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Prevalence and predictors of burnout in Swiss farmers – Burnout in the context of interrelation of work and household

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1. Introduction

Burnout is a syndrome with increasing relevance for public health. The term was coined in the 1970s in the United States to describe the social problem but not to provide a scholarly construct (Maslach & Schaufeli, 1993). The definition of burnout is not clear; research results are discussed controversially (Ahola et al., 2005; Baer, Schuler, Füglister-Dousse, & Moreau-Gruet, 2013; Kissling, Mendel, & Förstl, 2014; Kramer, 2014; Schaufeli, 1998; von Känel, 2008), and definitions vary. Other psychiatric illnesses often linked with burnout, following Freitag (2013, p. 204), are not specifically separated. Although depression is a psychological illness as defined in the World Health Organization's ICD-10 (disorders F32 and F33) (Dilling, Momour, & Schmidt, 2014), burnout is not (Jaggi, 2008). A precise distinction between burnout and depression is not possible (Jaggi, 2008). Burnout symptoms overlap increasingly with increasing intensity of the symptomatology of depression (Hell, 2007). The symptoms for burnout are very diverse. The burnout literature lists more than 130 expressions of burnout (Jerich, 2008). Leiter and Schaufeli (1996) proposed a tighter definition of burnout as a conflict in a person's relationship with his/her work or a serious disorder of well-being that develops over a long time period during stressful conditions; a person may be completely exhausted and also doubt his or her capacity to perform work tasks. According to Hell (2007), the burnout concept is very attractive because it explains exhaustion as resulting from stress and avoids stigmatization, since burnout is not a defined clinical psychological diagnosis. This is an advantage to approximate the discussion and research to the mental health problems like depression and anxiety in agriculture. As is known from burnout research, burnout has consequences for the mental and physical health of the affected persons and the system around them (Burisch, 2005).

When examining burnout, there is still the problem of the definition, so the instrument chosen to measure it is of great importance. According to a position paper by the German Association for Psychiatry, Psychotherapy and Psychosomatics (Deutsche Gesellschaft für Psychiatrie, 2012), the aim of a burnout instrument is not to make a diagnosis but to measure the subjective extent of burnout symptoms.

The present study is based generally on the definition by Leiter and Schaufeli (1996), which describes burnout as a conflict in a one's relationship with one's work and a serious disorder of well-being. As there is no definitive definition of burnout (Deutsche Gesellschaft für Psychiatrie, 2012), defining burnout is also dependent on the instrument used, which in this study is the Copenhagen Burnout Inventory, according to which, “Personal burnout is a state of prolonged physical and psychological exhaustion” (Borritz & Kristensen, 1999).

Although burnout has been well research in many occupational groups, such as oncologists (Murali & Banerjee, 2018), mental health professionals (O'Connor, Muller Neff, & Pitman, 2018), journalists (MacDonald, Saliba, Hodgins, & Ovington, 2016), high school students (Walburg, 2014) and athletes (Gustafsson, Hancock, & Côté, 2014), farmers represent an under-researched group in this area. Burnout studies focusing on the farming sector are available for only a few countries, such as France (Campeon & Batt-Moillo, 2008; Lourel & Mabire, 2008) and Finland (Kallioniemi, Simola, Kaseva, & Kymäläinen, 2016). We decided to investigate burnout in Swiss agriculture for two reasons. First and foremost, we see the need to close the research gap in terms of prevalence and predictors of burnout in agriculture. For about 5 years now, the Swiss agricultural press has increasingly published case stories about burnout in agriculture; nevertheless, empirical studies are still lacking. Also, as we know from the studies mentioned above, burnout can have serious consequences not only for the psychological and physical health of affected persons but also for their surrounding system (Burisch, 2005). It is obvious that burnout prevention is better than therapy, and overlooked burnout symptoms worsen over time and can even lead to suicide (Burisch, 2005). Besides personal consequences, burnout known to reduce the person's working productivity (Maslach, Schaufeli, & Leiter, 2001), with consequences for animal welfare and the whole production process on the farm. In Swiss agriculture, work loss can hardly be compensated for, because employing a temporary assistant is often impossible. Well-educated workers are rare, as the Swiss farming structure offers only few possibilities to work as an employed farmer. Finally, up to now only a few studies have analyzed a small range of stress and burnout predictors on farms, such as just policy and farm

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characteristics or just personality. There is a lack of comprehensive knowledge about the prevalence and reasons for burnout in agriculture. This knowledge is fundamental to establishing prevention programs that assure the health and efficiency of a farm and farm family and therefore sustainable agriculture.

The second reason for conducting this study is the strong linkage between farm (i.e., work) and family. It makes agriculture an interesting sector for analyzing whether and how the interrelation of work and family can influence burnout. Additionally, Switzerland represents an interesting case study region for analyzing burnout in agriculture because the agricultural sector is structurally different from the sector in other European countries. In 2017, the average agricultural area per farm in Switzerland was about 20.3 hectares (Agristat, 2017). As Contzen and Forney (2017, p. 31) found, "the importance of family farming in Switzerland is reflected statistically as well: 78% of the agricultural workforce comes from farm owners and their family members (SwissStatistics, 2014)." Since Switzerland is dominated by small-scale family farms (Reissig, Kohler, & Rossier, 2015), where often both spouses work on the farm, farm and household work are closely connected (Reissig et al., 2015), and family and professional issues are strongly interwoven (Inwood et al., 2018; Meares, 1997; Weigel, Wegel, & Blundall, 1987).

We published our developed method to measure burnout in Swiss farmers (Reissig, 2017). In the present, related study, we want to find the factors correlated with a high prevalence of burnout symptoms. The aim of this paper is to analyze-against the background of private and professional interdependence–the effects of perceived stress factors and of personal and social factors on burnout in Swiss agriculture. This empirical study focuses on describing factors that explain differences in the burnout rate of Swiss farmers or their spouses.

The applied research design is new and is being used for the first time in an agricultural setting. We developed a complex self-report questionnaire, which contains items taken from several standardized questionnaires. including the Copenhagen Burnout Inventory (CBI), the Copenhagen Psychosocial Questionnaire (COPSOQ), a partnership questionnaire, and a social support questionnaire. We first conducted a substantial literature review as well as expert interviews with psychologists and psychiatrists who work with farmers experiencing burnout. We then measured the burnout rate based on the CBI score, using the 6-item screener to measure physical and psychic exhaustion (Stöbel-Richter, Daig, Brähler, & Zenger, 2013), which is the most appropriate instrument to measure burnout independently of context (Kristensen, Borritz, Villadsen, & Christensen, 2005). This generic score was applied for the first time in an agricultural setting.

1.1. Literature review on the definition of burnout

Burnout is a term often used in practice and in research, but its definition is difficult. Whereas depression is considered a psychological illness and is defined in the World Health Organization's ICD-10 (disorders F32 and F33) (Dilling et al., 2014), burnout is not (Jaggi, 2008). No precise distinction can be made between symptoms of burnout and symptoms of depression (Jaggi, 2008). Burnout has a wide range of symptoms; the literature reports more than 130 types of expression of burnout (Jerich, 2008). Furthermore, burnout develops over a long time period during stressful conditions, such as when a person is completely exhausted and doubts his or her capacity to perform work tasks (Leiter & Schaufeli, 1996). According to (Hell, 2007), the burnout concept is very attractive because it explains exhaustion as due to stress and avoids stigmatization, because burnout is not a defined clinical psychological diagnosis. It may therefore be an acceptable way to approach discussion and research on mental health problems like depression and anxiety in agriculture.

1.2. Literature review on factors that lead to burnout

To better understand the factors that influence burnout, it is first necessary to understand how burnout develops. According to (Burisch, 2005), a combination of multiple factors leads to burnout. Fischer (1983), on the other hand, specifically distinguished internal and external factors, which are weighted differently for each burnout case. For example, even a very healthy and stable person can develop burnout when external conditions are very bad, with too many or too long-lasting stressors. Lazarus and Folkman (1984) defined stress as a relationship between the person and the environment that is appraised as personally significant and as taxing or exceeding the resources for coping. Previous American burnout literature, dominated by social psychologists, found characteristics of the environment of a person to be the main factors in the development of burnout (for example Aronson, Pines, & Kafry, 2007; Karger, 1981; Maslach, 1982, 2008). Empirical studies that examined factors promoting burnout independently of the individual perspective are rather rare (Burisch, 2005, p. 213 f.; Jerich, 2008, p. 89). Burnout researchers have barely analyzed societal reasons (Rösing, 2003, p. 240). Consequently, our study contributes to an understanding of the correlation between situational and personal burnout predictors.

1.3. Literature review on potential predictors of burnout

To select potential burnout predictors for agriculture, we reviewed the empirical literature on burnout, depression, stress, and suicide in different occupations. For reasons described above in Section 1.2, we speak of burnout-influencing factors even though many studies dealt with stress.

According to Burisch (2005), the burnout process begins with loss of autonomy in work, in line with the predictor 'perceived control' found by Glass and McKnight (1996). Lourel and Mabire (2008) described the effect of effort-reward imbalance on burnout in French dairy farmers. Being a dairy farmer seems to enhance burnout (Botha & White, 2013; Lourel & Mabire, 2008; Parry, Lindsey, & Taylor, 2005), as do also high administrative overhead and regulations (Booth & Lloyd, 2000; Deary, Willock, & McGregor, 1997; Parry et al., 2005). Moreover, often-changing guidelines, unpredictability, and general legal uncertainty can lead to burnout (Booth & Lloyd, 2000; Deary et al., 1997; Droz, Miéville-Ott, Jacques-Jouvenot, & Lafleur, 2014; Kallioniemi et al., 2016; Parry et al., 2005; Schulze, 2005).

Many researchers have reported that the high level of responsibility as an entrepreneur enhances burnout in farmers (Fischer, 2012; Fraser et al., 2005; Judd et al., 2006; Lenoir & Ramboarison-Lalao, 2014). This was closely linked to the financial situation and the pressure of costs, which are mentioned by many researchers as burnout predictors (Booth & Lloyd, 2000; Deary et al., 1997; Firth, Williams, Herbison, & McGee, 2007; Fischer, 2012; Kahnt-Ralle, 2015; Kallioniemi et al., 2016; Lee, Burnett, Lalich, Cameron, & Sestito, 2002; Malmberg, Hawton, & Simkin, 1997; Scherrer & Galbusera, 2015). Financial pressure in combination with anxiety about one's existence also influences burnout (Kahnt-Ralle, 2015).

Furthermore, a double workload caused by off-farm work as well as responsibility in many farm and household sectors have been mentioned as burnout predictors (Darnhofer & Strauss, 2014; Fraser et al., 2005; Pickett et al., 1998; Scherrer & Galbusera, 2015). Time pressure and working peaks seem to enhance burnout (Bachmann, 2008; Deary et al., 1997; Lenoir & Ramboarison-Lalao, 2014; Scherrer & Galbusera, 2015; Schulze, 2005). Not only work quality but also the quantity is important: Long work days and a lack of free time influence burnout (Botha & White, 2013; Darnhofer & Strauss, 2014; Firth et al., 2007; Grebner, Berlowitz, Alvarado, & Cassina, 2010; Kallioniemi et al., 2016; Parry et al., 2005). Intense manual work and hard, physically demanding work lead to burnout (Botha & White, 2013; Donham & Larabee, 2009; Kallioniemi et al., 2016). Unforeseen occurrences and

extreme weather events in agriculture, which lead to crop failure or animal diseases, also play a role (Deary et al., 1997; Firth et al., 2007; Kallioniemi et al., 2016; Schulze, 2005).

The close interrelation of work and household and connected 'negative spillover between professional and personal life' (Lourel & Mabire, 2008; Scherrer & Galbusera, 2015; Stamm, 2012) or social isolation (Booth & Lloyd, 2000; Deary et al., 1997; Frick, 2011; Kallioniemi et al., 2016; Schulze, 2005) influence burnout. Poor health, chronic diseases, or stress illnesses are known as predictors of burnout (Firth et al., 2007; Kallioniemi et al., 2016; Parry et al., 2005; Schulze, 2005). Being middle-aged raises the risk of burnout (Firth et al., 2007; Sanne, Mykletun, Moen, Dahl, & Tell, 2004). The attitude 'You don't get ill in farming,' which is common in agriculture, or a very high willingness to perform, influences stress and burnout (Darnhofer & Strauss, 2014; Frick, 2011; Judd et al., 2006).

A study on the relationship between burnout and personality by the University of Zurich (Rössler, Hengartner, Ajdacic-Gross, & Angst, 2013) found that almost all professional groups have work strain that can lead to psychological strain. For a better understanding of burnout, the researchers recommended a multi-level approach that includes the person's and the situational perspectives. In a later study (Rössler, Hengartner, Ajdacic-Gross, & Angst, 2015), the same researchers concluded that "the 'contribution' of the individual (i.e., person-variables) to the onset of burnout has possibly been underestimated and the role of working conditions (i.e., environment-variables) overestimated." (Rössler et al., 2015, p. 24) Personality traits, measured by core self-evaluations, are also known to have an influence on work success (Judge, 2009), which in turn affects burnout (Burisch, 2005). Further, a lack of social competence (Hochstrasser, Schulze, & Keck, 2013) as well as conflict readiness (Frick, 2011), for example, were found to be internal factors influencing burnout.

Social factors such as child care, care of relatives (Parry et al., 2005), partnership conflicts (Booth & Lloyd, 2000; Lochthowe, 2010; Parry et al., 2005; Rössler et al., 2015; Schulze, 2005; Wagner, 2011) or parents-in-law who live on the farm (Scherrer & Galbusera, 2015) were found to influence burnout. Peeters, Montgomery, Bakker, and Schaufeli (2005) examined work-family conflicts and found them to be important burnout predictors. Job and home demands together appear to influence the prevalence of burnout. Whereas Sprung (2013) analyzed farming and work-family facilitation and determined a positive effect in general, Brummelhuis, van der Lippe, Kluwer, and Flap (2008) reported buffer or catalyst effects. We conclude that the direction of the influence of the farm and family interrelation is contradictory.

2. Methods

2.1. Sampling procedure

A random sample of 4000 Swiss farmers was selected by the Swiss Federal Office for Agriculture, which maintains a database of all farm households that receive direct payments, which comprise about 98% of all Swiss farms. The registered name is the name of the farm manager, who is mostly a man. To obtain integrated information about farm couples, the person having a birthday next was asked to participate in the survey. The written survey was carried out in April and May, 2016. We first invited all farmers to participate in an online survey. Two weeks later, we sent the questionnaire (paper-pencil) by mail to non-respondents. This procedure is proven to generate high response rates (Reissig et al., 2015). Kongsved, Basnov, Holm-Christensen, and Hjollund (2007) recommended this procedure to avoid selection bias. For the online survey, the tool www.equestionnaire.de was used. For the two-step procedure, a personal coding of the questionnaires was necessary, and the data were anonymized. The respondents needed on average 40 min to complete the questionnaire. The survey was carried out in the three language regions of Switzerland (German, French, and Italian). The questionnaire was translated by the professional translation service of Agroscope, the Swiss center of excellence for agricultural research affiliated with the Federal Office for Agriculture. The questionnaire was pre-tested by four couples. The paper-pencil questionnaires were entered by hand and merged with the online dataset. Tests for plausibility were carried out.

The number of usable questionnaires returned was 1352; this was a response rate of 30%, which is usual in social research in agriculture (Besser & Mann, 2015), even though mental health is still a taboo topic in agriculture (Naik, 2017). For the analysis, we excluded the participants that did not work on the farm. This exclusion reduced the sample size to 1321 persons (316 women and 1005 men).

2.2. Instruments and measures

In this randomized field study, a complex self-report questionnaire was developed and first applied in an agricultural setting. The questionnaire was based on a substantial literature review and interviews with experts including staff members of agricultural advisory offices and psychologists and psychiatrists working with farmers having burnout.

2.2.1. Burnout (dependent variable)

A few instruments are available to measure burnout. According to a position paper by the German Association for Psychiatry, Psychotherapy and Psychosomatics (Deutsche Gesellschaft für Psychiatrie, 2012), the aim of a burnout instrument is to measure the subjective extent of burnout symptoms rather than to diagnose burnout. The classical burnout inventory method, the Maslach Burnout Inventory (MBI), is frequently used (Burisch, 2005). The MBI was developed for human service professions and contains many items that are not usable in the agricultural context (Maslach & Jackson, 1981). The same holds for the MBI-General Survey (MBI-GS), even though Kallioniemi et al. (2016) used it to examine the burnout rate in farming families in Finland. We decided not to use the MBI-GS, because we find some items not applicable for the family farm situation on Swiss family farms, where work and family are extremely interwoven. Take, for example, the item "In my opinion, I am good at my job." Being a family farmer is not a 'job'; it is mainly a profession and an identity, and Swiss farmers do not perceive themselves as having a 'job.'

Other researchers (for example Grebner et al., 2010) have recommended using newer instruments with a higher validity, such as the Oldenburg Burnout Inventory (Demerouti & Bakker, 2008) or the Copenhagen Burnout Inventory (CBI; (Kristensen et al., 2005). The CBI is a standardized psychological self-report questionnaire that is part of the Copenhagen Psychosocial Questionnaire (COPSOQ). The COPSOQ is a comprehensive screening instrument for assessing mental stress at the workplace (Nübling, Stößel, Hasselhorn, Michaelis, & Hofmann, 2006). The CBI measures burnout with high reliability (Cronbach's alpha values between 0.85 and 0.87) and very good validity (Kristensen et al., 2005; Nübling et al., 2006). Stöbel-Richter et al. (2013) used six questions, the 'personal burnout' scale, to examine physical and mental exhaustion. The authors investigated the prevalence of burnout in the German general population and found the same prevalence (about 6%) as is known for Switzerland, where it was determined with non-standardized instruments. Using the CBI enables us to compare our results with those from other studies. Another important reason for using this instrument is its independence of the work context. This quality was very important for our sample because of the interrelation between work and private situation in Swiss agriculture.

For examining burnout, we used the six-item screening instrument 'personal burnout' from the CBI (Tage S Kristensen et al., 2005). The severity of experienced stress was surveyed on a Likert scale ranging from 1 (*none*) to 5 (*always*). We used the content-related cut-off value established by Stöbel-Richter et al. (2013) for examining the burnout rate. Respondents who answered four out of the six questions with

'often' or 'always' counted as 'suffering from burnout.' The Cronbach's alpha values for internal reliability were very high: 0.89 for men and 0.87 for women.

2.2.2. Person-specific predictors

General health status was examined based on the question 'How is your health in general?' taken from the COPSOQ (Nübling et al., 2006). The health status was surveyed on a 5-point Likert scale ranging from 1 (*very good*) to 5 (*very poor*).

To examine work-family conflicts, we also used the Work-family conflict scale from the COPSOQ (Nübling et al., 2006), a 5-point Likert scale ranging from 1 (*completely agree*) to 5 (*disagree*). The Cronbach's alpha values for internal reliability were very high (0.90 for both men and women). All categorical items taken from the COPSOQ were transformed on a value range from 0 (minimum value) to 100 points (maximum value).

The last item of the shorter version of the *Partnerschaftsfragebogen* [partnership questionnaire] (Kliem et al., 2012) was used to assess the quality of a couple's relationship. The question 'How happy is your relationship with your partner at the moment?' was surveyed on a 6-point scale ranging from 1 (*very unhappy*) to 6 (*very happy*). The decision to use only one item rather than all 10 items of the partnership questionnaire PFB-K was made after the pre-test because of intimacy conflicts and time restrictions.

Social support was assessed using the short version of the *Fragebogen zur sozialen Unterstützung* [social support questionnaire] (F-SozU; (Fydrich, Sommer, Tydecks, & Brähler, 2009). This 14-item questionnaire combines several aspects of social support (e.g., emotional support, practical support, and social integration) in a global social support score. Higher scores indicate a higher level of social support. The score shows good psychometric property and acceptable reliability (Fydrich et al., 2009). The Cronbach's alpha values for internal reliability were very high: 0.91 for men and 0.93 for women.

Personality was measured using core self-evaluations as a higher order construct composed of broad and evaluative traits (e.g., self-esteem, neuroticism, locus of control, and general self-efficacy) (Judge, Erez, Bono, & Thoresen, 2003). Core self-evaluations were also used by Stumpp, Muck, Hülsheger, Judge, and Maier (2010) for the Swiss Job Stress Index. This 12-item questionnaire combines a broad, integrative trait indicated by self-esteem, locus of control, generalized self-efficacy, and (low) neuroticism (high emotional stability) in a global personality trait score. The items were surveyed on a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*). Half of the items were reverse coded. The Cronbach's alpha values were rather low: 0.36 for men and 0.30 for women.

2.2.3. Situational predictors

Time pressure was examined by evaluating three of the time pressure questions used by Igic et al. (2015): 'How often are you unable to take a break owing to too much work?'; 'How often does your work require you to work at a fast pace?'; 'How often are you under time pressure?' The 5-point Likert response scale ranged from 1 (*very rarely/never*) to 5 (*very often/always*). The Cronbach's alpha values were 0.81 for men and 0.84 for women.

The financial situation was captured by the self-report question, 'How would you rate your financial situation?' on a 5-point scale ranging from 1 (*very good*) to 5 (*very poor*). No response and the response 'Don't know' (which was an option for a few questions) were treated as missing values.

In addition, the questionnaire included general and farm-specific work stressors, family and work, general and mental health, farm and household characteristics, and sociodemographic characteristics (age, sex, marital status, education, share of work on the farm and off-farm, etc.). Table 1 presents definitions and sample statistics for these variables and all explanatory variables.

2.3. Statistical analyses

The data collected through the online and written questionnaires were analyzed using Excel and IBM SPSS Statistics Version 24. The data were first screened for accuracy of data entry and missing values and were found to be free of any multivariate outliers. Descriptive statistics, crosstabs, and bar charts were generated, as well as means and standard deviations. Next, parametric and non-parametric correlations were estimated. Effect size (ΔR^2) was analyzed for statistically significant results following Cohen (Cohen, 1992). For our inferential statistical analyses, we used *z*-transformations to standardize all continuous scales. Measures of burnout were always included as dependent variables. Bivariate and multivariate associations were examined with a series of general linear regression models in order to determine robust burnout predictors. We applied a robust estimator (maximum likelihood estimation) to reduce the effects of outliers and influential observations. Results for continuous predictors were reported with standardized regression coefficients (*r*) and 95% confidence intervals.

3. Results

3.1. Descriptive statistics

The age of the survey respondents was on average 49 years, and their marital status was as follows: 13.0% were single, 77.5% married or living in partnership, 7.6% divorced, and 1.2% widowed, 0.3% no data. Further, 81.7% of the respondents had children, and 17.0% had no children. Regarding the different agricultural structures, the respondents are representative for Switzerland (Reissig, 2017, 2019). The average CBI burnout score of the 1321 respondents was 42.00 (women) and 37.02 (men) (CBI scores from 0 [no burnout] to 100 [burnout]). Qualified as being diagnosed with burnout were 48 women (15.0%) and 103 men (10.4%). Table 1 presents summary statistics for the dependent and independent variables.

3.2. Bivariate correlations

Bivariate correlations are presented to support the variable selection for further analyses. Table 2 shows the correlations between the CBI burnout score and situational stressor variables. Most of the stressors correlated positively with the CBI burnout score. For women, we found either medium ($0.30 < r \leq 0.50$) or large ($r > 0.50$) correlation coefficients for all stressor variables except for 'free trade,' 'crop failure,' and 'animal diseases.' The strongest relationship with the CBI burnout score was found for 'lack of free time' ($r = 0.59$). For men, except for 'crop failure,' 'weather dependence,' and 'low self-care,' the correlation coefficients were also either medium or large. The strongest relationships with the CBI burnout score were found for 'time pressure' ($r = 0.41$) and 'lack of free time' ($r = 0.43$).

Table 3 shows the correlations between CBI burnout score and the psycho-social (i.e., person-specific) predictors. For women, except for 'health status,' the correlation coefficients were either medium ($0.30 < r \leq 0.50$) or large ($r > 0.50$). The strongest relationship with the CBI burnout score was found for 'work-family conflict' ($r = 0.52$). For men, the correlation coefficients were also either medium or large. The strongest relationships with the CBI burnout score were found for 'health status' ($r = 0.50$) and 'work-family conflict' ($r = 0.49$).

3.3. Multivariate analyses

The multivariate analyses considered only predictors that showed a significant correlation with the CBI burnout score in the bivariate analyses and the variables describing the agricultural working conditions. Only minor problems with multicollinearity were observed, with a lowest tolerance of 0.54 and highest variance inflation factor of 2.0. Residuals were normally distributed, which confirms the accuracy and

Table 1
Summary statistics and description of the assessed variables.

Category	Variable	Description	Coding	Mean Women (SD) $N = 316$	Mean Men (SD) $N = 1005$
Dependent variable					
CBI burnout score	CBI burnout score	6-item 'personal burnout' scale from the Copenhagen Burnout Inventory (CBI)	0 (no burnout) to 100 (total burnout)	42.00 (16.76)	37.02 (17.87)
Independent variables					
Situational predictors					
Finance	Finance	'How would you rate your financial situation?'	1 = very good, 5 = poor	2.68 (0.77)	2.68 (0.78)
Time pressure	Time pressure	Time pressure	1 = very rarely/never, 5 = very often/always	3.31 (0.82)	3.26 (0.75)
	Lack of free time	Strain due to 'lack of free time'	0 = none, 4 = very strong	2.04 (1.30)	1.75 (1.23)
Policy influence	Dependence on state	Strain due to 'dependence on the state'	0 = none, 4 = very strong	2.05 (1.39)	2.18 (1.30)
	Free trade	Strain due to 'opening of the borders/free trade'	0 = none, 4 = very strong	2.14 (1.44)	2.35 (1.34)
	Changing guidelines	Strain due to 'frequently changing guidelines'	0 = none, 4 = very strong	2.23 (1.33)	2.48 (1.21)
Unpredictable factors	Crop failure	Strain due to 'crop failure'	0 = none, 4 = very strong	1.15 (1.14)	1.42 (1.21)
	Weather dependence	Strain due to 'dependence on weather and the environment'	0 = none, 4 = very strong	1.90 (1.16)	1.87 (1.15)
	Animal diseases	Strain due to 'unexpected animal diseases'	0 = none, 4 = very strong	1.75 (1.31)	1.64 (1.27)
Social isolation	Social isolation	Strain due to 'social isolation' because of farm location	0 = none, 4 = very strong	1.00 (1.20)	1.06 (1.14)
Agricultural working conditions	Responsible for administration	Responsible for administration	0 = no, 1 = yes	0.76 (0.43)	0.69 (0.46)
	Double strain	Double strain (work on the farm and at minimum 41% off-farm)	0 = no, 1 = yes	0.11 (0.32)	0.26 (0.44)
	Farm manager	Farm manager	0 = no, 1 = yes	0.26 (0.438)	0.91 (0.28)
	Full-time business	Full-time business	0 = no, 1 = yes	0.81 (0.40)	0.74 (37)
Person-specific predictors					
Self-care of Farmer	Low self-care	Strain due to 'one's own sense of duty is greater than one's concern for oneself'	0 = none, 4 = very strong	1.67 (1.28)	1.54 (1.16)
General health status	Health status	'How is your health in general?'	1 = very good, 5 = very poor	2.03 (0.68)	2.12 (0.72)
Work-family conflict	Work-family conflict	Five items from the Copenhagen Psychosocial Questionnaire (COPSOQ)	1 = completely agree, 5 = disagree	2.17 (0.58)	2.12 (0.58)
Personality	Personality	Core self-evaluation score	1 = completely disagree, 5 = completely agree	3.02 (0.36)	3.00 (0.34)
Social support	Social support	Social support	1 = completely disagree, 5 = completely agree	3.97 (0.79)	3.98 (0.74)
Quality of partnership	Quality of partnership	'How happy is your relationship with your partner at the moment?'	1 = very unhappy, 6 = very happy, no partner = missing value	4.58 (1.39)	4.54 (1.51)

Table 2
Correlations between CBI burnout score and situational stressor variables (women below the diagonal, men above).

	1	2	3	4	5	6	7	8	9	10	11	12
												Men
1. CBI burnout score	–	.34**	.41**	.43**	.32**	.21**	.32**	.25**	.22**	.24**	.36**	.36**
2. Finance	.34**	–	.17**	.19**	.22**	.17**	.20**	.18**	.12**	.19**	.19**	.17**
3. Time pressure	.42**	.24**	–	.46**	.32**	.28**	.30**	.20**	.24**	.19**	.24**	.37**
4. Lack of free time	.59**	.28**	.44**	–	.37**	.29**	.38**	.27**	.34**	.27**	.35**	.46**
5. Dependence on state	.31**	.32**	.40**	.47**	–	.61**	.61**	.32**	.37**	.39**	.40**	.38**
6. Free trade	.26**	.23**	.25**	.37**	.67**	–	.54**	.33**	.32**	.34**	.36**	.33**
7. Changing guidelines	.32**	.26**	.43**	.46**	.63**	.56**	–	.32**	.38**	.35**	.42**	.40**
8. Crop failure	.20**	.26**	.10	.18**	.21**	.26**	.19**	–	.40**	.30**	.29**	.27**
9. Weather dependence	.33**	.13*	.27**	.42**	.39**	.33**	.36**	.35**	–	.30**	.28**	.26**
10. Animal diseases	.20**	.15**	.22**	.28**	.32**	.33**	.39**	.25**	.40**	–	.39**	.40**
11. Social isolation	.34**	.29**	.31**	.47**	.50**	.48**	.54**	.17**	.25**	.36**	–	.41**
12. Low self-care	.39**	.12*	.36**	.43**	.36**	.31**	.39**	.16**	.36**	.43**	.39**	–
	Women											

Note.
* $p < .05$;.
** $p < .01$.

Table 3
Correlations between CBI burnout score and person-specific predictors (women below the diagonal, men above).

	1	2	3	4	5	6
						Men
1. CBI burnout score	–	−.51**	.49**	−.23**	.30**	−.38**
2. Health status	−.44**	–	−.25**	.18**	−.07*	.31**
3. Work-family conflict	.51**	−.11	–	−.28**	.27**	−.35**
4. Quality of partnership	−.39**	.17**	−.36**	–	−.10**	.35**
5. Personality	.24**	0.04	.21**	−.07	–	−.11**
6. Social support	−.38**	.16**	−.33**	.41**	−.00	–
	Women					

Note.
* $p < .05$.
** $p < .01$.

reliability of the model. Table 4 shows the regression coefficients (beta values) of all independent variables.

The R^2 indicates that for both genders, more than half of the variation could be explained by the predictors. Half of the variables provided some explanatory value for both genders, and a few variables significantly differed between men and women. The R^2, the size of the coefficients (r), and the effect sizes (ΔR^2) differed slightly between women and men. The residuals were normally distributed, allowing us to generalize from our sample to the total population of Swiss farmers.

The results in Table 4 show for both men and women that the situational variables 'finance' (men: $r = 3.436$; $p = .000$; women: $r = 4.701$; $p = .003$) and 'lack of free time' (men: $r = 4.895$; $p = .000$; women: $r = 10.586$; $p = .000$) were strongly related to burnout, for men also 'time pressure' ($r = 5.471$; $p = .000$) but not so for women ($r = 1.944$; $p = .306$). These variables and the person-specific variable 'general health' (men: $r = -11.743$; $p = .000$; women: $r = -9.850$; $p = .000$) predicted burnout with the strongest effects.

Table 4
Linear models for the prediction of the CBI burnout score for women and men, with values in bold indicating statistical significance; shown are unstandardized correlation coefficients (b), standard errors (SE), p-values, and effect sizes (ΔR^2).

Covariate	Model A Men				Model B Women			
	b	SE	p	ΔR^2	b	SE	p	ΔR^2
(Intercept)	**36.608**	**1.264**	**.000**		**44.447**	**2.472**	**.000**	
Situational predictor								
Finance	**3.436**	**.930**	**.000**	**.108**	**4.701**	**1.594**	**.003**	**.139**
Time pressure	**5.471**	**1.183**	**.000**	**.137**	1.944	1.893	.306	.130
Lack of free time	**4.895**	**1.201**	**.000**	**.066**	**10.586**	**2.074**	**.000**	**.172**
Dependence on state	1.717	1.303	.188	.009	−1.024	2.241	.648	.001
Free trade	**−3.751**	**1.237**	**.003**	**.003**	1.068	2.084	.609	.000
Changing guidelines	1.662	1.284	.196	.006	−1.989	2.115	.348	.000
Crop failure	**2.682**	**.946**	**.005**	**.008**	1.225	1.627	.452	.002
Weather dependence	−.643	1.022	.530	.000	2.574	1.736	.139	.004
Animal diseases	−.333	1.044	.750	.001	−2.237	1.663	.180	.001
Social isolation	**2.474**	**1.110**	**.026**	**.017**	−1.028	1.937	.596	.002
Low self-care	.861	1.198	.473	.006	2.720	1.733	.118	.010
Responsible for administration	1.182	.961	.219	.001	**−3.845**	**1.685**	**.023**	**.009**
Double strain	−.105	1.267	.934	**.000**	−1.249	2.318	.590	.002
Not farm manager	**3.074**	**1.510**	**.042**	**.002**	−2.383	1.672	.155	.004
Part-time farm	.176	1.284	.891	.000	**4.055**	**1.884**	**.032**	**.007**
Person-specific predictor								
Health status	**−11.743**	**.925**	**.000**	**.120**	**−9.850**	**1.545**	**.000**	**.062**
Work-family conflict	**3.545**	**1.218**	**.004**	**.013**	**5.490**	**1.881**	**.004**	**.021**
Personality	**6.133**	**.979**	**.000**	**.022**	**6.339**	**1.500**	**.000**	**.024**
Social support	**−4.117**	**1.024**	**.000**	**.009**	**−3.651**	**1.644**	**.027**	**.009**
Quality of partnership	−.325	1.178	.782	.000	**−4.837**	**1.733**	**.006**	**.014**
	R-squared = 0.512 (adjusted R-squared = 0.498);				R-squared = 0.607 (adjusted R-squared = 0.573).			

The psycho-social factors (i.e., person-specific factors except 'health status') contributed less to explaining burnout than the situational factors and 'health status' in terms of effect size (ΔR^2), but they contributed more in terms of correlation coefficients (r). For both genders, the variable 'work-family conflict' influenced the prevalence of burnout to a large extent, for women ($r = 5.490$; $p = .004$) more than for men ($r = 3.545$; $p = .004$). 'Personality,' examined with the core self-evaluation score, was also a strong predictor of burnout (men: $r = 6.133$; $p = .000$; women: $r = 6.339$; $p = .000$), equally for men and women. 'Social support' provided explanation see the effect size.

Further, Table 4 shows that most of the farm and household characteristics did not have a significant effect on the CBI burnout score. Farm and household characteristics contributed to explaining burnout only to a small degree. For example, although the variable 'not farm manager' had a significant positive influence on burnout for men ($r = 3.074$; $p = .042$), the effect size ($\Delta R^2 = 0.002$) pointed out a shift of explanatory power to other variables. For women, the variable 'part-time farm' ($r = 4.055$; $p = .032$) was significant in the regression analysis. Being 'not responsible for administration' on the farm had significance in the regression analysis for women ($r = -3.845$; $p = .023$) but not for men ($r = 1.182$; $p = .219$). Considering the effect size, these farm characteristics did not contribute to predicting burnout. Predicting variables such as situational factors like strain due to policy and procedure, strain due to unpredictable factors in agriculture, strain due to social isolation, and strain due to the typical attitude in agriculture of 'One's own sense of duty is greater than one's concern for oneself' did not explain women's burnout, but they explained men's burnout to a small degree according to the effect size (Table 4). For men, strain due to 'free trade' ($r = -3.751$; $p = .003$) had a negative effect on the CBI burnout score but not in terms of effect size. Strain due to 'crop failure' ($r = 2.682$; $p = .005$) and strain due to 'social isolation' ($r = 2.474$; $p = .026$) predicted burnout just for men, but for 'crop failure' with only a small effect size.

4. Discussion

Our major objective was to explore predictors of burnout in Swiss agriculture, where with the large share of family farms, there is a close connection between work and family. We achieved a representative sample (Reissig, 2017, 2019) of Swiss farmers with an acceptable survey response rate of 33%. Reviews of the effects of non-response bias have generally concluded that there is little difference in health status between responders and non-responders (Firth et al., 2007), although persons suffering from burnout might not have enough energy to participate. Our survey indicates that 12% of Swiss farmers are affected by burnout, as previously published (Reissig, 2017). We can conclude that our sample is adequate for our research question.

Only very few of the hypothesized factors investigated in our analysis showed a statistically significant relationship with the prevalence of burnout. The results confirm a previous analysis of this dataset showing that farm characteristics do not predict the prevalence of burnout in farm men and women in Switzerland (Reissig, 2017). The results of the present study showed that the most common stressors among Swiss farmers ($N = 1321$) are not only external (situational) but also internal (person-specific) and social stressors. This finding is different from the results of a study conducted in Finland (Kallioniemi et al., 2016), possibly because we examined a wider range of variables and the two countries studied represent different political conditions.

The structure of Swiss family farms is mostly characterized by a couple living and working on the farm, in addition to working off-farm and in the household. Generally, all these areas have a potential influence on burnout and are interwoven with each other. In the following, we discuss the different predictors for men and women in this situation.

The correlation between burnout and a bad financial situation in agriculture is not a surprise and was found in several other studies (Booth & Lloyd, 2000; Deary et al., 1997; Firth et al., 2007; Fischer, 2012; Kahnt-Ralle, 2015; Kallioniemi et al., 2016; Lee et al., 2002; Malmberg et al., 1997; Scherrer & Galbusera, 2015). However, the strength of the correlation and the effect size found in this study are remarkable. A bad financial situation seems to be one of the main predictors of burnout in Swiss agriculture, mainly for male farmers. This result is in line with findings concerning other work fields (Karademas & Roussi, 2017; Simkin, Hawton, Fagg, & Malmberg, 1998). Karademas and Roussi (2017) refer to financial strain, which typically has a severe impact on a couple's relationship and the well--being of each partner. Nonetheless, our results should be interpreted with caution, because correlation with burnout does not mean causality. As laid out in the introduction above, burnout development is multifactorial. Thus, a remaining question, which is difficult to examine, is whether a farmer suffers from burnout as a result of a bad financial situation or whether the farmer's burnout has led to the farm's bad financial situation.

We also analyzed whether being the responsible person for different work segments (for example, household work, child care, administration, farm work) affects the prevalence of burnout. Only the area of administration as handled by the woman showed significant results. It seems to be exhausting for farm women if they have responsibility for administration; this is not so for farm men. It will have to be analyzed in more detail whether this is due to workload or to knowledge of the objective financial situation of the farm.

Time pressure being the main burnout predictor according to several previous studies (Bachmann, 2008; Deary et al., 1997; Lenoir & Ramboarison-Lalao, 2014; Scherrer & Galbusera, 2015; Schulze, 2005) is confirmed by our results for men even more than for women. Besides working quality, quantity was important. Further, we found long working days and a lack of free time to be predictors of burnout in agriculture, as several studies in other contexts demonstrated (Botha & White, 2013; Darnhofer & Strauss, 2014; Firth et al., 2007; Grebner et al., 2010; Kallioniemi et al., 2016; Parry et al., 2005). The results are in line with a Canadian study (Jamal, 2004) that evaluated the influence of weekend work and non-fixed day shifts and reported more exhaustion and psychosomatic health problems than found in workers without these conditions, which are typically found in agriculture.

A close interrelation of work and household and the connected 'negative spillover between professional and personal life' (Lourel & Mabire, 2008; Scherrer & Galbusera, 2015; Stamm, 2012) were emphasized by several studies as important sources of strain (Booth & Lloyd, 2000; Deary et al., 1997; Frick, 2011; Kallioniemi et al., 2016; Schulze, 2005); this is consistent with our findings. We can show that this farm/household interrelation and arising conflicts, measured by work-family conflict scale, have a large influence on burnout. This is an interesting point and raises questions concerning the existing agricultural structure in Switzerland. We furthermore found that the quality of the marital or partner relationship predicts burnout for women but not for men additionally to work-family conflicts. The findings by Falconier and Epstein (2010) and Helgeson (1994) might help to explain why: For women, financial strain had a negative association with positive behaviors towards their partner but had no association with negative behaviors. Because of the greater importance that women place on their relationships, they may be less likely to engage in negative interpersonal coping behaviors when faced with stressors. Analyzing the direction of facilitation, as did Sprung (2013), might elucidate if the perceived stress has its roots in the family or in work.

The interwovenness of work and family was previously highlighted by Peeters et al. (2005), who showed that not only job demands but also home demands are related to burnout. Our results confirm these findings for the Swiss agricultural sector, where both the work and the private situation influence the prevalence of burnout to a large extent. Thus, Swiss agriculture is a useful case study for private and professional burnout predictors.

As anticipated, general health status has an influence on the prevalence of burnout (Firth et al., 2007; Kallioniemi et al., 2016; Parry et al., 2005; Schulze, 2005). However, as stated above regarding financial anxiety, we cannot discern if poor health promotes the development of burnout or if experiencing burnout negatively impacts health, but these results are consistent. We also found that the personality of the farm men and women influences burnout to a high degree. The core self-evaluation score used is a broad integrated trait composed of self-esteem, locus of control, generalized self-efficacy, and neuroticism, and research suggests that it predicts many work-related and other applied outcomes better than the individual traits do (Judge, 2009). The results concerning personality, measured with the core self-evaluation score, need to be interpreted with care, as the Cronbach's alpha in our sample is rather low. We found a strong relation between the core self-evaluation score and burnout in our sample. These results are in line with Rössler et al. (2015) conclusion that person-specific factors have more and work-related factors less influence on the onset of burnout than previously assumed. According to our knowledge, our study is the first to show the influence of farmers' personality on burnout. Awareness of this influence is important in terms of burnout prevention and gives farmers the opportunity to include their internal perspective in making decisions and making changes on the farm. Of course, personality also influences a person's whole life, including aspects such as quality of the relationship, social support, financial situation, etc. A more detailed understanding of a farmer's personality could help to answer other questions, such as how farmers make decisions.

Social isolation was emphasized by several authors as an important strain contributing to burnout (Booth & Lloyd, 2000; Deary et al., 1997; Frick, 2011; Kallioniemi et al., 2016; Schulze, 2005), and our results show confirm these results: The perceived, not measured, social isolation is correlated with the burnout amount. Social isolation on the family farm context tends to be due to geographic location, but farmers can also experience isolation for other reasons, such as uncommon farm practices. We also analyzed a different social construct, "perceived social support", which we know from literature could serve as a protective factor for burnout. This effect is weak in terms of the effect size, so we can conclude that social support is already included in social isolation, quality of partnership, financial situation, and other variables.

Limitations of our study should be discussed. Our study was based on self-reports which runs the risk of common method variance. We established a large questionnaire, containing standardized psychological questionnaires and questions specifically developed for agriculture. Thereby the rather low Cronbach's alpha values of the personality scale limits interpretation of this scale. These results point out that it is also necessary for the measurement of personality in agriculture to validate the measuring instrument for this occupational section with structural immense differences to other working conditions, not least the close interrelation between household and work. In the following, we used "work-family conflict scale" to measure this connection. Our study results show a clear correlation between burnout and this measured value. Therefore, it is interesting for further studies to explore this connection even more deeply. Furthermore, we decided to use the personal burnout scale of Copenhagen Burnout Inventory. The dependency of the burnout on the measuring instrument used should be mitigated in another study by the use of another burnout-measuring instrument, a clinical burnout diagnosis and thus the burnout measurement should be validated for farmer. It may also be useful to test several standardized burnout instruments in agriculture and to have application security for various studies in agriculture. In addition, our study was a cross-sectional study. It would be important for future research to replicate the present study with longitudinal panel design. Second, we focused on one professional group only; farmer and conclude for farmers. However, we assume that there are no reasons to expect that when using a similar design the effects found in the present study would not replicate in other samples as well. For reasons of missing follow-up, we have no control for selection bias between respondents and non-respondents in terms of attitude and health status, but we could show the representativeness of farm and farmer characteristics for Switzerland. Although we investigated a very complex selection of possible influencing variables, strictly speaking our study cannot demonstrate causality between burnout measure and influencing variables.

Despite limitations, the results of this study contribute to the agricultural health literature. Most notably, these are the first estimates from a Swiss national sample of farm owners and their partners suggesting that burnout risk is higher in this population than in the general population. The prevalence of burnout is less associated with structural conditions of household and farm but more with the social and financial situation. However, these variables are influenced by personality traits. Future studies should address the interaction between burnout, financial situation, and personality. Although further replication of the findings is needed, our results suggest that farmers in Switzerland are exposed to a high risk of developing burnout because of the close connection between family and farm, the associated conflicts and spillover effects, and the financial situation. In addition, our results indicate that good social skills can serve as a protective factor.

5. Conclusions

The analyses presented here offer insights into the complex explanation of burnout in agriculture, assessed for the Swiss farming community, where family and work are interrelated. Although farming is often considered as a traditional profession that might be free of the challenges of modern life, farmers are not at all immune to burnout. Prior to this study, the prevalence of burnout in the Swiss population had been estimated using a non-standardized method to be 6.1%. A similar burnout rate (6.0%) had been measured with the CBI in the general population in Germany. With our results showing that 12% of Swiss farmers are affected, we assume that farmers are at least as much at risk of developing burnout as most other professional groups.

Our study contributes to an understanding of burnout in agriculture. We can state that reasons for burnout can be found in situational and in person-specific factors and are not specific to the agricultural sector. The consideration of predicting factors in both private and professional life succeeded in explaining a large share of the variance. This shows the multifaceted causes of burnout. Our results confirm that the prevalence of relational conflicts (and for women also the quality of the marriage/partnership), a bad financial situation, a heavy workload (and for men also time pressure), a lack of free time, and bad health remain core predictors of burnout for men and women.

As this study had an explorative character, we note that more research on burnout in agriculture is needed, as some important questions remain unanswered. Future studies should specifically address the correlation between burnout, financial situation, and work-family interrelation. Apart from work-family conflicts, which can contribute to the onset of burnout and represent the negative side of the work-family interface, research on the positive side could provide tools for the prevention of burnout in agriculture, using concepts such as enrichment and positive spillover (Masuda, McNall, Allen, & Nicklin, 2012).

Finally, our results highlight the importance of addressing internal (i.e., person-specific) factors, work-family conflicts, and the quality of the partnership and other social relationships in practice-oriented burnout prevention. A good starting point could be to show farmers possible ways to strengthen their internal factors and social relationships. Research should be done to establish and evaluate a valid burnout prevention program for farmers. Knowing that many challenges such as free trade, digitalization, and the change in the occupational profile in agriculture are yet to come, researchers, the health care sector, policy makers, and farmers need to collaborate now to stop the rise of burnout symptoms in the agricultural sector.

Conflict of interest

No conflicts of interest are to be disclosed. I confirm that this work is original and has not been published elsewhere in substantially the same form, nor is it currently under consideration for publication elsewhere. No copyrighted materials have been used, except where explicitly pointed out.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.mph.2019.200157.

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