Burnout and Alcohol consumption: A Meta-Analysis

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Abstract

Background

Previous research assessing the association between burnout and alcohol consumption have shown mixed results. The aim of this meta-analysis is to provide some clarity and a complete overview of the research to date. The relation between burnout and alcohol consumption deserves special attention, given the high prevalence in the general population and the serious consequences of both phenomena.

Methods

Meta-analyses on the association between burnout and alcohol consumption.

Results

We found 12 studies with a total of 27936 participants. Overall, a significant association between general burnout and alcohol consumption was observed (r = .12, p = .001). We found no effect for gender or age in the moderator analyses. Furthermore, for the subdimensions of burnout, we found a significant association between emotional exhaustion and alcohol consumption (r = .13, p = .010) and between depersonalization and alcohol consumption (r = .19, p < .001). No significant association was found between low personal accomplishment and alcohol consumption (r = .09, p = .281).

Conclusions

A small but significant association was found between general burnout, emotional exhaustion and depersonalization in relation to alcohol consumption. It is possible that the influence of coping styles and personal thoughts about the ability of alcohol to reduce stress is a moderator in this relation.

Introduction

What is the association between burnout and alcohol consumption? This is the first meta-analysis to focus on this association. Job burnout was first described in the 1970's as a career crisis for professionals who do 'people work'. Now in the twenty-first century burnout is a widely known concept and continues to be a major career crisis (Leiter, Bakker, & Maslach, 2014). Burnout is associated with working life and is believed to be a consequence of chronic stress at work (Maslach, Schaufeli, & Leiter, 2001). This can be due to high job demand and a lack of job resources (Schaufeli & Bakker, 2004). In the Netherlands alone, 13% of workers experienced symptoms of burnout in 2011 (Bierings & Mol, 2012). The relation between burnout and alcohol consumption deserves special attention, given the high prevalence of both phenomena in the general population (Bierings & Mol, 2012; Cañadas-De la Fuente et al., 2015; Creedy, Sidebotham, Gamble, Pallant, & Fenwick, 2017; Kumar, 2016; Milczarek et al., 2009; World Health Organization [WHO], 2004). About 2 billion people worldwide consume alcohol and approximately 76.3 million have a diagnosable alcohol abuse disorder (WHO, 2004). Excessive alcohol consumption is a global healthcare problem with serious economic, social, psychological and medical consequences, accounting for 3.3 million deaths in 2012 (World Health Organization [WHO], 2014). The aim of this study is to identify if and to what extent burnout and alcohol use are related.

Burnout has been associated with a variety of psychological, occupational and health problems. More specifically, burnout has been predictive of: a decrease in job satisfaction and commitment to the job, anger, irritability, anxiety, depression, increased risk of cardiovascular disease and various forms of substance abuse (Ahola et al., 2006b; Engelbrecht, Bester, Van Den Berg, & Van Rensburg, 2008; Maslach et al., 2001; Melamed, Shirom, Toker, Berliner, & Shapira 2006 Olivares-Faúndez, Gil-Monte, & Figueire-Ferraz, 2014). Given the serious consequences of burnout and its high prevalence, the burden and cost of burnout are substantial on both and individual and societal level (Paine, 1984; Milczarek, Schneider, & González, 2009).

The definition of burnout was initially hard to grasp, but there has been some consensus about the theoretical framework described by Maslach in 1982 (Maslach et al., 2001). Maslach (1982), described the three core dimensions of burnout as: emotional exhaustion, depersonalization and reduced personal accomplishment. Emotional exhaustion is defined as a lack of energy and the feeling of being drained. Depersonalization can be described as creating an emotional distance and reducing one's co-workers to impersonal objects. Creating this

distance is a way of coping with the overwhelming demands from other people. From this feeling of exhaustion and indifference, a feeling of failing and inadequacy can occur. This describes the third core element: reduced personal accomplishment (Maslach, 1982). Even though the Maslach Burnout Inventory (MBI) is widely used for the assessment of burnout, there is still no overall accepted clear definition of burnout (Korczak, Huber, & Kister, 2010; Maslach & Jackson, 1981). It has been argued that emotional exhaustion and depersonalization are at the core of the burnout condition and that lack of personal accomplishment is less predictive of burnout (Schaufeli, Bakker, Hoogduin, Schaap & Kladler, 2001; Schaufeli & Taris, 2005; Maslach, 1982). In addition, the lack of a clearly defined diagnosis of burnout in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) does not contribute to the clarification of the concept of burnout (American Psychiatric Association, 2013; Kleijweg, Verbraak & Van Dijk, 2013).

Coping styles and personal characteristics play an important factor in the prevalence of burnout (Van Veldhoven & Van Daalen, 2010). Furthermore, emotional support from family and the work environment can be effective in reducing symptoms of burnout (Ten Brummelhuis, 2009). When looking at alcohol consumption, the level of alcohol consumption is related to a complex interaction between a wide range of factors. These include personal vulnerability and different environmental factors like culture, economic development, sociodemographic factors, availability of alcohol and preferred beverage types (WHO, 2014, Frone, 1999). With specific regard to the occupational field, high alcohol consumption can undermine the health and productivity of employees (WHO, 2014; Mangione et al., 1999; Mcfarlin & Fals-Stewart, 2002).

There are several theories and models discussing the association between occupational stress and the consumption of alcohol. The spillover model posits that job-related stress does not remain isolated but extends (or 'spills over') to the personal environment of individuals (Cooper, 1983; Martin, 1990; Martin, Blum, & Roman, 1992 as described in Grunberg, Moore & Greenberg, 1998). This can result in negative coping responses, like the consumption of alcohol. Especially for workers who believe that drinking is an effective way to manage their stress. Other workers who believe that drinking will reduce their capability of controlling the job-related stress, will reduce their alcohol intake. Research has shown moderate support for the concept that personal thoughts about the effectivity of alcohol on the reduction of stress influences the consumption of alcohol. Thus, personal thoughts about the effectivity of alcohol on stress reduction might either reduce or increase alcohol consumption (Grunberg et al., 1998). The mixed result of previous studies assessing the relationship between burnout and alcohol consumption could be explained by this non-linear relationship (Ahola et al., 2006b; Cunradi,

Greiner, & Fisher, 2003; Chen & Cunradi, 2008; Grunberg et al., 1998; Lebensohn et al., 2013; Lheureux, Truchot & Borteyrou, 2016; Campos, Schneider, Bonafé, Oliveira & Maroco, 2016; Winwood, Winefield, & Lushington, 2003). For other models that aim to describe the link between work induced stress and alcohol consumption, like the simple 'tension reduction model', no convincing evidence was found (Cooper, Russell, & Frone, 1990). These findings indicate the complexity of the association between burnout and alcohol consumption (Moore, Grunberg, & Greenberg, 2000).

The heterogeneity in the research field about the association between burnout and alcohol consumption asks for some clarity (Ahola et al., 2006b; Cunradi, Greiner, & Fisher, 2003; Chen & Cunradi, 2008; Grunberg et al., 1998; Lebensohn et al., 2013; Lheureux, Truchot & Borteyrou, 2016; Campos, Schneider, Bonafé, Oliveira & Maroco, 2016; Winwood, Winefield, & Lushington, 2003). To this day, there is no meta-analysis on the association between burnout and alcohol consumption. However, this is needed because of the serious psychological, occupational and health problems that are associated with burnout and high alcohol consumption (Ahola et al., 2006b; Engelbrecht et al., 2008; Mangione et al., 1999; Maslach et al., 2001; Mcfarlin & Fals-Stewart, 2002; Melamed et al., 2006; Olvares-Faúndez et al., 2014; WHO, 2004; WHO, 2014). Furthermore, outcomes of this meta-analysis may help guide us in developing fitting interventions for employees. This study will focus on the relation between burnout and alcohol consumption, including alcohol dependence and abuse to provide a complete overview of the research to date. To clarify whether population- and methodological characteristics of individual studies could explain the heterogeneity, the analyses were repeated with several moderators to test the strength of the association. Moderators were: the gender distribution of the sample, mean age of the sample, measurement method of burnout and alcohol consumption and sample size. We choose these moderators because these variables have been related to burnout and alcohol consumption and they were available in most studies (Ahola et al., 2006a; Alonso et al., 2004; Purvanova & Muros, 2010; WHO, 2014).

To summarize, in the present study we explored the association between alcohol consumption and burnout using a meta-analysis. We additionally explored the association between alcohol consumption and the three burnout dimensions, namely; emotional exhaustion, depersonalization and lack of personal accomplishment.

Method

Search strategy

To identify eligible studies, different electronic databases were searched (Web of Science, PubMed and PsycINFO) up to June 2018. The following keyword-profile was used: (burnout AND (alcohol OR (alcohol abuse) OR (alcohol dependence) OR (alcohol consumption)). Furthermore, the reference lists of the included papers were checked for eligible papers and a backward search was performed.

Figure 1. PRISMA Flow Diagram for the meta-analysis on the association between burnout and alcohol consumption

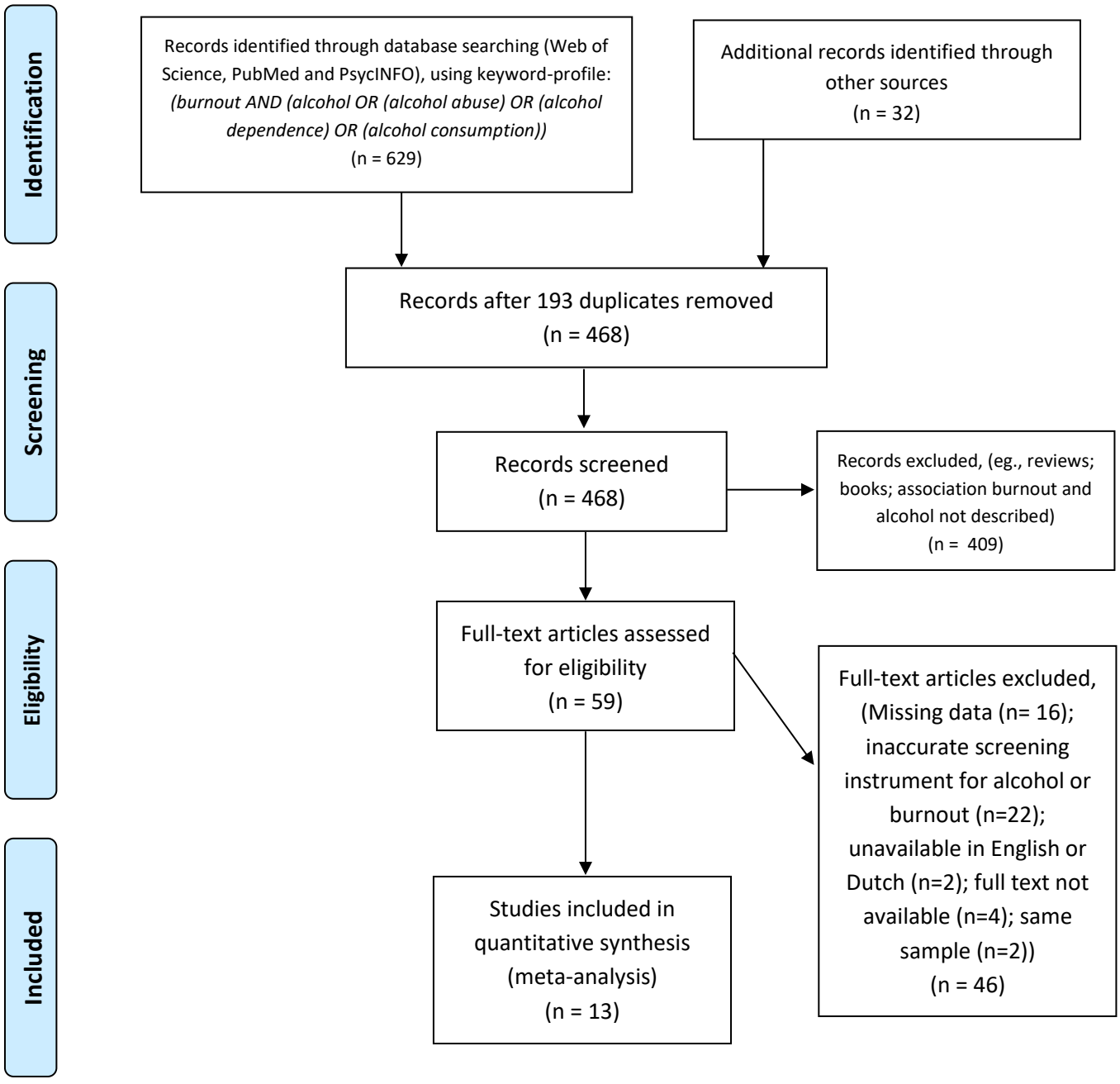

Figure 1. PRISMA flow diagram for the meta-analysis on the association between burnout and alcohol consumption.

Inclusion criteria

For inclusion, studies had to report on the association between burnout and alcohol consumption. Burnout had to be described in line with the definition given by Maslach (1982), which is elaborately explained in the introduction section of this paper. The instrument to assess alcohol consumption had to inquire about both the quantity and the frequency of alcohol consumption. Furthermore, studies with missing information or studies which were unavailable in English or Dutch were excluded. Inclusion was not dependent on year of publication. Finally, studies had to report a correlation coefficient between burnout and alcohol consumption or provide the necessary data to calculate an effect size. The search revealed roughly 600 potentially eligible papers. Figure 1 shows the flow-chart of the inclusion and exclusion process in further detail.

Data extraction

The effect measure of each study was extracted and converted to standardized Pearson product-moment correlation coefficients *r*. If this effect measure was not provided, it was calculated based on the provided data given in the article if possible. In case multiple effect measures of the same outcome were provided, the average effect measure was calculated (e.g. when studies calculated separate effect sizes for gender). Furthermore, when studies reported multiple outcomes of burnout (e.g., emotional exhaustion, depersonalization and low personal accomplishment), effect measures from all the subscales were extracted and an average correlation was calculated to produce a single study-wide correlation coefficient. This was done with the exception of studies that already provided a general burnout correlation coefficient or studies that only reported a correlation coefficient for low personal accomplishment. Furthermore, demographic characteristics from each included study were extracted: female percentage, mean age and type of workers. Finally, methodological characteristics were extracted: sample size, study design and measurement tools.

Statistical Analyses

Analyses were carried out using the MAJOR - Meta analysis 1.0.0 module in JAMOVI version 0.9.5.12. Statistical significance of the pooled effect size was assessed using a *Z*-test. Statistical significance was set at $P < 0.05$. Heterogeneity between studies was anticipated and therefore the random effects model was used (Borenstein, Hedges, Higgins, & Rothstein, 2010). I^2 was used as a measure of heterogeneity.

The potential moderating effect of mean age, gender distribution of the sample and measurement methods was assessed by entering these variables as continuous or categorical predictors into the random effects model. Publication bias was assessed by visual inspection of the funnel plot for potential asymmetry and the Egger test (Egger, Schneider, & Minder, 1997). In case of a publication bias, a trim-and-fill procedure was performed (Duval & Tweedie, 2000).

Results

Description of samples

From the 13 samples, 27 effect sizes were extracted. For general burnout, 4 effect sizes were extracted, for emotional exhaustion 10, for depersonalization 8 and for low personal accomplishment 5 effect sizes. From these 13 samples, 8 general burnout scores were recalculated by taking the average of the correlation coefficient of emotional exhaustion and depersonalisation and/or low personal accomplishment. From the 4 samples that already gave a general burnout score, no general burnout scores were recalculated. One single sample only gave a correlation coefficient for low personal accomplishment, so for this sample no general correlation was calculated. See Appendix A, Table 1.

The number of participants in the included studies ranged from $n = 147$ to $n = 7120$ ($M = 2176$, $SD = 2113$, $N = 28292$). The mean age of the entire sample ranged from 21.0 to 52.1 ($M = 38.3$, $SD = 11.5$). Furthermore, 12 out of 13 studies reported the gender distribution. The percentage of women ranged from 14.2% to 82.0% ($M = 44.9$, $SD = 11.5$). Given the entire sample, 39.3% of the participant were female ($n = 11062$). With regard to the field of work, the participants were either medical students or residents ($k = 5$), healthcare employees ($k = 4$) or general working samples ($k = 4$). The 13 samples were predominantly cross-sectional studies ($k = 12$), except for 1 study that provided data from the longitudinal baseline findings.

As a measurement method for burnout, a version of the Maslach Burnout Inventory

(MBI), was most frequently used (k = 11) (Maslach & Jackson, 1981). The MBI is a 22-item validated questionnaire that measures the three dimensions of burnout; emotional exhaustion, depersonalization and lack of personal accomplishment (Maslach & Jackson, 1981; Schaufeli et al., 2001). Furthermore, 1 study used the Oldenburg Burnout Inventory (OLBI) to asses burnout. The OLBI is a 16-item questionnaire with two subscales: exhaustion and disengagement. The OLBI is in line with the definition of burnout given by Maslach (1982) (Demerouti, Bakker, Vardakou & Kantas, 2003). Finally, 1 study used the short 10-item version of the Burnout Measure which measures exhaustion only (BMS) (Maslach-Pines, 2005).

As a measurement method for alcohol consumption, the short or full version of the Alcohol Use Disorders Identification Test (AUDIT) was most frequently used (k = 9). The AUDIT is a 10-item validated questionnaire, developed by the WHO (World Health Organisation). Each item is scored on a scale from 0 to 4. A score of ≥8 indicates harmful or hazardous use (Saunders, Aasland, Babor, De La Fuente & Grant, 1993). Furthermore, 1 study used the Alcohol Use Questionnaire (AUQ). The AUQ is a 12-item questionnaire that assesses the frequency and quantity of alcohol consumption within the last six months (Mehrabian & Russell, 1978). Finally, Lebensohn et al. (2013), developed and used the Wellness Behaviour Survey (WBS). The WBS is a 14-item questionnaire that assesses various wellness behaviours (e.g. yoga, praying, being outdoors). The WBS assesses alcohol consumption by inquiring about the number of alcoholic drinks consumed in a typical week (Lebensohn et al., 2013). See Appendix A, Table 2 for an overview of the basic demographic characteristics.

With regard to how the mean burnout scores were operationalized in the 13 samples, we detected some heterogeneity. From the 13 samples, 5 samples gave a mean burnout score (from which 2 gave a mean score per item), 4 samples grouped their participants according to high/average/low scores on the burnout measurement, 3 samples gave a distribution in a different way and 2 samples gave no mean scores or division of the sample in any way. Furthermore, when examining how mean alcohol scores were operationalized in the 13 samples, similar heterogeneity was found. From the 13 samples, 6 samples grouped their participants into an alcohol abuse/dependence group according to the AUDIT, 4 samples gave no mean scores or division, 2 samples gave a mean score and 1 sample made a division based on the reported amount of pure alcohol consumption in a week. Given the small number of studies in each operationalization category, we decided to not include the mean scores on the burnout and alcohol questionnaires as a moderator in the meta-analyses.

Meta-analysis on the association between burnout and alcohol consumption

The combined relation between the recalculated general burnout and alcohol consumption was r = .12 (95% *CI* = .05-.19, p = .001, k = 12, N = 27936). Substantial heterogeneity across studies was identified (I^2 = 96,99%, $Q(12)$ = 111.84, p < .001). See Figure 2 for a forest plot.

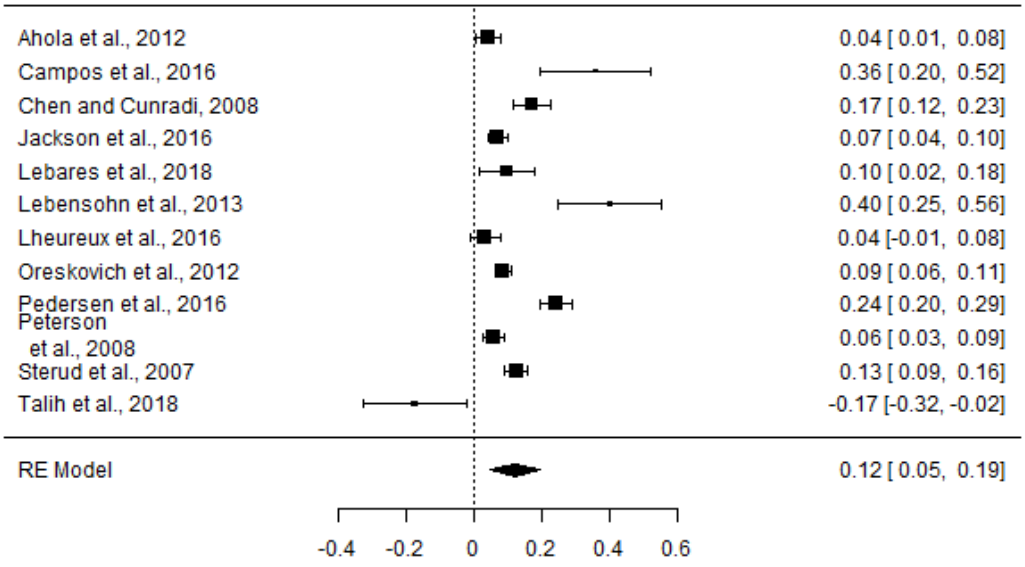

Figure 2. Forest plot of the association between general burnout and alcohol consumption.

A moderator analyses showed no significant effect between general burnout and age (r = .002, 95% *CI* = -.008-.012, p = .70, k = 10) or gender (r = 0.0001, *CI* = -.003-.004, p = .950, k = 11) (See Figure 4 and Figure 5). Visual inspection of the funnel plot showed that there were 3 effect sizes with relatively large standard errors, these were also the studies with the smallest sample sizes (n < 173). The funnel plot is shown in Figure 3. When excluding these smaller studies manually, the results remained similar (r = .10, 95% *CI* = .06-.15, p < .001). There was no indication of publication bias based on the visual inspection of the funnel plot. Egger's regression for bias shows no presence of asymmetry (Z = 1.14, p = .253).

With regard to the subscales of burnout, no significant relation was found between alcohol consumption and low personal accomplishment (r = .09, 95% *CI* = -.07-.26, p = .281, k = 5). We did find a significant relation between alcohol consumption and emotional exhaustion (r = .13, 95% *CI* = .03-.22, p = .010, k = 10) and between alcohol consumption and depersonalization (r = .19, 95% *CI* = .09-.28, p < .001, k = 8). Moderator analyses were not

conducted for the subscales of burnout due to the small number of effect sizes given on the subscales.

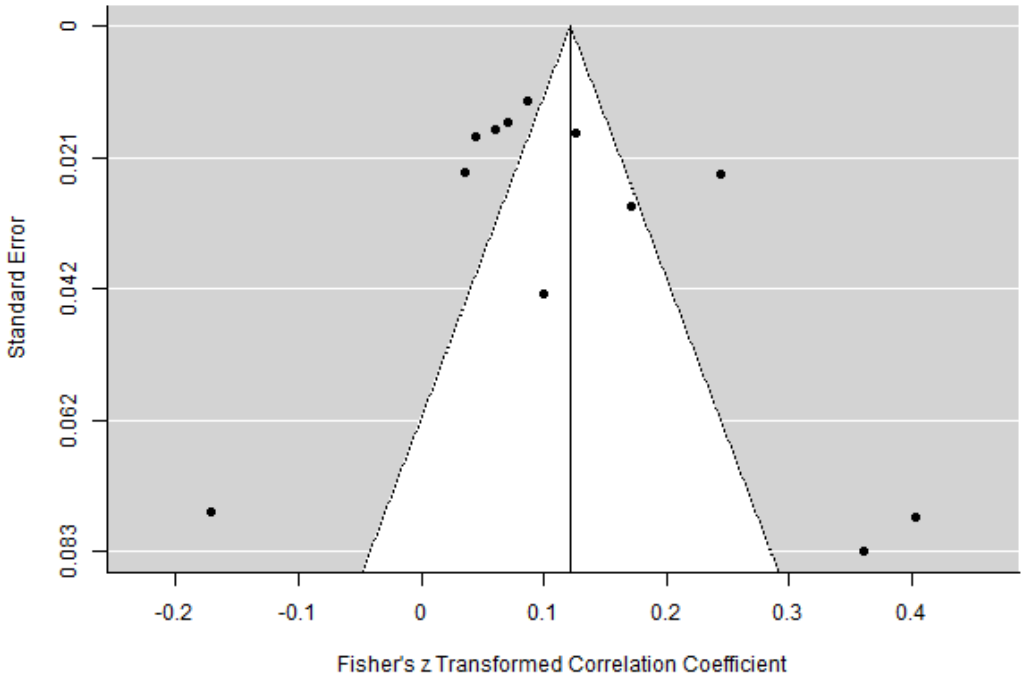

Figure 3. Funnel plot for the publication bias assessment.

Discussion

In this meta-analysis, we showed that there is a significant association between burnout and alcohol consumption. In the moderator analysis we found no effect for gender or age. The result indicates an explained variance of 1.69 percent. According to Cohen's criteria, the reported effect sizes of the individual studies are small to medium. For the overall meta-analysis, the effect found between general burnout and alcohol consumption is significant but could be considered as small.

The observed association can be explained by the notion that job-related stress extends to an individual's personal environment. This in turn results in a negative coping response, like the consumption of alcohol, as is explained by the spillover model (Cooper, 1983; Martin, 1990; Martin, Blum, & Roman, 1992 as described in Grunberg, Moore & Greenberg, 1998). The found association between burnout and alcohol consumption in this meta-analysis is small, but it is possible that the association between alcohol consumption and burnout is moderate or even

large in specific subpopulations. Due to a lack of studies on this topic, we were only able to assess the combined effect of alcohol consumption and burnout in a general population. By assessing individual differences such as coping styles, we might be able to identify subpopulations that are especially vulnerable to develop burnout and subsequent alcohol disorders, or the other way around (Chen & Cunradi, 2008). Possibly, personal thoughts about the ability of alcohol to reduce stress is a moderator in this relation. Individuals who believe that alcohol helps to reduce stress might show a stronger relation between burnout and alcohol consumption. Individuals who believe that the consumption of alcohol will only work in their disadvantage in the reduction of stress might show a small or no relation between burnout and alcohol consumption (Grunberg et al., 1998). This non-linear relationship might help explain the small association. This line of research can be used to develop effective and tailored interventions aimed to reduce burnout and subsequent alcohol abuse among employees.

Besides our main finding, we found a significant association between alcohol consumption and the burnout subdimensions emotional exhaustion and depersonalization. On the other hand, we found no significant relation between alcohol consumption and the subdimension low personal accomplishment. In explaining the observed associations, it has been argued that low personal accomplishment might not be part of the burnout syndrome or might not be at the core of it (Schaufeli et al., 2001; Schaufeli & Taris, 2005; Maslach, 1982). It is possible that this association shows that alcohol consumption is only associated with the core of the burnout syndrome. However, it should be noted that the association between low personal accomplishment and alcohol consumption was based on considerably less studies and therefore the results might be less accurate.

Strengths and limitations

An obvious strength of this study is that it is the first meta-analysis to focus on the association between burnout and alcohol consumption. The high prevalence of both phenomena in the general population highlights the importance of a thorough investigation (Bierings & Mol, 2012; Cañadas-De la Fuente et al., 2015; Creedy et al., 2017; Kumar, 2016; Milczarek et al., 2009; World Health Organization [WHO], 2004). Another strength of this meta-analysis is that it takes a possible publication bias into account. No indication of a publication bias was found. Furthermore, moderator analysis found no effect for gender and age on the association between general burnout and alcohol consumption.

The limitations of this study should also be mentioned. First, because of the heterogeneity in the operationalization of the mean scores for burnout and alcohol consumption

in the 13 samples, we were unable to include the distribution of the mean scores on the burnout and alcohol questionnaires in the moderator analysis. Second, because of the small number of studies and the overall use of the MBI and the AUDIT, we decided not to include measurement instrument in the moderator analysis. Third, the effect sizes on the three separate dimensions of burnout were based on fewer studies, restricting our exploration of possible moderators in these dimensions. Fourth, no longitudinal data was available, therefore the exploration of the possible bidirectional link between burnout and alcohol consumption could not be explored. Fifth, there is no clearly defined definition of burnout and there is no clarity about the use of the three dimensions of burnout (Korczak et al., 2010; Maslach, 1982; Schaufeli et al., 2001; Schaufeli & Taris, 2005). This has consequences for the consistency in the research about burnout to date. Some studies only focus on emotional exhaustion, while other focus on all the subscales of burnout (Campos et al., 2016; Chen & Cunradi 2008; Lebares et al., 2016; Jackson, Shanafelt, Hasan, Satele & Dyrbye, 2016). Sixth, the number of included studies in this meta-analysis is limited, which could mean the results are less generalizable. The use of a measurement instrument for alcohol consumption with the inclusion of quantity and frequency limited the number of included studies. Seventh, the influence of individual personal thoughts about the effectivity of alcohol to reduce their stress, as described in the spillover model, was only included by one study and could not be further explored (Chen & Cunradi, 2008). This non-linear relation may help understand the varied findings and might be interesting for future research (Ahola et al., 2006b; Cunradi, Greiner, & Fisher, 2003; Chen & Cunradi, 2008; Grunberg et al., 1998; Lebensohn et al., 2013; Lheureux, Truchot & Borteyrou, 2016; Campos, Schneider, Bonafé, Oliveira & Maroco, 2016; Winwood, Winefield, & Lushington, 2003).

Future research

An important implication for future research is in line with the above stated limitations. To attain more consistency in the research about burnout, a clearly defined definition is necessary, with consensus about the use of the three dimensions of burnout defined by Maslach in 1982 (Korczak et al., 2010; Schaufeli et al., 2001; Schaufeli & Taris, 2005; Maslach, 1982). Furthermore, a longitudinal study could give more insight in the possible bidirectional link between burnout and alcohol consumption. In addition, the exploration of personal thoughts about the effectivity of alcohol to reduce stress, could be interesting in gathering more insight in the complexity of the association between burnout and alcohol consumption (Grunberk et al., 1998; Moore et al., 2000).

Summary and conclusion

In conclusion, we found a significant association between general burnout, emotional exhaustion and depersonalization in relation to alcohol consumption. The results are significant, but the found effect could be considered as small. No significant association was found between low personal accomplishment and alcohol consumption. In addition, moderator analyses were restricted. However, this research provides an important first insight into the association between burnout and alcohol consumption.

Appendix A

Table 1. *Correlation coefficients of the association between burnout and alcohol consumption*

Author, year	General burnout [A]	Emotional exhaustion	Depersonalization	Lack of personal accomplishment
Ahola et al., 2012	0.044	0.081	0.048	0.064
Campos et al., 2016	0.346	0.340	0.380	0.320
Cecil et al., 2014	NK	NK	NK	-0.200
Chen and Cunradi, 2008	0.170	0.170	NK	NK
Jackson et al., 2016	0.071	NK	NK	NK
Lebares et al., 2018	0.099	0.059	0.138	NK
Lebensohn et al., 2013	0.383	0.402	0.363	NK
Lheureux et al., 2016	0.035	-0.010	0.080	NK
Oreskovich et al., 2012	0.087	NK	NK	NK
Pedersen et al., 2016	0.239	0.245	0.306	0.197
Peterson et al., 2008	0.060	0.040	0.080	NK
Sterud et al., 2007	0.126	0.150	0.150	0.080
Talih et al., 2018	-0.170	-0.170	NK	NK

[A] General burnout was calculated by taking the average correlation of emotional exhaustion and depersonalization and/or lack of personal accomplishment. Studies that already provided a general burnout correlation coefficient were not recalculated. In addition, studies that only reported a correlation for lack of personal accomplishment were not considered for a general burnout correlation coefficient.

Table 2. *Basic demographic characteristics of the included studies*

Author, year	Sample size	% Female	Mean age	Burnout measure [A]	Alcohol measure [B]
Ahola et al., 2012	3264	49.6	44.5	MBI-GS	Self-report
Campos et al., 2016	147	NK	40.2	MBI-GS	AUDIT
Cecil et al., 2014	356	65.1	21.0	MBI	AUQ
Chen and Cunradi, 2008	1231	17.0	46.4	MBI (only EE)	Self-report
Jackson et al., 2016	4354	55.1	26.0	MBI	AUDIT-C
Lebares et al., 2018	562	50.9	NK	MBI-HSS (9 item version)	AUDIT-C
Lebensohn et al., 2013	168	59.5	29.0	MBI	WBS
Lheureux et al., 2016	1890	26.0	50.6	MBI-HSS	AUDIT-C
Oreskovich et al., 2012	7190	14.2	52.1	MBI (2 item version)	AUDIT-C
Pedersen et al., 2016	1841	52.5	49.2	MBI-HSS	AUDIT
Peterson et al., 2008	3719	82.0	NK	OLBI	AUDIT
Sterud et al., 2007	3468	17.8	37.1	MBI	AUDIT
Talih et al., 2018	172	48.8	23.9	BMS	AUDIT

[A] Indicates what kind of instrument was used to measure burnout.
[B] Indicates what kind of instrument was used to measure alcohol consumption.

Abbreviations questionnaires (alphabetical): *AUDIT-C,* Alcohol Use Disorder Identification Test – Version C; *AUQ,* Alcohol Use Questionnaire; *BMS,* Burnout Measure Short version; *MBI-GS,* Maslach Burnout Inventory – General Survey; *MBI-HSS,* Maslach Burnout Inventory – Human Service Survey; *OLBI,* Oldenburg Burnout Inventory; *WBS,* Wellness Behavior Survey.

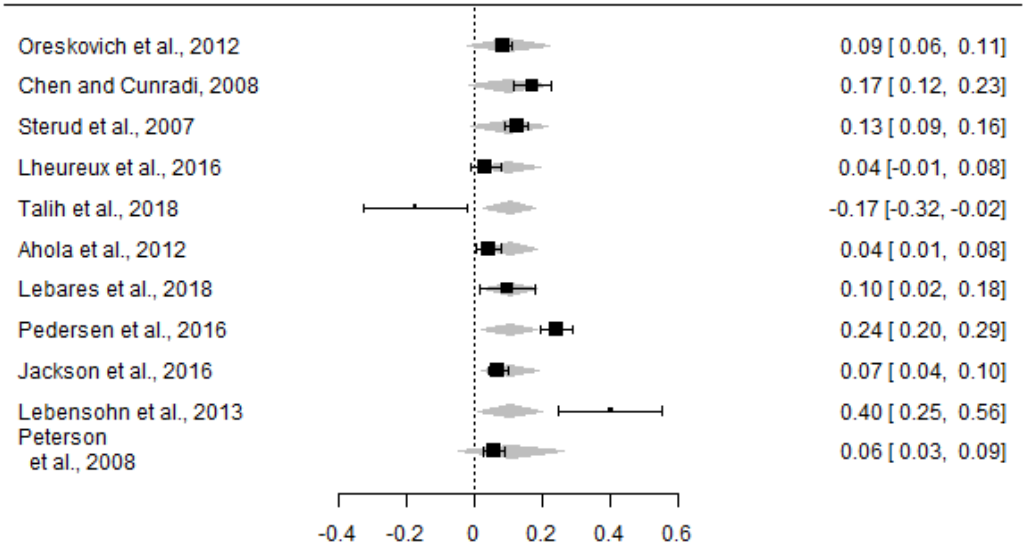

Figure 4. Forest plot of the moderator analysis for gender.

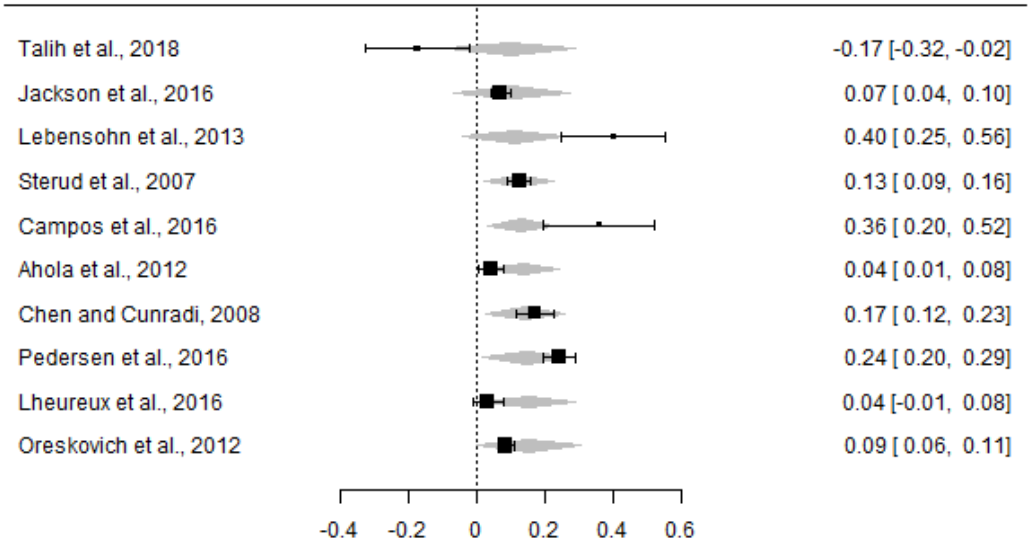

Figure 5. Forest plot of the moderator analysis for age.

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