

Work-related behavior and experience patterns of entrepreneurs compared to teachers and physicians

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Abstract

Purpose This study examined the status of health-related behavior and experience patterns of entrepreneurs in comparison with teachers and physicians to identify specific health risks and resources.

Methods Entrepreneurs ($n = 632$), teachers ($n = 5,196$), and physicians ($n = 549$) were surveyed in a cross-sectional design. The questionnaire Work-related Behavior and Experience Patterns (AVEM) was used for all professions and, in addition, two scales (health prevention and self-confidence) from the Checklist for Entrepreneurs in the sample of entrepreneurs.

Results The largest proportion of the entrepreneurs (45%) presented with a healthy pattern (compared with 18.4% teachers and 18.3% physicians). Thirty-eight percent of entrepreneurs showed a risk pattern of overexertion and stress, followed by teachers (28.9%) and physicians (20.6%). Unambitious or burnout patterns were seen in only 9.3/8.2% of entrepreneurs, respectively, and 25.3/27.3% of teachers, and 39.6/21.5% of physicians. While the distribution of patterns in teachers and physicians

differed significantly between genders, a gender difference was not found among entrepreneurs. Entrepreneurs with the risk pattern of overexertion scored significantly ($P < 0.01$) lower in self-confidence and health care than those with the healthy pattern.

Conclusions The development of a successful enterprise depends, in part, on the health of the entrepreneur. The large proportion of entrepreneurs with the healthy pattern irrespective of gender may support the notion that self-selection effects of healthy individuals in this special career might be important. At the same time, a large proportion was at risk for overexertion and might benefit from measures to cope with professional demands and stress and promote a healthy behavior pattern.

Keywords Entrepreneurs · Physicians · Teachers · Occupational stress · Psychosocial health risks and resources

Introduction

Entrepreneurship is considered as one of the crucial driving motors of economic growth and innovation (Bryant 2002). Therefore, efforts to conserve this engine and make it “run” efficiently are necessary and are provided. Nevertheless, one key aspect of this is often neglected, the possible health consequences of the career choice for the entrepreneur (Boles et al. 2000; Lewin-Epstein and Yuchtman-Yaar 1991). In fact, entrepreneurs are confronted with high demands on their energy and personal skills. For occupational stress, a diversity of concepts and multidimensional models have been described, making it difficult to compare results (Aitken Harris et al. 1999). After reviewing the literature, Stephan and Roesler (2010)

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“felt that entrepreneurs are an under-researched population in occupational health psychology” and reported contradictory findings about entrepreneurs health and well-being. While some studies reported a better well-being (Bradley and Roberts 2004; Sankelo and Akerblad 2009; Tetrick et al. 2000) including less depression and anxiety disorders (Bradley and Roberts 2004; Kawakami et al. 1996), others found more health problems compared with the general population or employees (Parslow et al. 2004; Rau et al. 2008). From their own study of a national sample of matched pairs of entrepreneurs and employees, Stephan and Roesler (2010) reported that entrepreneurs showed significantly lower overall somatic and mental morbidity, as well as higher well-being. Others found no differences between employees and entrepreneurs’ well-being (Chay 1993).

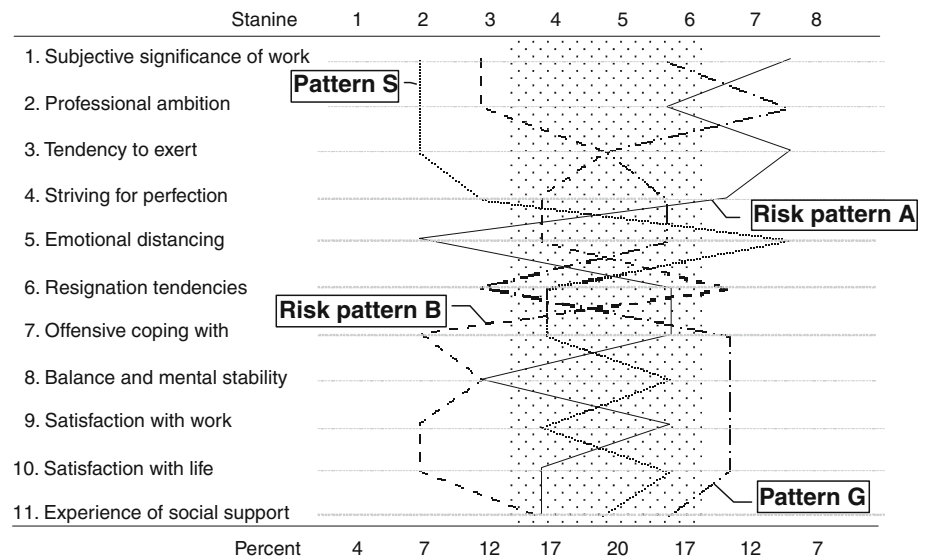
For burnout, a concept introduced by Freudenberger (1974) and Maslach (1982) describing a work-related process resulting in a state of emotional exhaustion, depersonalization, and reduced personal accomplishment, there are only some, again contradictory, findings reported for entrepreneurs. While Jamal (2007) found higher total burnout, emotional exhaustion, and lack of accomplishment in entrepreneurs compared with employees, Tetrick et al. (2000) reported that owners showed lower emotional exhaustion and higher professional and job satisfaction than employees.

The same inconsistency is seen in health-related personality characteristics of entrepreneurs. There is some evidence that entrepreneurs are more likely to be type A personalities (Boyd 1984; Kieschke and Schaarschmidt 2005). This concept introduced by Friedman and Rosenmann (1974) describes a constant struggle to achieve more in less time, and if necessary, against the opposing efforts of other things or other persons and has been found to be associated with higher cardiovascular health risk. But Begley and Boyd (1986) found no difference in type A behavior between business founders and non-business founders.

While previous research often focused on symptoms and pathology, Sankelo and Akerblad (2009) point out the importance of evaluating factors that promote and support coping at work. In pursuing this question of how people stay healthy while enduring professional stress, Schaarschmidt and Fischer (2003) developed a theoretical and methodological framework describing eleven dimensions in the context of work that could either be risk factors or resources for health. In addition to the work-engagement addressed in the type A behavior of Friedman and Rosenmann (1974), these dimensions also cover the domains of resistance to stress and emotional well-being and are represented in the questionnaire Work-related Behavior and Experience Patterns (AVEM). The approach goes beyond the mere identification of strain factors and symptoms. In the tradition of the

transactional stress model (Lazarus and Folkman 1984) and the Salutogenesis model (Antonovsky 1987), the affected person is perceived as an active element in dealing with professional demands and strains rather than a passive victim of the circumstances. Analyzing not only one’s risk factors but also one’s resources can lead to the early identification of possible future health risks. Stress and potential impairment can be expected with excessive professional ambition, low resistance toward stress, and limited emotional well-being. For example, very high scores in the dimensions of professional commitment (e.g., tendency to exert, striving for perfection, (in)ability to detach from work) have often been linked to high levels of stress and health problems. Overcommitment, especially if correlated with low reward, was found as a risk factor for cardiovascular disease (Siegrist 1996, 2002). McEwen (2000, 2006) described a chronic imbalance between effort and recovery as a wear and tear on the body and the brain that may lead to mental or somatic disorders. The inability to detach from work has been described as a major characteristic of workaholism, which was a potent predictor for reduced health and well-being (Taris et al. 2008). According to this model, the analysis of configuration characteristics across the eleven scales is more valuable than the scores on a single dimension. For example, high scores in the dimension of professional ambition may not be a health risk in itself. If, however, these are combined with low scores in the dimension of emotional distancing from work, this combination may set the individual at a higher risk. This is in line with Tyssen et al. (2007) who affirm that *types* of personality give a more comprehensive picture of an individual’s character than the *dimensions* of personality alone. In a cluster analysis of the dimensions of the initial AVEM sample group ($N = 1,598$ of diverse professions), Schaarschmidt and Fischer (2003) identified four characteristic configurations that have been described as “healthy” (pattern G), “unambitious” (pattern S), “overexertion” (risk pattern A), and “burnout” (risk pattern B). The relationship between dimensions and behavior patterns is illustrated in Fig. 1. Several studies have empirically shown that the AVEM typology is useful in relating work-strain and coping behavior to health (Schaarschmidt 2004; Schaarschmidt and Fischer 2001). The validation criteria have been wide ranging: from subjective statements on the person’s well-being, perceived professional competencies, and the assessment of current strain, to objective indicators of coping capacity (days of sick leave, physiological parameters). Without exception, pattern G shows the most favorable, while the risk patterns A and B show the most unfavorable relationship to employees’ health. The burnout-related risk pattern B scored highest on the scale of emotional exhaustion of the Maslach Burnout Inventory (MBI; Schaarschmidt and Fischer 2003).

Fig. 1 Relationship between work-related behavior and experience patterns and health-relevant dimensions of the AVEM



Among teachers, only 13.8% showed a healthy pattern (pattern G), 17.7% suffered severe overcommitment and strain (risk pattern A), 35.9% showed an unambitious pattern (pattern S), and 32.5% of the sample suffered from burnout (risk pattern B). Burnout was significantly higher among women (Bauer et al. 2006). Except for a larger proportion with the unambitious pattern S, a quite similar distribution was found in physicians working in hospitals (Voltmer et al. 2008). In this study, female physicians showed lower scores for professional ambition and offensive coping with problems as well as higher scores for resignation tendencies. Male physicians were less satisfied with life and reported lower experiences of social support.

In the current study, we aimed to assess the status of job-related health risks and resources of entrepreneurs. Among entrepreneurs, the question regarding gender differences is under constant debate (Carter et al. 2001). While differences in the acquisition of start-up finances, professional networking, and risk taking have been described, no differences were reported for motivation and personal characteristics (Brindley 2005; Sexton and Bowman-Upton 1990). There is some evidence that the health of female entrepreneurs might be poorer than that of male entrepreneurs or female employees (Arber and Lahelma 1993; Dolinsky and Caputo 2003) but differences between countries have been described (Lahelma and Arber 1994). From a Finnish study, a lower cardiovascular risk score was reported for women compared with men across various occupations including entrepreneurs (Luoto et al. 1994). Therefore, the current study was interested in a gender-sensitive analysis of the health risks and resources of entrepreneurs. In addition, teachers and physicians in private practice were selected as two distinct professions for comparison. Teachers are doing “people work”, mainly in an employed status. Physicians in private practice are

working in a typical helping profession, but by running their own practice, they can be viewed as a type of entrepreneur. To our knowledge, the comparison of behavior and experience patterns with this perspective has not been investigated before. Similar to the entrepreneurs surveyed, the percentage of female physicians in private practice was about one-third that of their male counterparts, while the proportion of female teachers was more than half (60%) of the male teachers surveyed.

Materials and methods

The recruitment of the entrepreneur and business starter participants was conducted with the help of the Credit Agency for Reconstruction (KfW) in the year 2000. Of the 5,000 entrepreneurs who were informed about the survey, 2,000 were interested in participating and received the questionnaire. The response rate was 31.6% ($n = 632$). Almost one-third (29.6%) of the 632 participants were women. The average age of the participants was 36.8 years ($SD = 6.81$), and 45.3% of them were graduates of university. The majority of the entrepreneurs (71.8%) were the sole managing director at their business, whereas 28.2% shared leadership responsibilities with others. None of the subjects had been on the market with their business for more than 3 years, and 45.6% of the participants had commenced their project during the year of our survey. The distribution of the branches was subdivided proportionally as follows: 3.2% education and research, 8.5% law, tax, and insurance, 19.1% trade, selling and transportation, 29.5% handicraft and production, 15.4% health, rehabilitation, and therapy, and 24.4% other services. The study sample was representative for the debtors of the credit agency for reconstruction (KfW) with regard to age and sex.

Besides the entrepreneurs, teachers and physicians were represented in our analysis. The data for the teachers were taken from the study “Psychological Health in the Teaching Profession” that was supported by the German Federation of Career Public Servants (dbb) and collected data from teachers and other professions in multiple surveys. Included in the analysis were 5,196 teachers of all school forms, with data collected between 2000 and 2002 in 11 federal states. The response rate was about 55%. The majority (60.9%) were women, and their mean age was 45.6 (SD 9.0) years. The sample could be viewed as a representative sample of German teachers (Schaarschmidt and Fischer 2003).

The physicians sample was derived in a cross-sectional survey of 900 physicians working in medical practices, randomly selected from a list of 3,935 physicians enrolled in the Medical Association of Schleswig–Holstein, Germany. The response rate after two reminders was 61% ($n = 549$). The sample consisted of 64% male and 36% female physicians. Their mean age was 51.7 years (SD 8.0), and the mean duration of professional work was 23.4 (SD 8.0) years. About one-half of the physicians were working in a single and 45% in a group practice. There was no difference between responders and non-responders in terms of age and medical discipline but female physicians were more likely to respond compared with men (68% vs. 56%; $\chi^2(1) = 11.02$, $P < .01$, $V = .11$; Voltmer et al. 2010a). The sample could be viewed as representative of the physicians of this state. Participation in all studies was voluntary. Because the study was associated with minimal risks and complied with the data protection rules, it was approved by the ethics commission at the University of Freiburg in a minimal risk review and exempted from a full formal evaluation.

Instruments

The questionnaire was comprised of demographic questions and two standard instruments, the Work-related Behavior and Experience Patterns (AVEM; Schaarschmidt and Fischer 2003) and two scales from the Checklist for Entrepreneurs (Schaarschmidt et al. 2000).

Work-related behavior and experience patterns (AVEM)

The AVEM was developed to collect self-reported data about personal experiences with work-related stress and typical coping behaviors. The instrument covers the following three major domains: (1) professional commitment, (2) resistance towards stress, and (3) emotional well-being (in the context of work), which are assessed with 11

separate scales. Each scale comprises six items with response options presented as 5-point Likert scales ranging from 1 (strongly disagree) to 5 (strongly agree; Table 1). Scale reliability was assessed in samples of different professions. The median Cronbach's α was 0.80 (minimum: 0.79, maximum: 0.86). Results of the reliability analysis for the three professional groups examined are presented in Table 1.

The findings underline the psychometric quality of the AVEM questionnaire both with regard to the homogeneity of the internal consistencies within a sample and with regard to the comparison of the singular coefficients across different samples. The 11 dimensions of AVEM are assessed with almost the same accuracy. The coefficients for entrepreneurs, teachers, and physicians average 0.82 (calculated with Fisher's Z aggregation). The internal consistencies (Cronbach's α) per single scale deviate only marginally between the samples. Low correlations of the 11 AVEM scales in all three samples are a necessary condition for classifying profiles reliably. The average value calculated with Fisher's Z aggregation is lower than 0.30 (absolute value) in every sample.

People not only differ in the total score of each scale but also differ in the specific combination of their scale scores. A cluster analysis of the initial AVEM sample group, comprised of 1,598 representatives from different professions, revealed a four-cluster solution (Fig. 1). This four-cluster solution was conceptually plausible and fulfilled the formal quality criteria for multivariate classification techniques (e.g., high within-cluster homogeneity and high between-cluster heterogeneity) and extensive profile analyses (i.e., high reliability and moderate intercorrelation of singular scales). The same cluster solution was replicated with sufficient concurrence in 10 random samples drawn from the same 1,598 test subjects (average $\kappa > 0.80$; Schaarschmidt and Fischer 2003).

The four different types of work-related experience and behavior patterns derived from the cluster analysis are described as follows:

Pattern G (“Health”)

Individuals with the healthy pattern G score high but not highest on professional commitment (including the subjective significance of work, professional ambition, tendency to exert, striving for perfection). Although the will to show high performance is expressed, the important ability to distance oneself from work-related demands (Richter et al. 1996) is preserved (emotional distancing). Those in this cluster are able to prevent intrusion of professional problems into their leisure time. Scores on the scales measuring coping capacity further underline their healthy attitude towards work (low scores on resignation

Table 1 AVEM dimensions with item examples and reliability scores (Cronbach's α) for the three professional groups

AVEM dimensions (Item example)	Entrepreneurs ($n = 632$) α	Teachers ($n = 5,169$) α	Physicians ($n = 549$) α
1. Subjective significance of work (Work is the most important element in my life)	.84	.83	.80
2. Professional ambition (I want to achieve more in my career than most people I know)	.81	.85	.77
3. Tendency to exert (If necessary, I will work until I am exhausted)	.79	.84	.85
4. Striving for perfection (My work should never contain errors or deficiencies)	.84	.87	.84
5. Emotional distancing (After work is over I can forget about it quickly)	.86	.86	.89
6. Resignation tendencies (I quickly resign myself to lack of success)	.84	.85	.82
7. Offensive coping with problems (For me, difficulties are there to be overcome)	.80	.81	.77
8. Balance and mental stability (I don't get upset easily)	.80	.83	.79
9. Satisfaction with work (Until now I have been successful in my work)	.85	.85	.70
10. Satisfaction with life (So far, I have been satisfied with my life)	.79	.83	.84
11. Experience of social support (My partner shows understanding for my work)	.81	.82	.81

The eleven dimensions can be divided into three domains: professional commitment (1–5), resistance towards stress (6–8), and emotional well-being (9–11)

tendencies, high scores in offensive coping with problems, balance, and mental stability). The profile of the G-type person is completed with high scores on those scales, which indicate a generally positive attitude towards life (satisfaction with work, satisfaction with life) and the experience of social support.

Pattern S (“Unambitious”)

Characteristics of this pattern include below average scores on subjective significance of work, professional ambition, tendency to exert, and striving for perfection. In addition, individuals who display this behavioral pattern score the highest of all the four types on emotional distancing. They also show medium to high scores in the dimensions of resistance to stress and emotional well-being. In general, the S-pattern may be of more interest in terms of professional motivation than occupational health, but the low commitment to work might indicate a certain ambivalence that expresses either less interest in work than in other areas of life or a sign of inner frustration with work.

Risk pattern A (“Overexertion”)

This pattern is characterized by excessive commitment at the workplace. The scores on relevant scales show significant deviations from average, such as the subjects' low ability to distance themselves from work. For Taris et al. (2008), this is a major characteristic of workaholics and highly predictive for reduced well-being. Further, high commitment is not coupled with sufficient resilience (low scores on coping capacity) to withstand excessive stress and work-related demands that set the individual at a high risk for developing health problems. This has also been demonstrated by results with the overcommitment scale of Siegrist (2001), s.a. Buddeberg-Fischer et al. (2008). In addition, rather negative emotions dominate the work experience. High commitment to work does not seem to be rewarding, at least not in terms of an “emotional benefit”. The discrepancy between professional commitment and the absence of success or reward has been described by Siegrist (1996, 2002) as “gratification crisis”. In other words, high professional commitment is insufficiently appreciated and leads to low satisfaction. In the long run, this leads to

increased health problems such as cardiovascular diseases (Siegrist 2002). Individuals with risk pattern A show many similarities with the type A behavior concept (Friedman and Rosenmann 1974). The pattern described here attempts to broaden their original concept by emphasizing the complex interplay of excessive commitment, lowered coping capacity, and negative emotions for an individual's health.

Risk pattern B ("Burnout")

Representatives of risk pattern B are characterized by low scores in the dimensions of professional commitment, especially in the subjective significance of work and professional ambitions. In contrast to pattern S, reduced commitment is connected to a limited ability to distance oneself from work demands. For the coping capacity dimensions, all scores are problematic (i.e., resignation tendencies, offensive coping with problems, balance and mental stability). Moreover, low scores on virtually all scales related to satisfaction with work and well-being indicate a negative emotional tone. This type is characterized by exhaustion, the experience of excessive challenge, and resignation. Similarities to the burnout syndrome (Freudenberger 1974; Maslach 1982) are obvious. Referring to the pattern as 'B' (burnout) emphasizes this parallel.

The concurrence of the individual data score of study participants and the four reference profiles can be estimated by a weighted linear combination (based on an algorithm of discriminant analysis). According to the highest concurrence of profiles, each person is assigned to one pattern only (e.g., probability scores $P_G = 0.75$, $P_S = 0.15$, $P_A = 0.06$, and $P_B = 0.04$ classified as pattern G; Schaarschmidt and Fischer 2003). The validity of the instrument was supported by moderate to good correlations with scales that measured related constructs (e.g., Freiburg Personal Inventory (FPI), Maslach Burnout Inventory (MBI), Big-Five Adjective List; Schaarschmidt and Fischer 2003). The high correlation between risk pattern B and the exhaustion scale of the MBI has already been stated. While pattern G scored high on extraversion and low on neuroticism, the opposite was seen for risk pattern B. The highest rate of sick leave absence is observed among pattern B representatives followed by persons with a tendency towards pattern S. Pulse rate normalized significantly faster in persons showing patterns G and S compared with representatives of patterns A and B (Schaarschmidt and Fischer 2003).

In addition to the AVEM, this study employed a questionnaire tailored to the specific occupational situation of entrepreneurs, as measured by the Checklist for Entrepreneurs (Schaarschmidt et al. 2000). This assessment

instrument permits self-evaluation in 15 characteristic dimensions of particular relevance for this career decision. For the purpose of the current investigation, two scales were considered: health prevention (5 five-fold graded items (e.g., "I do spend time on physical training"; Cronbach's $\alpha > 0.8$; stability: $r_{1,2} = .68$) and self-confidence (5 five-fold graded items (e.g., "I'm worried about competing with others"; Cronbach's $\alpha \geq 0.6$; stability, $r_{1,2} = .57$; Kieschke 2003).

Statistical analysis

For statistical analysis, the statistical program SPSS (Version 15.0) was used. Descriptive statistics (e.g., means and standard deviations) were reported for all of the continuous variables. ANOVAs and MANOVAs were used to determine the differences that existed between the AVEM clusters in continuous variables. A comparison of the AVEM patterns across the different professions was made by chi-square analysis.

Results

Behavior and experience patterns

Figure 2 shows a comparison of AVEM patterns of entrepreneurs, teachers, and physicians in private practice. The largest proportion of entrepreneurs presented with the healthy pattern G (45.0% compared with 18.4% teachers and 18.3% physicians). The second largest proportion were those with the overambitious risk pattern A (37.5% compared with 28.9% teachers and 20.6% physicians). Only a small proportion of entrepreneurs presented with an unambitious (9.3%) or a burnout pattern (8.2%). The differences in the distribution of patterns between the professions were statistically significant ($\chi^2(9) = 662.97$, $P < 0.01$). Standard residuals indicated that this was mainly due to the higher proportion of entrepreneurs with the healthy pattern G ($z = 13.0$), the lower proportion with the burnout-related risk pattern B ($z = -8.38$) and the unambitious pattern S ($z = -7.81$), and the high proportions of physicians with the unambitious pattern S ($z = 6.79$).

The distribution of patterns in entrepreneurs did not differ between men and women. In teachers ($P < 0.01$) and physicians ($P < 0.05$), the difference was significant. Female teachers presented with a lower proportion of the healthy pattern G and a higher proportion of the burnout-related risk pattern B compared with men. In female physicians, the opposite trend was found. In both groups, women presented with a higher proportion of the overambitious risk pattern A (Fig. 3).

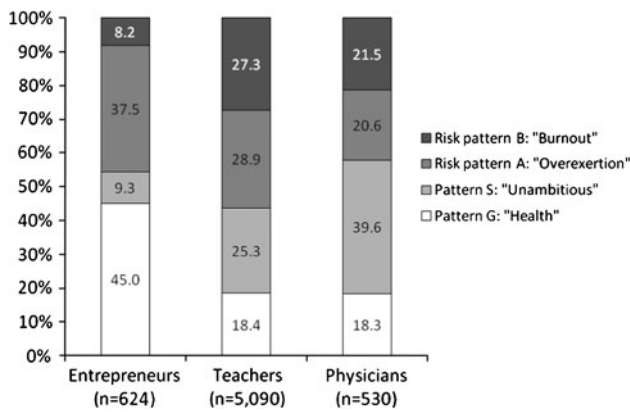


Fig. 2 Distribution of work-related behavior and experience patterns of entrepreneurs compared with teachers and physicians

Table 2 shows the differences of the AVEM patterns in the scales of health prevention and self-confidence from the Checklist for Entrepreneurs. Significant differences ($P < 0.01$, $\eta^2 = 0.13$) were found between entrepreneurs with the healthy patterns compared with those with a risk pattern. For both scales, the lowest scores were found in entrepreneurs with risk pattern A or B. Male entrepreneurs scored significantly higher in self-confidence than did female entrepreneurs ($M = 18.12$, $SD 3.40$ vs. $M = 17.21$, $SD 3.53$). The scores from the health prevention scale did not reflect any gender differences.

Fig. 3 Differences in work-related behavior and experience patterns for job and gender

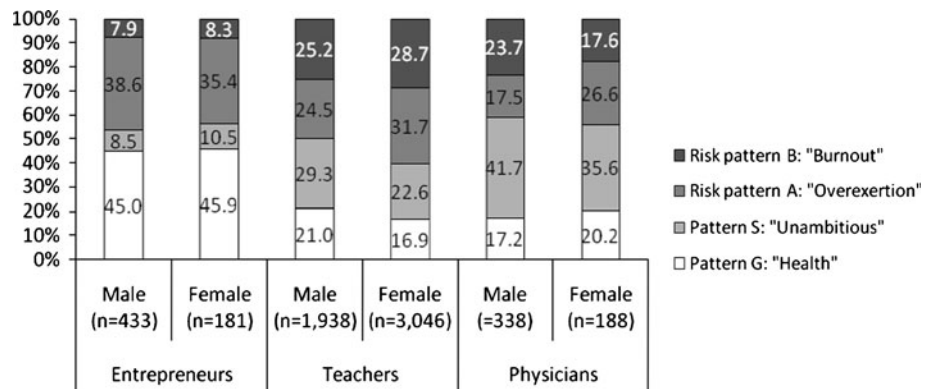


Table 2 Differences of AVEM patterns in two scales of the “Checklist for Entrepreneurs”

		Pattern G “healthy” (n = 276)	Pattern S “unambitious” (n = 57)	Risk pattern A “overexertion” (n = 229)	Risk pattern B “burnout” (n = 51)	P
Self-esteem/confidence	M (SD)	19.11 (3.06)	18.49 (2.85)	16.76 (3.38)	15.16 (3.17)	G–A*, G–B, S–A, S–B
Health care and recreation	M (SD)	14.66 (4.33)	16.21 (4.03)	11.56 (4.25)	13.02 (4.32)	G–A, S–A, S–B

* Significant difference between pattern G and risk pattern A

Health-relevant dimensions

Entrepreneurs differed significantly from teachers (P at least < 0.05) in all but one dimension, emotional distancing. Entrepreneurs scored higher in the domain of professional ambition and showed more favorable scores in the domains of resistance toward stress and emotional well-being. They also differed significantly in nine of eleven dimensions from physicians (P at least < 0.05). Entrepreneurs showed more favorable scores in the domains of professional ambition and resistance toward stress. In the domain of emotional well-being, they scored significantly higher in the dimension satisfaction with life (Table 3).

In contrast to teachers (8 out of 11) and physicians (7 out of 11), female entrepreneurs differed in only three dimensions from their male colleagues. They showed significantly higher scores in the dimensions of emotional distancing ($P < 0.05$) and experience of social support ($P < 0.01$) but also in the dimension of resignation tendencies ($P < 0.01$), compared with their male colleagues (Table 4).

Discussion

The majority of start-up entrepreneurs presented with either a healthy work-related behavior and experience pattern or a pattern at risk for overexertion. The distribution of patterns differed significantly from those seen in

Table 3 Differences in health-relevant dimensions (AVEM) between entrepreneurs, teachers, and physicians

	Entrepreneurs (1; <i>n</i> = 614)		Teachers (2; <i>n</i> = 4,984)		Physicians (3; <i>n</i> = 526)		<i>P</i>
	M	SD	M	SD	M	SD	
Subjective significance of work	18.24	4.82	16.15	4.50	14.85	4.22	1–2*, 1–3, 2–3
Professional ambition	23.06	4.15	17.11	4.65	17.51	3.96	1–2, 1–3
Tendency to exert	21.35	4.31	19.66	4.63	19.40	4.68	1–2, 1–3
Striving for perfection	23.77	3.98	22.03	4.32	21.33	4.48	1–2, 1–3, 2–3
Emotional distancing	15.06	4.79	15.53	4.78	18.54	5.08	1–3, 2–3
Resignation tendencies	15.05	4.62	16.33	4.43	15.98	4.10	1–2, 1–3
Offensive coping with problems	23.98	3.30	21.47	3.53	21.04	3.29	1–2, 1–3, 2–3
Balance and mental stability	19.83	4.38	19.00	4.51	20.55	4.08	1–2, 1–3, 2–3
Satisfaction with work	23.84	3.92	22.76	3.89	23.69	3.32	1–2, 2–3
Satisfaction with life	22.86	3.76	21.86	4.06	21.56	4.41	1–2, 1–3
Experience of social support	23.25	4.46	22.72	4.43	22.69	4.26	1–2

* Significant difference between entrepreneurs (1) and teachers (2)

Table 4 Differences in health-relevant dimensions (AVEM) between male and female entrepreneurs, teachers, and physicians

	Entrepreneurs (1)				<i>P</i> _{m,f}	Teachers (2)				<i>P</i> _{m,f}	Physicians (3)				<i>P</i> _{m,f}	<i>P</i> _{male across professions}	<i>P</i> _{female across professions}
	Men (<i>n</i> = 433)		Women (<i>n</i> = 181)			Men (<i>n</i> = 1,938)		Women (<i>n</i> = 3,046)			Men (<i>n</i> = 338)		Women (<i>n</i> = 188)				
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD			
Subjective significance of work	18.06	4.87	18.67	4.68		15.47	4.57	16.59	4.40	**	14.33	4.17	15.80	4.16	**	1–2 ^a , 1–3, 2–3	1–2, 1–3
Professional ambition	23.22	3.94	22.66	4.60		17.49	4.73	16.87	4.59	**	17.39	4.08	17.73	3.73		1–2, 1–3	1–2, 1–3, 2–3
Tendency to exert	21.41	4.15	21.22	4.68		19.06	4.58	20.04	4.62	**	18.75	5.20	20.04	4.79	**	1–2, 1–3	1–2, 1–3
Striving for perfection	23.57	4.01	24.24	3.90		21.77	4.25	22.20	4.35	**	21.04	4.57	21.85	4.28	*	1–2, 1–3, 2–3	1–2, 1–3
Emotional distancing	14.81	4.64	15.67	5.10	*	15.94	4.84	15.27	4.72	**	18.65	5.25	18.32	4.77		1–2, 1–3, 2–3	1–3, 2–3
Resignation tendencies	14.52	4.44	16.33	4.80	**	15.57	4.23	16.82	4.48	**	15.81	4.30	16.29	3.70		1–2, 1–3	–
Offensive coping with problems	24.04	3.29	23.82	3.33		21.51	3.46	21.44	3.57		21.03	3.24	21.06	3.38		1–2, 1–3, 2–3	1–2, 1–3
Balance and mental stability	19.87	4.17	19.73	4.83		19.88	4.39	18.43	4.50	**	20.82	4.05	20.05	4.10	*	1–3, 2–3	1–2, 2–3
Satisfaction with work	23.84	3.93	23.84	3.92		22.72	4.04	22.79	3.79		23.47	3.42	24.09	3.09	*	1–2, 2–3	1–2, 2–3
Satisfaction with life	22.75	3.68	23.11	3.94		21.80	3.99	21.89	4.09		21.14	4.57	22.31	3.99	**	1–2, 1–3, 2–3	1–2
Experience of social support	22.80	4.36	24.31	4.52	**	22.50	4.23	22.87	4.55	**	22.25	4.29	23.48	4.10	**	–	1–2

* *P* < 0.05, ** *P* < 0.01

^a Significant difference between entrepreneurs (1) and teachers (2)

teachers and physicians. In contrast to these professions, there were no significant gender differences in entrepreneurs in work-related behavior and experience patterns.

Behavior and experience patterns of entrepreneurs compared with teachers and physicians

The judgment of enterprise developments is usually made only in accordance with strictly based economic criteria. A significant factor, possible health consequences of the career choice for the entrepreneur, thus often remains unconsidered. The ways in which an entrepreneur handles the effects of their job and how they approach the presenting tasks and challenges depend not least on the personality characteristics, individual resources, and coping styles that one brings into the business world. The theoretical and methodological framework of Schaarschmidt and Fischer (2003) presented in the current study with eleven health-relevant dimensions and four behavior and experience patterns opens a perspective for the measurement of such resources and coping styles.

The literature about health and well-being of entrepreneurs compared with the general population or employees reveals contradictory findings. Some researchers found better health and higher well-being (Bradley and Roberts 2004; Sankelo and Akerblad 2008; Stephan and Roesler 2010). Others found lower well-being and higher mental disturbances (Parslow et al. 2004; Rau et al. 2008). Our results with both a high proportion of entrepreneurs with the healthy pattern G and another high proportion with entrepreneurs at risk for overexertion reflect these findings. At the level of the dimensions in general, entrepreneurs showed the highest expression of professional commitment and emotional well-being compared with teachers and physicians. They also scored higher than teachers and physicians in offensive coping with problems and lowest in resignation tendencies. The analysis of patterns reveals that one major proportion might be highly motivated and engaged in work but also be able to find the right balance between work and private life. Another major proportion has difficulties in maintaining this balance. Their overcommitment and inability to distance themselves from work has been described by Taris et al. (2008) as a major characteristic for workaholism and subsequent health risks. Overcommitment, especially if not correlated with an appropriate reward, was described as gratification crisis and has been demonstrated as a major risk constellation for cardiovascular disease (Siegrist 2002). In addition, the readiness for A-representatives to perform active prevention is unmistakably slight. This might be hazardous because within the characteristics of successful entrepreneurs, good health and self-confidence have been reported as important factors (Welsh and White 1981). There is only

limited research about entrepreneurs and burnout. In contrast to our results, Jamal (2007) found higher total burnout in entrepreneurs compared with employees. In accordance with our findings, Tetrick et al. (2000) reported that owners showed lower emotional exhaustion and higher professional and job satisfaction than employees.

Beside the influence of work, self-selection effects into the job have to be considered. Certain careers are preferred by certain persons, and the choice of a career is unlikely to be accidental. Whether candidates and job profiles match lies not only in the eyes of the “others” (aspect of external selection), but also self-selection effects play a crucial role (Lent et al. 1994; Semmer and Schallberger 1996). An individual that demonstrates limited commitment to a job or even doubts his or her own competence will hardly choose the career of an entrepreneur.

Because physicians in private practice are both members of a helping profession and entrepreneurs, it was of interest whether the distribution of patterns of physicians in private practice would be more similar to the results reported by other physicians or those of the entrepreneurs. The results showed a significant difference between entrepreneurs and physicians and a higher similarity to the distribution of other helping professionals. For physicians in hospitals (Voltmer et al. 2008), teachers (Bauer et al. 2006), or pastors (Voltmer et al. 2010b) comparable low proportions of the healthy pattern G and high proportions of the unambitious pattern S and the burnout-related risk pattern B have been reported. This might indicate that the initial choice of the profession was driven by the characteristics of the profession (working with people, helping people) rather than by running a business.

Gender differences in work-related behavior and experience patterns

A substantial number of studies addressing female entrepreneurship do not approve of systematic differences between male and female entrepreneurs. In starting a business, women are motivated by the same factors (money, independence, business opportunities) as their male counterparts. They also do not differ in typical personality traits (e.g., autonomy, persistence, aggression, leadership, locus of control; Birley 1989). Women measured business success by the same criteria that men do. However, women are usually younger when starting their business, have more difficulties in the acquisition of start-up capital and, consequently, start with only one-third of the financial resources, as compared with men. An important difference with regard to entrepreneurship has been found regarding lower self-confidence scores among women than among men (Berry 1980; Scherer et al. 1990). As a potential consequence of the above-mentioned factors, the performance of their business does not

fare as well as that of their male counterparts (Carter et al. 2001). Some researchers also report poorer health of female entrepreneurs compared with male entrepreneurs or female employees (Arber and Lahelma 1993; Dolinsky and Caputo 2003). The current study found no gender-related differences between work-related behavior and experience patterns between female and male entrepreneurs. This finding provides support to those studies that challenge gender as a relevant factor in running a business “arguing that the process of ‘creating and growing’ wealth is universal” and not dependent on gender (Birley 1989:129; Carter et al. 2001:27). At the level of the dimensions, highly significant differences in gender were only found for the dimensions of resignation tendencies and social support, with female entrepreneurs scoring higher than men. They also scored lower in self-esteem than men. These characteristics have often been reported in other studies researching women across professions (Daalen et al. 2005; Grossi et al. 2003; Scherer et al. 1990; Voltmer and Spahn 2009). Concordant with these findings, resignation tendencies were the only dimension with no significant differences between women across the professional groups investigated here.

In contrast, in the group of teachers surveyed, women presented with a significantly more unfavorable distribution of patterns than did men, whereas female physicians in private practice presented with higher proportions of the healthy pattern G and lower proportions of the burnout-related risk pattern B compared with their male colleagues. However, female physicians also had a higher proportion associated with the overambitious risk pattern A. It seems that female physicians who decided to start their own business with a medical practice are more resilient to negative emotions, but also more at risk for overexertion than their female colleagues in hospitals (Voltmer et al. 2008) or their male colleagues in medical practice. As such, an influence in self-selection with regard to running a business might be seen in female physicians as mentioned before in entrepreneurs. It might be typical in this regard that more than 60% of teachers were women but only a small proportion of one-third of entrepreneurs and physicians.

The large proportion of entrepreneurs that presented with a pattern of self-exploitation and overexertion emphasized the need for appropriate prevention and health promotion. This should address issues at the level of the individual behavior, as well as contextual factors. Intervention studies in teachers have been successful in reducing risk behavior and stabilizing healthy behaviors (Schaarschmidt and Kieschke 2007).

Limitations

The overall response rate among entrepreneurs was 31.6%, which represents an acceptable rate as compared with

studies investigating this professional group. At the same time, some bias risks could not be ruled out. While the mean age of the study samples differed, there was no significant interaction effect between age and profession regarding health dimensions and patterns. The analysis is based on self-reported data and, therefore, represents the subjective view of the participants. Independent data (physiological parameters, sick leave, financial scores) or estimations of others would be valuable.

Conclusion

In summary, entrepreneurs were the professional group with the highest proportion of the healthy pattern G; however, they also presented with a high proportion at risk for overexertion. Unlike the other professions, no significant difference in the distribution of health-relevant patterns was found between male and female entrepreneurs. This might support the notion that there is a self-selection of healthy people with high professional commitment into this professional career. This might also be supported by the more favorable distribution of female physicians in private practice and the overall lower proportion of female entrepreneurs and physicians. Appropriate means for the high proportion of entrepreneurs at risk for overexertion that help raising self-awareness and healthier coping styles would be valuable. Addressing personal health and adopting appropriate coping styles may be beneficial not only for one’s health but also for one’s business success.

Conflict of interest The authors declare that they have no conflict of interest.

References

- Aitken Harris J, Saltstone R, Fraboni M (1999) An Evaluation of the Job Stress Questionnaire with a Sample of Entrepreneurs. *J Bus Psychol* 13:447–455
- Antonovsky A (1987) *Unraveling the mystery of health—how people manage stress and stay well*. Jossey-Bass Publishers, San Francisco
- Arber S, Lahelma E (1993) Inequalities in women’s and men’s ill-health: Britain and Finland compared. *Soc Sci Med* 37:1055–1068
- Bauer J, Stamm A, Virnich K, Wissing K, Müller U, Wirsching M, Schaarschmidt U (2006) Correlation between burnout syndrome and psychological and psychosomatic symptoms among teachers. *Int Arch Occup Environ Health* 79:199–204
- Begley TM, Boyd DP (1986) Psychological characteristics associated with entrepreneurial performance. In: Ronstadt R, Hornaday JA, Peterson R, Vesper KA (eds) *Frontiers of entrepreneurship research* Babson College, Massachusetts, pp 146–165
- Berry MC (1980) Targeting more aid to women entrepreneurs. *Venture May*:294–304
- Birley S (1989) Female Entrepreneurs: Are They Really Any Different? *J Small Bus Manage* 27:32–37

- Boles JS, Dean DH, Ricks JM, Short JC, Wang G (2000) The dimensionality of the Maslach Burnout Inventory across small business owners and educators. *J Vocat Behav* 56:12–34
- Boyd DP (1984) Type A behaviour, financial performance and organizational growth in small business firms. *J Occup Psychol* 57:137–140
- Bradley DE, Roberts JA (2004) Self-employment and job satisfaction: investigating the role of self-efficacy, depression, and seniority. *J Small Bus Manage* 42:37–58
- Brindley C (2005) Barriers to women achieving their entrepreneurial potential. *Intern J Entrepreneurial Behav Res* 11:144–161
- Bryant TA (2002) Entrepreneurship. In: Goethals GR, Sornsen B, Burns JM (eds) *Encyclopedia of leadership*. Sage, Thousand Oaks, pp 442–448
- Buddeberg-Fischer B, Klaghofer R, Stamm M, Siegrist J, Buddeberg C (2008) Work stress and reduced health in young physicians: prospective evidence from Swiss residents. *Int Arch Occup Environ Health* 82:31–38
- Carter S, Anderson S, Shaw E (2001) Women's business ownership: a review of the academic, popular and internet literature. Department of Marketing, University of Strathclyde, Glasgow
- Chay YW (1993) Social support, individual-differences and well-being—a study of small business entrepreneurs and employees. *J Occup Organ Psych* 66:285–302
- Daalen G, Sanders K, Willemson TM (2005) Sources of social support as predictors of health, psychological well-being and life satisfaction among Dutch male and female dual-earners. *Women Health* 41:43–62
- Dolinsky AL, Caputo RK (2003) Health and female self-employment. *J Small Bus Manage* 41:233–241
- Freudenberger HJ (1974) Staff burn-out. *J Soc Issues* 30:159–165
- Friedman M, Rosenmann RH (1974) Type A behavior and your heart. Knopf, New York
- Grossi G, Perski A, Evengard B, Blomkvist V, Orth-Gomer K (2003) Physiological correlates of burnout among women. *J Psychosom Res* 55:309–316
- Jamal M (2007) Short communication: burnout and self-employment: a cross-cultural empirical study. *Stress Health* 23:249–256
- Kawakami N, Iwata N, Tanigawa T, Oga H, Araki S, Fujihara S, Kitamura T (1996) Prevalence of mood and anxiety disorders in a working population in Japan. *J Occup Environ Med* 38:899–905
- Kieschke U (2003) *Arbeit, Persönlichkeit und Gesundheit*. Logos, Berlin
- Kieschke U, Schaarschmidt U (2005) Bewältigungsverhalten bei Existenzgründern—Ein typendiagnostischer Beitrag zur Psychologie des Unternehmertums. *Wirtschaftspsychologie* 2:71–85
- Lahelma E, Arber S (1994) Health inequalities among men and women in contrasting welfare states Britain and three Nordic countries compared. *Eur J Public Health* 4:213–226
- Lazarus RS, Folkman S (1984) *Stress, appraisal and coping*. Springer, New York
- Lent WL, Brown SD, Hackett G (1994) Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *J Vocat Behav* 45:79–122
- Lewin-Epstein N, Yuchtman-Yaar E (1991) Health risks of self-employment. *Work Occupation* 18:291–312
- Luoto R, Pekkanen J, Uutela A, Tuomilehto J (1994) Cardiovascular risks and socioeconomic status: differences between men and women in Finland. *J Epidemiol Commun Health* 48:348–354
- Maslach C (1982) Understanding burnout: definitional issues in analyzing a complex phenomenon. In: Paine WS (ed) *Job, Stress and Burnout*. Sage Publications, Beverly Hills, pp 29–40
- McEwen BS (2000) The neurobiology of stress: from serendipity to clinical relevance. *Brain Res* 886:172–189
- McEwen BS (2006) Protective and damaging effects of stress mediators: central role of the brain. *Dialogues Clin Neurosci* 8:367–381
- Parslow RA, Jorm AF, Christensen H, Rodgers B, Strazdins L, D'Souza RM (2004) The associations between work stress and mental health: a comparison of organizationally employed and self-employed workers. *Work Stress* 18:224–231
- Rau S, Hoffmann K, Metz U, Richter PG, Rösler U, Stephan U (2008) Gesundheitsrisiken bei Unternehmern. *Z Arb Organ* 52:115–125
- Richter P, Rudolf M, Schmidt CF (1996) Fragebogen zur Analyse belastungsrelevanter Anforderungsbewältigung (FABA). Swets, Frankfurt a. M
- Sankelo M, Akerblad L (2008) Nurse entrepreneurs' attitudes to management, their adoption of the manager's role and managerial assertiveness. *J Nurs Manag* 16:829–836
- Sankelo M, Akerblad L (2009) Nurse entrepreneurs' well-being at work and associated factors. *J Clin Nurs* 18:3190–3199
- Schaarschmidt U (2004) *Halbtagsjobber?* Beltz Verlag, Weinheim und Basel
- Schaarschmidt U, Fischer AW (2001) Bewältigungsmuster im Beruf. Persönlichkeitsunterschiede in der Auseinandersetzung mit den Arbeitsbelastungen. Vandenhoeck & Ruprecht, Göttingen
- Schaarschmidt U, Fischer AW (2003) *Arbeitsbezogenes Verhaltens- und Erlebensmuster AVEM*. Swets & Zeitlinger, Frankfurt a. M
- Schaarschmidt U, Kieschke U (2007) *Gerüstet für den Schulalltag. Psychologische Unterstützungsangebote für Lehrerinnen und Lehrer*. Beltz-Verlag, Weinheim, Basel
- Schaarschmidt U, Groth C, Kieschke U, Spörer N (2000) *Checkliste für Existenzgründer*. Institut für Psychologie, Potsdam
- Scherer RF, Brodzinski JD, Wiebe FA (1990) Entrepreneur, career selection, and gender: a socialization approach. *J Small Bus Manage* 28:37–44
- Semmer N, Schallberger U (1996) Selection, socialization, and mutual adaption: resolving discrepancies between people and work. *Appl Psychol-Int Rev* 45:263–288
- Sexton D, Bowman-Upton N (1990) Female and male entrepreneurs: psychological characteristics and their role in gender-related discrimination. *J Bus Ventur* 5:29–36
- Siegrist J (1996) *Soziale Krisen und Gesundheit*. Hogrefe, Göttingen
- Siegrist J (2001) Psychosocial factors influencing development and course of coronary heart disease. *Herz* 26:316–325
- Siegrist J (2002) Effort-reward imbalance at work and health. In: Perrewe PL, Ganster DC (eds) *Historical and Current Perspectives on Stress and Health*. JAI Elsevier, Amsterdam, pp 261–291
- Stephan U, Roesler U (2010) Health of entrepreneurs versus employees in a national representative sample. *J Occup Organ Psych* 83:717–738
- Taris TW, Geurts SAE, Schaufeli WB, Blonk RWB, Lagerveld SE (2008) All day and all of the night: the relative contribution of two dimensions of workaholism to well-being in self-employed workers. *Work Stress* 22:153–165
- Tetrick LE, Slack KJ, Da Silva N, Sinclair RR (2000) A comparison of the stress-strain process for business owners and nonowners: differences in job demands, emotional exhaustion, satisfaction, and social support. *J Occup Health Psychol* 5:464–476
- Tyssen R, Dolatowski FC, Rovik JO, Thorkildsen RF, Ekeberg O, Hem E, Gude T, Gronvold NT, Vaglum P (2007) Personality traits and types predict medical school stress: a six-year longitudinal and nationwide study. *Med Educ* 41:781–787
- Voltmer E, Spahn C (2009) Social support and physicians' health. *Z Psychosom Med Psychother* 55:51–69
- Voltmer E, Kieschke U, Schwappach DL, Wirsching M, Spahn C (2008) Psychosocial health risk factors and resources of medical students and physicians: a cross-sectional study. *BMC Med Educ* 8:46

- Voltmer E, Schwappach DLB, Frank E, Wirsching M, Spahn C (2010a) Work-related experience and behavior patterns and predictors of mental health in German physicians in medical practice. *Fam Med* 42:433–439
- Voltmer E, Büssing A, Thomas C, Spahn C (2010b) Religiosity, spirituality, health and work-related behaviour patterns in pastors of two free protestant denominations. *Psychother Psychosom Med Psychol* 60:425–433
- Welsh JA, White JF (1981) Converging on characteristics of entrepreneurs. In: Vesper KH (ed) *Frontiers of entrepreneurship research*. Babson Center for Entrepreneurial Studies, Wellesley, Mass, pp 504–515