions, they tend to reduce this uncertainty by socially comparing and by adjusting their emotional reactions to those of others (see also Gerard, 1963). Indeed, Groenestijn et al. (1992) found that nurses who perceived burnout complaints amongst their colleagues *and* who felt a strong need for social comparison were more susceptible to burnout compared to those who had a low need for social comparison.

Similarity between individuals in the situation where crossover occurs may contribute to the intensity of the crossover process. An important assumption in Festinger's (1954) theory was that others who are similar will be preferred for comparison, because information about similar others is most informative for self-evaluation (see also Tesser, 1988; Tesser, Millar, & Moore, 1988). Levy, Freitas, and Salovey (2002) maintain that perceiving similarity between oneself and others can lead one to take the others' perspectives thus prompting the experience of empathic emotions (empathic identification). In line with this view, Keinan, Sadeh, and Rosen (2003) investigated the attitudes and reactions to media coverage of terrorist acts. They suggest that the experience of stress responses in reaction to media coverage stems from identification with the victims of violence, and this identification is related to the degree of similarity between the media consumer and the victim: The greater the number of shared characteristics, the greater the probability of identifying with the victim.

In Study 1, participants were more or less forced into social comparison activity by confronting them with a burned-out colleague. This situation may be reasonably similar to the reality in the work place, where employees are regularly exposed to burned-out colleagues. However, if we were able to demonstrate that *similarity to the comparison other* moderates the crossover of burnout effect, we would even make a stronger case for the contention that empathic identification is responsible for a transmission of burnout from one person to the other. Therefore, we conducted a second study.

STUDY 2

The central goal of Study 2 was to replicate the findings of Study 1 under ecologically more valid conditions, and to test the hypothesis that similarity to the comparison other intensifies the crossover of burnout effect (Hypothesis 2). Participants in this study were soldiers, who were randomly exposed to a videotape in which a burned-out or an engaged, enthusiastic colleague tells about his work. In addition, it was randomly determined how similar the stimulus person was to the participants in terms of power position. One half of the sample was exposed to a soldier (similar), and the other half was exposed to a squadron leader (different). We hypothesized that the probability of crossover of burnout increases with increasing similarity to the stimulus person. More specifically, we predicted that soldiers are most likely to “catch” the stimulus person’s burnout, when this stimulus person is equal in rank (similar to the receiver).

Method

Design and participants

Participants were 85 male and 16 female Dutch soldiers from one battalion, with a mean age of 21.57 years ($SD = 3.93$). The mean number of years’ working experience in the army was 3 years ($SD = 3.37$). The soldiers were randomly assigned to experimental conditions in a study with a 2 (burnout status of stimulus person: burned-out vs. engaged) \times 2 (similarity to stimulus person: different vs. similar) between-subjects design. Dependent variables were the three burnout dimensions that are measured with the MBI-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996), namely exhaustion, cynicism, and professional efficacy.

Procedure

All participants were members of one Dutch battalion, located in the south of The Netherlands. Four research assistants contacted the soldiers at their barracks, and randomly assigned them to one of four rooms (conditions). All soldiers participated in the study on a voluntary basis (response = 100%). In each of the four rooms, a group of 25 participants was seated in front of a TV, and exposed to one of the four experimental videotapes. Participants were randomly exposed to a videotape of an engaged or burned-out colleague (a soldier or a squadron leader) who told about a peace-keeping mission in former Yugoslavia. The assistants explained to the participants that they would see a 10-minute video first,

and instructed them on how to fill out the questionnaire. The confidentiality and anonymity of the answers was emphasized. Following videotape exposure, participants completed a questionnaire that included the negative affect scale, the MBI-GS, and the manipulation checks. After the session, soldiers were debriefed, thanked for participation, and dismissed.

Independent variables

The stories that were told on the videotapes were based upon a series of interviews with Dutch soldiers who had actually participated in United Nations peace-keeping missions in former Yugoslavia. On the basis of these interviews, two scripts were constructed, one script describing an engaged person, who was enthusiastic about his experiences during a peace-keeping mission, and one script describing a burned-out person, who was exhausted and extremely cynical about his experiences during the mission. Two volunteer actors, i.e., a soldier and a squadron leader who had been in former Yugoslavia, were instructed to play the role of the engaged, enthusiastic person, and the role of the burned-out person.

Burnout status of the stimulus person. In the *engagement condition*, the actor told very enthusiastically that the peace-keeping mission in former Yugoslavia had been challenging and adventurous. He explained that, after a few months, there was a nice and dedicated atmosphere in the group. Furthermore, the actor told that the interactions with the people in former Yugoslavia had been very positive and satisfying. His story included, for example, the following quotes: “The people really appreciated our work. They were very glad with our presence and with the food that we brought them”; “They showed a lot of gratitude, and sometimes even invited us at their homes”; and “I have very nice memories when I look back on this peace-keeping operation: Think about the cheerfulness and hope that we saw in people’s faces!”

In the *burnout condition*, the actor emphasized the restrictions his battalion had, and the problems they encountered in former Yugoslavia. He explained that, after a few months, the atmosphere in the group was rather tense and cynical. In addition, the actor told that the interactions with the people in former Yugoslavia had been rather difficult and frustrating. His story included, for example, the following quotes: “Only when you are there, you realize what war is. Once, we were surprised by a group of Bosnian Serves, and we were under fire for nearly two weeks”; “You really feel useless for the local people—you do not really get in touch with them”; “I remember one occasion in which some local people passed our barrack. They scrolled the window, pointed a gun through it, and started firing at us!”; “It was very disappointing and frustrating, because there was no way

to really help the people”; and “I am exhausted and not sure anymore what I want with my life.”

Similarity to the stimulus person. This independent variable was operationalized by the stimulus person’s rank in the army. In one condition, the actor told that he was a soldier (i.e., similar to the participants). In the other condition, the actor told that he was a squadron leader (i.e., different from the participants). In addition, the rank of the stimulus person could be recognized from the number of stripes on the sleeve of his uniform.

Dependent variables

The MBI-GS can be used in any occupational context and includes three subscales (i.e., exhaustion, cynicism, and professional efficacy) that parallel those of the original MBI, except that items do not explicitly refer to working with people (Schaufeli et al., 1996). *Exhaustion* was measured with five items, including “I feel tired when I get up in the morning and have to face another day on the job”; Cronbach’s alpha was .75. *Cynicism* was also assessed with five items, such as “I have become more cynical about whether my work contributes anything”; Cronbach’s alpha was .79. Finally, *professional efficacy* was measured with six items, including “I feel I am making an effective contribution to what this organization does”; Cronbach’s alpha was .73.

Manipulation checks and control variable

Burnout status of stimulus person. This manipulation was controlled with two items, namely: “In my view, the person on the video was...” (1 = extremely burned-out, 5 = extremely engaged), and “In my view, the person on the video was...” (1 = very negative about the people in former Yugoslavia, 5 = very positive about the people in former Yugoslavia). These two items correlated positively and substantively, $r = .68$, $p < .001$, and were therefore combined in one index to form the manipulation check measure for the burnout status of the stimulus person.

Similarity to the stimulus person. This manipulation check was operationalized with three items, namely: “Does the person on the video have a lower or a higher position in the army than you?” (1 = much lower, 5 = much higher), “Suppose that the person on the video is in your battalion. Would he have less or more power than you?” (1 = much less power, 5 = much more power), and “Suppose that the person on the video is in your battalion. How much influence would he have on your work?”

(1 = absolutely no influence, 5 = a lot of influence). The three items were combined in one index to serve as the manipulation check for similarity to the stimulus person (Cronbach's alpha = .73).

Negative affect was assessed with the same scale as in Study 1. The internal consistency was good: Cronbach's alpha = .78.

Results¹

Manipulations checks

Burnout status of the stimulus person. A 2 (burnout status of stimulus person: burned-out vs. engaged) \times 2 (similarity to stimulus person: different vs. similar) analysis of variance (ANOVA) with the manipulation check as the dependent variable yielded a highly significant main effect of burnout status, $F(1, 96) = 261.87, p < .001$. Participants who were exposed to a burned-out colleague indeed judged him as such ($M = 2.34$), whereas participants who were exposed to an engaged colleague did not ($M = 4.05$). There was neither an effect of similarity, $F < 1, ns$, nor of the interaction term, $F(1, 96) = 2.03, ns$, on this manipulation check. We concluded that our manipulation of burnout status of the stimulus person had been successful.

Similarity to the stimulus person. The 2×2 ANOVA with this manipulation check measure as the dependent variable showed a highly significant main effect of similarity, $F(1, 94) = 193.95, p < .001$. Soldiers who were exposed to a colleague similar in rank (soldier) indeed perceived the stimulus person as such ($M = 2.93$), whereas participants who were exposed to the squadron leader perceived dissimilarity ($M = 4.50$). There was no effect of burnout status, $F < 1, ns$, or of the interaction term, $F < 1, ns$. Thus, our manipulation of similarity to the stimulus person had also been effective.

Crossover of burnout

The central hypothesis in the second study was that the probability of crossover of burnout increases with increasing similarity to the stimulus person. Thus, we predicted that soldiers are most likely to catch their colleague's burnout, when this colleague is equal (similar) in rank. In order to test this hypothesis, we conducted a 2 (burnout status of the stimulus person) \times 2 (similarity to the stimulus person) MANOVA with the three burnout variables as the dependent variables, and negative affect as a

¹The number of degrees of freedom in the analyses may vary due to occasionally missing data.

covariate. The stimulus person's level of burnout had a significant multivariate effect on participants' levels of burnout, $F(3, 91)=4.56$, $p < .01$. The multivariate similarity effect was not significant, $F < 1$, but the multivariate interaction effect was significant as well, $F(3, 91)=3.14$, $p < .05$. We will continue with discussing the univariate results.

Exhaustion. The univariate results revealed no main or interaction effects for exhaustion, all F s < 1 , *ns*. The mean exhaustion score for the whole group was $M = 6.24$. Thus, Hypothesis 2 was rejected for exhaustion.

Cynicism. The predicted Burnout Status \times Similarity interaction was significant for cynicism, $F(1, 93)=6.27$, $p < .05$. The mean cynicism scores are presented in Table 2. An additional planned simple contrast analysis showed that soldiers who had been exposed to a colleague similar in rank showed much more negative attitudes towards their work when this colleague was burned-out, than when this colleague was engaged, $F(1, 93)=7.00$, $p < .01$. In contrast, the stimulus person's burnout status had no impact on participants' level of cynicism when he was higher in rank (the squadron leader), $F < 1$, *ns*. These results confirm Hypothesis 2: Similarity to the stimulus person moderates the crossover of burnout effect. The main effect of burnout status was in the expected direction, but not significant, $F(1, 93)=2.68$, $p = .11$, and the main effect of similarity was not significant, $F < 1$.

Professional efficacy. The univariate results showed a significant burnout status main effect on professional efficacy, $F(1, 93)=13.65$, $p < .001$, but no other effects. More specifically, independent of their similarity to the stimulus person, participants reported lower levels of professional efficacy after exposure to a burned-out colleague ($M = 22.03$) than after exposure to an engaged colleague ($M = 26.00$). Thus, the results regarding professional efficacy confirm the hypothesis that burnout can cross over from one person to another (consistent with Study 1), but provide

TABLE 2
Soldiers' mean cynicism scores as a function of burnout status of and similarity to the stimulus person, $N=98$ (Experiment 2)

Burnout status stimulus person	Similarity to stimulus person	
	Dissimilar (Squadron leader)	Similar (Soldier)
Engaged	7.17 (5.46) ^a	5.19 (4.73) ^a
Burned-out	6.30 (4.22) ^a	9.38 (5.96) ^b

Means with unequal superscripts differ significantly per column at the .01 level.

no evidence for the hypothesis that similarity to the stimulus person moderates this process.

Discussion

Study 2 made two contributions. First, it provided a neat replication of the finding in Study 1 that burnout can be communicated from one individual to another. Soldiers who were exposed to a videotape of a burned-out colleague showed a somewhat higher level of cynicism and a lower level of professional efficacy (but no higher level of exhaustion) than soldiers who were exposed to a colleague who showed work engagement. The fact that this result is replicated is important, because in Study 2 we used both another medium (videotape instead of newspaper article), and a different occupational group (soldiers instead of teachers) than in Study 1. Of equal importance, the second study sheds some light on the underlying process that may be responsible for the crossover of burnout. For cynicism, we found an interaction effect of burnout status and similarity to the stimulus person. Thus, closer data inspection revealed that cynical attitudes were particularly communicated when the stimulus person's rank in the army was similar to the target person's rank. This latter finding is consistent with recent theorizing about crossover.

GENERAL DISCUSSION

The central aim of the present research was to test the hypothesis that occupational burnout can be communicated from one person to another. The results of two studies provide support for this crossover of burnout hypothesis. The first study among high-school teachers showed that teachers who were exposed to an interview with a colleague who talked negatively about his students and teaching, reported significantly higher levels of emotional exhaustion and depersonalization than teachers who were exposed to an interview that was negative in tone, but unrelated to work. In this first study, the burnout status of the stimulus person had an effect on perceptions of exhaustion and cynicism but not on (reduced) personal accomplishment. The second study among soldiers replicated these findings in part by showing that a videotaped colleague who expressed himself negatively about peace-keeping missions in former Yugoslavia (burnout condition) had a significant negative influence on participants' attitudes towards work (cynicism), and on their feelings of professional efficacy, when compared to a control condition. In this study, the burnout status of the stimulus person had no effect on feelings of exhaustion.

In retrospect, the fact that the first study offered evidence for crossover of emotional *exhaustion* may seem somewhat surprising. Most burnout

researchers agree that feelings of exhaustion develop gradually over a relatively long period of time (see Schaufeli & Enzmann, 1998). However, we do not claim that respondents developed burnout because of the "encounter" with the stimulus person. One tentative explanation for the crossover of exhaustion would be that information from a colleague about emotionally demanding working conditions reminded the participants of the times that they were in similar situations (a priming effect). Priming may have activated previously experienced feelings of exhaustion and this may have caused teachers to report elevated scores on emotional exhaustion. However, the crossover of exhaustion that was observed in Study 1 should be interpreted with some caution, since it was not replicated in Study 2.

The results of both studies were consistent regarding negative attitudes: Both the newspaper experiment and the videotape experiment showed that negative attitudes towards people (depersonalization in Study 1) and towards work in general (cynicism in Study 2) transferred from one person to others. Importantly, this effect was qualified in the second study: The crossover of cynicism only persisted when the person on the video was similar in rank, and not when this person was higher in rank. This interaction effect is consistent with social comparison theory (Festinger, 1954; Schachter, 1959). Accordingly, people tend to reduce uncertainty about the appropriateness of their attitudes and emotions by socially comparing and by adjusting their reactions to those of others. This suggests that regarding the crossover of cynicism, empathic concern with the stimulus person played a role. The soldiers presumably only empathized with their colleague who was similar in rank, and not with the squadron leader; therefore, only the stimulus of a similar person influenced them. Thus, an important theoretical contribution made by the present research is that it provides evidence for an important assumption in Festinger's theory, and suggests that empathic identification plays a role in the crossover of burnout process. The findings suggest that others who are similar will be preferred for comparison, because information about similar others is most informative for self-evaluation and will elicit empathic concern (Keinan et al., 2003; Levy et al., 2002).

The final burnout component that was considered in the present research, i.e., personal accomplishment in Study 1 and professional efficacy in Study 2, is clearly self-evaluative. It can be regarded as an indicator of people's attitude towards their own accomplishments at work (Schaufeli & Enzmann, 1998). Despite this attitudinal nature and concurrent potential for change, only Study 2 provided evidence for a transmission of feelings of professional efficacy. It is well conceivable that the more lively presentation of the stimulus person's attitudes and feelings in the second

study (as compared to the first study) has been responsible for this rather strong effect.

Limitations of the studies clearly must be noted as well. First, although the results of both studies generally confirmed the crossover of burnout hypothesis, an inconsistency in the findings was that Study 1 rejected the hypothesis for personal accomplishment and Study 2 for exhaustion. The reason for this may be the different operationalizations of the burnout status of the stimulus person in both studies, the limited statistical power, or differences between both samples' characteristics (teachers vs. soldiers). It is also possible that the underlying processes responsible for crossover of burnout are different for the different burnout-dimensions: e.g., a predominantly conscious transference process (empathic identification) for cynicism or depersonalization, and a predominantly unconscious process for feelings of exhaustion. These hypotheses should be tested more rigorously in future studies. Second, as is the case for many experimental studies, the ecological validity of the present research may be somewhat limited. A more natural work setting, in combination with a repeated measures design, may address this limitation, and provide evidence for the generalizability of the present findings. Third, although we grounded our interaction hypothesis in theory, we cannot be sure that our manipulation of similarity indeed had an effect on empathic identification. One alternative explanation would be that the similar stimulus person was taken more serious as a source of information, and therefore had a stronger effect on participants' levels of burnout. Nevertheless, several authors have argued and shown that perceiving similarity between oneself and others can lead one to take the others' perspectives, thus prompting experience of empathic emotions (empathic identification) (Keinan et al., 2003; Levy et al., 2002).

Despite these limitations, the present research provides the first experimental evidence for the contention that burnout can be communicated from one employee to others. The results replicate and expand previously established findings in field studies (Bakker, Demerouti, & Schaufeli, 2003; Bakker & Schaufeli, 2000; Bakker et al., 2001, 2006; Rountree, 1984; Westman & Etzion, 1999), suggesting that burnout is not limited to individuals, but may be an important concern for whole units and organizations. Previous research has identified a variety of individual and organizational consequences of burnout, including decreased job satisfaction, reduced emotional and physical well-being, absenteeism, reduced performance, and personnel turnover (Halbesleben & Buckley, 2004; Lee & Ashforth, 1996). Thus, one practical contribution made by the present research is that it emphasizes the potential benefits of social-psychological interventions at the organizational level. Such burnout interventions may focus—for example—upon interpersonal dynamics in teams (Maslach, Schaufeli, & Leiter, 2001; West, 1994).

REFERENCES

- Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2003). The socially induced burnout model. In S. P. Shohov (Ed.), *Advances in psychology research* (Vol. 25, pp. 13–30). New York: Nova Science.
- Bakker, A. B., LeBlanc, P. M., & Schaufeli, W. B. (2005). Burnout contagion among nurses who work at intensive care units. *Journal of Advanced Nursing*, *51*, 276–287.
- Bakker, A. B., & Schaufeli, W. B. (2000). Burnout contagion processes among teachers. *Journal of Applied Social Psychology*, *30*, 2289–2308.
- Bakker, A. B., Schaufeli, W. B., Sixma, H., & Bosveld, W. (2001). Burnout contagion among general practitioners. *Journal of Social and Clinical Psychology*, *20*, 82–98.
- Bakker, A. B., van Emmerik, I. J. H., & Euwema, M. C. (2006). Crossover of burnout and engagement in work teams. *Work and Occupations*, *33*, 464–489.
- Bandura, A. (1969). *Principles of behavior modification*. New York: Holt, Rinehart, & Winston.
- Bargh, J. A., Bond, R. N., Lombardi, W. L., & Tota, M. E. (1986). The additive nature of chronic and temporary sources of construct accessibility. *Journal of Personality and Social Psychology*, *50*, 869–879.
- Bargh, J. A., & Pietromonaco, P. (1982). Automatic information processing and social perception: The influence of trait information presented outside of conscious awareness on impression formation. *Journal of Personality and Social Psychology*, *43*, 437–449.
- Bolger, N., DeLongis, A., Kessler, R., & Wethington, E. (1989). The contagion of stress across multiple roles. *Journal of Marriage and the Family*, *51*, 175–183.
- Burke, R. J., Weir, T., & DuWors, R. E. (1980). Work demands on administrators and spouse well-being. *Human Relations*, *33*, 253–278.
- Cooper, C., & Kelly, M. (1993). Occupational stress in head teachers: A national UK study. *British Journal of Occupational Psychology*, *63*, 130–143.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Ebbinghaus, M. (2002). From mental strain to burnout. *European Journal of Work and Organizational Psychology*, *11*, 423–441.
- Eckenrode, J., & Gore, S. (1981). Stressful events and social support: The significance of context. In B. Gottlieb (Ed.), *Social networks and social support* (pp. 43–68). Beverly Hills, CA: Sage.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.
- Friedman, Y. (1991). High- and low-burnout schools: School culture aspects of teacher burnout. *Journal of Educational Research*, *84*, 325–333.
- Gerard, H. B. (1963). Emotional uncertainty and social comparison. *Journal of Abnormal and Social Psychology*, *66*, 568–573.
- Groenestijn, E., Buunk, A. P., & Schaufeli, W. B. (1992). Het besmettingsgevaar bij burnout: De rol van sociale vergelijkingsprocessen [The danger of burnout contagion: About the role of social comparison processes]. In R. W. Meertens, A. P. Buunk, P. A. M. van Lange, & B. Verplanken (Eds.), *Sociale psychologie en beïnvloeding van intermenselijke en gezondheidsp Problemen* (pp. 88–103). The Hague, The Netherlands: VUGA.
- Halbesleben, J. R. B., & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management*, *30*, 859–879.
- Higgins, E. T. (1989). Knowledge accessibility and activation: Subjectivity and suffering from unconscious sources. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 75–123). New York: Guilford Press.
- Jackson, S. E., & Maslach, C. (1982). After-effects of job-related stress: Families as victims. *Journal of Occupational Behavior*, *3*, 63–77.
- Jones, F., & Fletcher, B. (1993a). An empirical study of occupational stress transmission in working couples. *Human Relations*, *46*, 881–902.

- Jones, F., & Fletcher, B. (1993b). Transmission of occupational stress: A study of daily fluctuations in work stress and strain and their impact on marital partners. In H. Schroder, K. Rescke, M. Johnston, & S. Maes (Eds.), *Health psychology: Potential indiversity* (pp. 328–338). Regensburg, Germany: Roderer Verlag.
- Katz, J., Beach, S., & Joiner, T. (1999). Contagious depression in dating couples. *Journal of Social and Clinical Psychology, 18*, 1–13.
- Keinan, G., Sadeh, A., & Rosen, S. (2003). Attitudes and reaction to media coverage on terrorist acts. *Journal of Community Psychology, 31*, 149–168.
- Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology, 81*, 123–133.
- Levy, S., Freitas, A., & Salovey, P. (2002). Construing actions abstractly and blurring social distinctions: Implications for perceiving homogeneity among, but also empathizing with helping others. *Journal of Personality and Social Psychology, 83*, 1224–1238.
- Maslach, C. (1993). Burnout: A multidimensional perspective. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 19–32). New York: Taylor & Francis.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory: Manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397–422.
- Mearns, J., & Cain, J. E. (2003). Relationships between teachers' occupational stress and their burnout and distress: Roles of coping and negative mood regulation expectancies. *Anxiety, Stress and Coping, 16*, 71–82.
- Pavett, C. M. (1986). High-stress professions: Satisfaction, stress, and well-being of spouses of professionals. *Human Relations, 39*, 1141–1154.
- Rook, S. K., Dooley, D., & Catalano, R. (1991). Stress transmission: The effects of husbands' job stressors on emotional health of their wives. *Journal of Marriage and the Family, 53*, 165–177.
- Rountree, B. H. (1984). Psychological burnout in task groups: Examining the proposition that some task groups of workers have an affinity for burnout, while others do not. *Journal of Health and Human Resources Administration, 7*, 235–248.
- Schachter, S. (1959). *The psychology of affiliation*. Palo Alto, CA: Stanford University Press.
- Schaufeli, W. B., Daamen, J., & van Mierlo, H. (1994). Burnout among Dutch teachers: An MBI-validity study. *Educational and Psychological Measurement, 54*, 803–812.
- Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to research and practice: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The MBI-General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach Burnout Inventory: Manual* (3rd ed., pp. 19–26). Palo Alto, CA: Consulting Psychologists Press.
- Schaufeli, W. B., & van Dierendonck, D. (1994). Burnout, een begrip gemeten. De Nederlandse versie van de Maslach Burnout Intentory (MBI-NL) [Burnout, the measurement of a concept: The Dutch version of the MBI]. *Gedrag & Gezondheid, 22*, 153–172.
- Starcevic, V., & Piontek, C. M. (1997). Empathic understanding revisited: Conceptualization, controversies, and limitations. *American Journal of Psychotherapy, 51*, 317–328.
- Stotland, E. (1969). Exploratory investigations of empathy. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 4, pp. 271–314). New York: Academic Press.
- Tesser, A. (1988). Towards a self-evaluation maintenance model of social behavior. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 181–227). San Diego, CA: Academic Press.

- Tesser, A., Millar, M., & Moore, J. (1988). Some affective consequences of social comparison and reflection processes: The pain and pleasure of being close. *Journal of Personality and Social Psychology, 54*, 49–61.
- Van Dierendonck, D., Schaufeli, W. B., & Buunk, B. P. (2001). Toward a process model of burnout: Results from a secondary analysis. *European Journal of Work and Organizational Psychology, 10*, 41–52.
- Vinokur, A., Price, R. H., & Caplan, R. D. (1996). Hard times and hurtful partners: How financial strain affects depression and relationship satisfaction of unemployed persons and their spouses. *Journal of Personality and Social Psychology, 71*, 166–179.
- West, M. A. (1994). *Effective teamwork*. Leicester, UK: BPS Books.
- Westman, M. (2001). Stress and strain crossover. *Human Relations, 54*, 557–591.
- Westman, M., & Etzion, D. (1995). Crossover of stress, strain and resources from one spouse to another. *Journal of Organizational Behavior, 16*, 169–181.
- Westman, M., & Etzion, D. (1999). The crossover of strain from school principals to teachers and vice versa. *Journal of Occupational Health Psychology, 4*, 269–278.
- Westman, M., Etzion, D., & Horovitz, S. (2003). The toll of unemployment does not stop with the unemployed. *Human Relations, 57*, 823–844.
- Westman, M., & Vinokur, A. (1998). Unraveling the relationship of distress levels within couples: Common stressors, emphatic reactions, or crossover via social interactions? *Human Relations, 51*, 137–156.
- Westman, M., Vinokur, A., Hamilton, L., & Roziner, I. (2004). Crossover of marital dissatisfaction during downsizing: A study of Russian army officers and their spouses. *Journal of Applied Psychology, 89*, 769–779.
- Zuckerman, M. (1960). The development of an affect adjective checklist for the measurement of anxiety. *Journal of Consulting Psychology, 24*, 457–462.
- Zuckerman, M., Lubin, B., Vogel, L., & Valerius, E. (1964). Measurement of experimentally induced affects. *Journal of Consulting Psychology, 28*, 418–425.

Original manuscript received June 2006
Revised manuscript received January 2007
First published online May 2007