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Substance Use in Healthcare Workers: Importance of Stress Perception, Smoking Temptation, Social Support, and Humor

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ABSTRACT

Background: Research indicates healthcare workers' personal substance use may affect quality of care. Investigating factors that correlate with coping through substance use may provide insight into improving quality care. **Objectives:** This study aims to examine potential correlates of coping through substance use among healthcare workers, with a particular focus on humor, social support, stress perception, and smoking temptation. **Method:** Participants, recruited from healthcare facilities, anonymously completed a 30-minute questionnaire of psychometrically valid measurements. **Results:** In a sample of primarily female (75.7%), age 20–39 (74.8%), floor staff (i.e., doctors, nurses, technicians/assistants; 61.2%), perceived stress [$\beta = .036$, $t(98) = 2.55$, $p = .012$], smoking temptation [$\beta = .036$, $t(98) = 2.21$, $p = .030$], and coping through humor [$\beta = .163$, $t(98) = 2.033$, $p = .045$] were significant correlates of the coping through substance use, with all relationships positively co-varying. Social support at work did not predict coping through substance use [$\beta = -.032$, $t(98) = -.814$, $p > .05$]. Furthermore, negative affect/situation smoking temptation was associated with increased coping through substance use [$\beta = .246$, $t(99) = 2.859$, $p = .005$] and habit/craving temptation was associated with decreased coping through substance use [$\beta = -.260$, $t(99) = -2.201$, $p = .030$]; however, positive affect/social temptation was not [$\beta = .054$, $t(99) = -.553$, $p > .05$]. **Conclusions/Importance:** These findings suggest that coping with humor may relate to coping through substance use, while social support at work is either unrelated to coping through substance use in this sample or may not be adequately assessed with the measure used. Consistent with the literature, negative affect/situation was associated with increased coping through substance use. However, habit/craving was negatively predictive. Further research should explore the variables related to coping through substance use among healthcare workers.

KEYWORDS

Substance use; healthcare; stress; smoking; temptation; social support; humor; coping

Introduction

The negative consequences of substance use, abuse, and dependence have been extensively studied and are well known. Particularly, physical health consequences are abundantly described in literature (e.g., liver damage, irreversible brain damage, morbidity, and mortality; National Institute on Drug Abuse, 2017). Yet, little is known about risk or predictive factors for substance use specifically in health care workers (Kenna & Lewis, 2008). Though workers in healthcare and social assistance facilities consistently show low frequencies of substance use, substance use may interfere with quality-of-care provided to patients who utilize these resources by reducing the likelihood of substance cessation advice (Pipe, Sorensen, & Reid, 2009) or their availability to care due to absenteeism (Bush & Lipari, 2015). Therefore, research highlighting possible factors that may interfere

with quality-of-care and overall health may be useful in directing ways to improve healthcare services.

The literature on substance use among healthcare workers is limited, though nicotine use has been somewhat more studied than other substances. One large-scale international study, reports that 42% of respondent physicians smoke and were significantly less likely to discuss the harmful effects of nicotine with patients who smoke, were less likely to report that smoking was a harmful activity, and less likely to agree that smoking cessation was the single largest factor to improving public health (Pipe, Sorensen, & Reid, 2009). Research also suggests that nicotine users are significantly more likely to use other substances than nonusers (Richter, Pugh, Smith, & Ball, 2017), proposing that health care workers who smoke may also be more likely to use other substances. Given evidence that personal use of nicotine may impact

a healthcare worker's behavior in advising patients to quit smoking (e.g., Frank, Winkleby, Altman, Rockhill, & Fortmann, 1991; Li, Lee, Chen, Jeng, & Chen, 2014) and that substance use may compromise their ability to provide comprehensive care, it becomes relevant to understand what factors may predict nicotine use among healthcare workers (Kenna & Lewis, 2008). Temptation to engage in smoking and how temptation may be tied to other substance use-related factors have been neglected within research. Given that nicotine use is strongly tied to other substance use (e.g., Belanger et al., 2011; Dani & Harris, 2005; Grant, Hasin, & Chou, 2004; Richter, Pugh, Smith, & Ball, 2017), examining how temptation to smoke relates to coping mechanisms among healthcare workers may contribute to a better understanding of the factors that predict general substance use in this population.

Evidence suggests that smoking behaviors may be prompted by positive affect/social situations, habit or craving, and negative affect/situations (Velicer, DiClemente, Rossi, & Prochaska, 1990). Therefore, it is unsurprising that other well-established predictive factors of nicotine use and substance use are stress and factors of affective distress reduction. With this in mind, it is noted that healthcare workers may be exposed to a high amount of occupational stress (Portoghese, Galletta, Coppola, Finco, & Campagna, 2014), such as occupational burnout: the emotional exhaustion among those who experience chronic stress (Malasch, 1982; Portoghese, Galletta, Coppola, Finco, & Campagna, 2014). As occupational stress may cause greater perceived stress overall (Cohen, Kamarck, & Mermelstein, 1983), it becomes particularly important to understand how healthcare workers cope with global stress and what factors may predict which individuals turn to substance use to cope.

Generally, high social support correlates with good psychological health (Bradley & Cartwright, 2002; Stansfeld, Bosma, Hemingway, & Marmot, 1998), yet among healthcare workers, this relationship appears to be mediated by stress (Button, 2008). When work-related stress is high, social support and psychological health negatively correlate; however, when work-related stress is low, the inverse is true (Button, 2008). One element of human interaction in the workplace that has impact on health, mental flexibility, and smooth social relations (Morreall, 1991), as well as work groups and organizational outcomes is humor (Romero & Cruthirds, 2006). Within healthcare services, humor has been shown to improve communication and trust between nurse-patient relationships, and is also cited as a worthwhile investigation in its support toward recovery from substance use (Canha, 2016). Further research on humor as an adaptive coping mechanism in healthcare workers is mixed (Francis,

Monahan, & Berger, 1999). Additionally, humor as a coping strategy may help individuals cognitively appraise a situation as less stressful; yet, research suggests humor may be used as an avoidant strategy (Abel, 2002). Because of the sparse and inconsistent findings of early research examining the relationship between humor and substance use, further research exploring this relationship is needed.

The purpose of this study is to explore potential correlates of coping through substance use among a general sample of healthcare workers (i.e., not targeting substance-using healthcare workers specifically). To do so, we place particular attention to the roles of stress perception, social support, humor, and smoking temptation as correlates of coping through substance use. Due to the lack of consensus on the protective role of social support and humor as coping mechanisms for healthcare workers, we are particularly interested in how these factors may influence substance use as a coping mechanism. Given that nicotine dependence is highly correlated with substance use and that stress prompts craving (Garland, Boettiger, & Howard, 2011), we are also interested in how smoking temptation may be related to coping with substance use.

Method

Participants

The participants ($N = 114$) in this study were individuals employed in medical and psychiatric rehabilitative and/or emergency healthcare facilities across the United States, including acute care hospitals, residential treatment centers, and traumatic brain injury rehabilitative centers. Participants were recruited, via HR/administrative contacts, through both interfacility email and posting information flyers in common non-patient areas of each facility, such as employee break rooms. This study was approved by [THIRD AUTHOR'S INSTITUTION] Institutional Review Board.

Procedure

Data were collected via a Qualtrics online survey, and participants were compensated with an electronically sent \$5 Amazon gift card. The survey included items assessing demographics, and the following series of measures of stress, coping strategies, and smoking temptation:

Perceived stress scale

Stress was measured using the perceived stress scale (PSS; Cohen et al., 1983) to assess the amount of stress experienced by participants within the last month. The PSS is a 10-item measurement where respondents select zero

to four on a Likert-type scale for each question. Higher cumulative scores indicate higher levels of stress perception in relation to the last month. Compared to other measures of stress, this scale has consistent convergent validity (Cohen et al., 1983). An example question for this measurement includes, "In the last month, how often have you felt difficulties were piling up so high that you could not overcome them." For our sample, analysis of internal consistency indicates $\alpha = .87$.

Brief COPE: Substance use and humor subscales

Coping through substance use and coping through humor were measured using the substance use and humor subscales of the Brief COPE measurement (Carver, 1997). The Brief COPE is a 28-item measurement with proven internal reliability and shows utility in predicting health and clinical outcomes across several stressful situations (Carver, 1997; Meyer, 2001). Further, several studies examining nicotine use have used this scale, thus it is an appropriate measure to examine how nicotine use may be related to coping with stress through substance use (e.g., Bricker, Schiff, & Comstock, 2011, Varescon ET AL, 2011). Responses are given on a Likert-type scale from one to four, with higher scores indicating the respondent has engaged in that coping mechanism "a lot." A sample question for the two-item substance use subscale includes "I've been using alcohol or other drugs to make myself feel better." A sample item for the two-item humor subscale includes "I've been making fun of the situation." For our sample, analysis of internal consistency indicates $\alpha = .96$ for the substance use subscale and an $\alpha = .86$ for the humor subscale utilized.

Work design questionnaire: Social support subscale

For this study, social support was assessed through the social support subscale of the Word Design Questionnaire (WDQ) and measures to what degree a job provides opportunities for advice and assistance from others (Morgeson & Humphrey, 2006). The reliability of this measurement is much higher than the most commonly used work design measures, and displays an average reliability of .87 across all scales in published work (Morgeson & Humphrey, 2006). Responses are given on a five point Likert scale, one to five, with higher scores indicating strong agreement that the statement is accurate. Examples items for this six-item subscale include "I have the opportunity to develop close friendships in my job" and "My supervisor is concerned about the welfare of the people that work for him/her." For our sample, analysis of internal consistency indicates $\alpha = .92$ with a specific $\alpha = .83$ for the subscale utilized.

Smoking temptation short form

Smoking temptation was assessed using the nine-item Smoking Temptation Short Form (STSF), a scale which assesses the temptation to use nicotine. This measure calculates a total score as well as separate subscale scores for positive affect/social situations, negative affect/situation, and habitual/craving situation (Velicer, DiClemente, Rossi, & Prochaska, 1990). Research indicates a published internal consistency of .95 for Negative Affect, $\alpha = .96$ for Social/Positive, and $\alpha = .80$ for Habit/Addictive (Velicer, DiClemente, Rossi, & Prochaska, 1990). In this measurement, participants read a statement and rate the importance of each statement in their decision to smoke on a one to five point Likert-type scale ranging from "not at all" to "extremely" in relation to their temptation to smoke cigarettes. A sample item includes "When I could experience an emotional crisis, such as an accident or death in the family." For our sample, analysis of internal consistency indicates and $\alpha = .97$. Each three-item subscale demonstrates the following internal consistency: $\alpha = .97$ for Negative Affect, $\alpha = .92$ for Social/Positive, and $\alpha = .87$ for Habit/Craving.

Statistical analysis

This study utilized a hierarchical linear multiple regression to explore the relationships between stress perception, social support, coping through humor, and smoking temptation on coping through substance use. Block one consisted of age and gender control variables. The total PSS score, the WDQ social support subscale score, the composite STSF score, and the Brief Cope humor subscale score were assigned as independent simultaneous correlates into block two of our statistical model to predict total Brief Cope substance use subscale scores. This study also utilized a secondary linear multiple regression with gender and age as control variables in block one, and the three individual subscales of the STSF as simultaneous correlates of coping through substance use in order to better understand the interconnectivity of smoking temptation and substance use. Lastly, an independent samples T-test and a one-way ANOVA assessed for differences in correlate and outcome variables based on gender and age category. All analyses were conducted on SPSS v. 24 (Armonk, NY: IBM Corp).

Results

Sociodemographic information is included in Table 1. The sample was primarily Nurses (30.1%), Technicians/Assistants (27.2%), and Social Services/Case Management/Utilization Review (22.3%), with smaller proportions of the sample identifying as Administration,

Table 1. Sociodemographic descriptive statistics for sample.

Sociodemographic variable	Frequency	Valid %
Gender		
Male	25	24.3%
Female	78	75.7%
Age		
20–29	46	44.7%
30–39	31	30.1%
40–49	19	18.4%
50–59	6	5.8%
60+	1	1%
Job type		
Doctor/Physician	4	3.9%
Nurse	31	30.1%
Technician/Assistant	28	27.2%
Social service, case management, and utilization review	23	22.3%
Administration	13	12.6%
Admissions/Intake	1	1.0%
Facility smoking rule		
Able to smoke on facility grounds (ex: designated smoking area)	52	45.6%
Able to smoke outside of facility grounds	21	19.6%
Not permitted to smoke whatsoever	34	31.8%

Doctor/Physician, Admission/Intake, and other roles within the healthcare facility. With regard to allowing employees to smoke, 48.6% of individuals reported being able to smoke on facility grounds, 19.6% of individuals were able to smoke outside of facility grounds, and 31.8% of individuals reported not being allowed to smoke whatsoever.

A multiple regression was conducted utilizing a model of stress perception, smoking temptation, social support at work, and coping through humor to determine their relationship to coping through substance use. The analysis shows our model significantly predicts variation in coping through substance use while controlling for age and gender [adjusted $R^2 = .183$, $F(6, 92) = 4.670$, $p < .001$]. Perceived stress significantly relates to a participant's levels of coping through substance use and suggests that as perception of stress increases, coping through substance use tends to increase as well [$\beta = .036$, $t(98) = 2.55$, $p = .012$]. Smoking temptation total score [$\beta = .036$, $t(98) = 2.21$, $p = .030$] and coping through humor [$\beta = .163$, $t(98) = 2.033$, $p = .045$] were also both significant predictors of coping through substance use. However, social support at work did not significantly predict a person's level of coping through substance use [$\beta = -.032$, $t(98) = -.814$, $p > .05$]. This suggests that as participants experience increased temptation to smoke, total levels of coping through substance use increase as well. Additionally, the results suggest that as these individuals cope through humor, the total levels of coping through substance will also increase. Univariate and inferential statistics from the analysis are included in Tables 2 and 3.

Table 2. Univariate statistics of predictor and outcome variables.

	Mean (SD)
Stress perception	41.25 (4.20)
Smoking temptation	16.37 (10.64)
Social support at work	22.40 (4.20)
Coping: Humor	4.62 (2.03)
Coping: Substance use	3.01 (1.75)

Table 3. Hierarchical multiple regression analysis with coping through substance use as outcome variable adjusted $R^2 = .183$, $F(6, 92) = 4.670$, $p < .001$.

IV	β	Std. error	t	p
Block 1				
Age	-.295	.179	-1.653	.102
Gender	-.336	.406	-.827	.410
Block 2				
Stress perception	.036	.014	2.552	.012
Smoking temptation	.034	.016	2.206	.030
Social support at work	-.032	.039	-.814	.418
Coping: Humor	.163	.080	2.033	.045

To explore the understudied relationship between smoking temptation and general engagement in coping through substances, a second multiple regression was conducted. This analysis examined the negative affect, positive/social, and habit/craving subscales of STSF to assess the specific domains that predict coping through substance use [adjusted $R^2 = .147$, $F(5, 94) = 4.413$, $p = .001$]. Temptation related to negative affect was a significant positive predictor of coping through substance use [$\beta = .246$, $t(99) = 2.859$, $p = .005$]. This suggests that as temptation related to negative affect increases, coping through substance use increases as well. The habit/craving subscale of the STSF was a significant negative predictor of coping through substance use [$\beta = -.260$, $t(99) = -2.201$, $p = .030$]. This suggests that as temptation increases regarding to habit/craving, coping through substance use tends to decrease. The social/positive subscale was not a significant predictor of coping through substance use [$\beta = .054$, $t(99) = -.553$, $p > .05$]. Additional analyses of differences in coping through substance use found no differences based on gender [$t(101) = .901$, $p > .05$] nor age [$F(4, 96) = .888$, $p > .05$]. See Table 4.

Table 4. Secondary hierarchical multiple regression analysis with coping through substance use as outcome variable adjusted $R^2 = .147$, $F(5, 94) = 4.413$, $p = .001$.

IV	β	Std. error	t	p
Block 1				
Age	-.296	-.166	-1.662	.100
Gender	-.348	-.086	-.860	.392
Block 2				
Temp: Negative affect	.246	.086	2.859	.005
Temp: positive/Social	.054	.098	.553	.581
Temp: habit/Craving	-.260	.118	-2.201	.030

Discussion

This study explored how perceived stress, smoking temptation, social support, and coping with humor may relate to coping through substance use among health care workers. Since healthcare workers are perceived as authoritative leaders on health-care related issues (Glavas, Rumboldt, & Rumboldt, 2003) and because their own behaviors may impact their behavior with patients and/or interfere with the ability to provide overall quality care (Pipe, Sorensen, & Reid, 2009), it is important to examine what factors are associated with coping through substance use in healthcare workers.

As expected, higher perceived stress and greater smoking temptation were significant correlates of coping through substance use among this population. Coping through humor was also significantly and positively correlated with coping through substance use. This finding corroborates other research indicating that more humorous individuals may diminish potentially serious matters, a cognitive mechanism which may contribute to using avoidant coping strategies like substance use (Apter, 2001; Edwards & Martin, 2012; Wyer & Collins, 1992). Further, this study found that social support in the workplace was not a significantly associated with coping through substance use.

The second multiple regression indicated that the higher scores on the negative affect/situation scale correlated with coping through substance use, while the scale for positive affect/social situation, a measure for the social enhancement properties of smoking, was not significantly related. Considering that social support did not predict coping through substance use in this sample of healthcare workers, it may be that social support stemming from the workplace environment operates more indirectly on coping through substance use, which was not testable through this model. The finding that the negative affect/situation scale positively correlated with coping through substance use is consistent with literature that suggests that substance use may follow situationally stressful events due to stress-related negative affect (Garland et al., 2011; Kassel, Stroud, & Paronis, 2003; Velicer, DiClemente, Rossi, & Prochaska, 1990). The most surprising finding was that the habit/craving subscale on the temptation to use scale negatively correlated with coping through substance use, meaning that higher scores on habit/craving were associated with lower scores on coping through substance use. These results may be explained through the lens of habitual smoking as an automatic process rather than a cognitive process of smoking to cope (Motschman & Tiffany, 2016). It is possible to both smoke to cope out of habit, similar to how individuals become hungry and eat meals at specific times throughout the day.

Smoking by this account then differentiates smoking to cope with a stressor versus smoking due to a formed and habituated habit. Through this viewpoint, it is possible to use other methods of coping not related to habitual smoking or substance use for those individuals who habitually smoke.

Lastly, though no gender- or age-based differences were found for coping through substance use, this may be due to the overrepresentation of females and younger individuals in our sample. A more proportional and larger sample may have found gender and age differences.

Limitations

Given that the sample was largely female and younger in age, the results may not generalize to older groups with a more even split by sex. However, it is important to note that the nursing-related field is typically a female-dominated occupation (Snyder & Green, 2008). Variables in this study were limited and thus focused to the specific questions addressed in this study. Because of this, some variables may have been excluded from this study that could help to further explain coping through substance use within those employed within healthcare facilities. Similarly, the relatively small sample size and lack of physicians represented in this sample were limitations. Further, recruitment took place primarily through private health care facilities, rather than hospitals, due to advertising restrictions at public healthcare facilities.

As our sample is a highly heterogeneous group (i.e., administration compared to nurses), it is also important to note that each job position within each respective domain can vary in hours spent directly with patients. Because of this, some job types may not be exposed to the same stressors as personnel involved with direct patient care. Still, it is important to note that within job type (i.e., administration), there is potential for wide variety as well (e.g., a nursing supervisor may have different stressors and level of patient interaction compared to the chief financial officer). Though these individuals are a heterogeneous group and may not experience the same stressors, including these participants offers a unique insight in an understudied population. Additionally, given the limited literature on the topic of study within healthcare employees, any a priori power calculations based on a series of potentially erroneous assumptions may potentially be harmful; however, the lack of an a priori power estimate is a limitation. Thus, this was a convenience sample and may not fully represent the healthcare worker community. As this study did not specifically target healthcare workers who abuse substances, results may only be able to inform general healthcare worker risks for coping with substance use. Finally, though we had a measure for

global perceived stress, a measure for occupational stress specifically may have further elucidated the relationship between stress and coping among healthcare workers.

This study is notable for finding that humor, though thought to be somewhat psychologically protective among healthcare workers, may be predictive of coping through substance use. Furthermore, it is noteworthy that social support, as measured by the social support at work subscale on the WDAQ, did not predict coping through substance use. This suggests that social support may be psychologically protective against coping through substance use. Alternatively, high stress may have a mediating effect on the outcome of social support on psychological health, such that high stress with low social support result in better psychological health among healthcare workers, per Button (2008).

Future research should focus on how substance use, beyond nicotine dependence, among healthcare workers may impact healthcare workers' behaviors toward patients and how it may mediate the relationship between occupational stress and burnout. Also, it may be useful to examine how attitudes and beliefs toward substance use mediate the relationship between craving or habitual use and coping through substance use. Among this population, there may be cognitive mechanisms that reduce coping through substance use, despite craving, providing an avenue for intervention. Lastly, in addressing the factors that may lead to engaging in substance use as a method of coping, researchers and clinicians can begin to better identify and treat healthcare workers who may be prone to coping through substance use. Targeted intervention among the healthcare workers may increase overall quality of care for their patients as well as maintain the well-being of those in the various roles involved with patient and client care.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

References

- Abel, M. H. (2002). Humor, stress, and coping strategies. *Humor-International Journal of Humor Research*, 15(4), 365–381.
- Apter, M. J. (2001). *Motivational styles in everyday life: A guide to reversal theory*. Washington, DC: American Psychological Association.
- Belanger, R., Marclay, F., Berchtold, A., Akre, C., Saugy, M., & Suris, J.-C. (2011). Is cannabis use a significant exposition to nicotine? *Journal of Adolescent Health*, 48, S71–S72.
- Bradley, J., & Cartwright, S. (2002). Social support, job stress, health, and job satisfaction among nurses in the United Kingdom. *International Journal of Stress Management*, 9, 163–182.
- Bricker, J. B., Schiff, L., & Comstock, B. A. (2011). Does avoidant coping influence young adults' smoking?: A ten-year longitudinal study. *Nicotine & Tobacco Research*, 13(10), 998–1002.
- Bush, D. M., & Lipari, R. N. (2015). *Substance use and substance use disorder by industry*. The CBHSQ Report. Rockville, MD: Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality. Retrieved from <http://europaepmc.org/books/NBK343542;jsessionid=D1FA6577D12BCF86CFBA820955B3F142>
- Button, L. A. (2008). Effect of social support and coping strategies on the relationship between health care-related occupational stress and health. *Journal of Research in Nursing*, 13(6), 498–524.
- Canha, B. (2016). Using Humor in treatment of substance use disorders: Worthy of further investigation. *The Open Nursing Journal*, 10, 37–44. <http://doi.org/10.2174/1874434601610010037>
- Carver, C. S. (1997). You want to measure coping but your protocol too long: Consider the brief cope. *International Journal of Behavioral Medicine*, 4, 92.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385–396.
- Dani, J. A., & Harris, R. A. (2005). Nicotine addiction and comorbidity with alcohol abuse and mental illness. *Nature Neuroscience*, 8(11), 1465–1770.
- Edwards, K. R., & Martin, R. A. (2012). Do humorous people take poorer care of their health? Associations between humor styles and substance use. *Europe's Journal of Psychology*, 8(4), 523–234.
- Francis, L., Monahan, K., & Berger, C. (1999). A laughing matter? The uses of humor in medical interactions. *Motivation and Emotion*, 23(2), 155–174.
- Frank, E., Winkleby, M. A., Altman, D. G., Rockhill, B., & Fortmann, S. P. (1991). Predictors of physicians' smoking cessation advice. *JAMA*, 266(22), 3139–3144.
- Garland, E. L., Boettiger, C. A., & Howard, M. O. (2011). Targeting cognitive-affective risk mechanisms in stress-precipitated alcohol dependence: An integrated, biopsychosocial model of automaticity, allostasis, and addiction. *Medical Hypotheses*, 76(5), 745–754.
- Glavas, D., Rumboldt, M., & Rumboldt, Z. (2003). Smoking cessation with nicotine replacement therapy among health care workers: Randomized double-blind study. *Croatian Medical Journal*, 44(2), 219–224.
- Grant, B. F., Hasin, D. S., Chou, S. P., Stinson, F. S., & Dawson, D. A. (2004). Nicotine dependence and psychiatric disorders in the United States: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry*, 61(11), 1107–1115.
- Kassel, J. D., Stroud, L. R., & Paronis, C. A. (2003). Smoking, stress, and negative affect: Correlation, causation, and context across stages of smoking. *Psychological Bulletin*, 129(2), 270.
- Kenna, G. A., & Lewis, D. C. (2008). Risk factors for alcohol and other drug use by healthcare professionals. *Substance Abuse Treatment, Prevention, and Policy*, 3(1), 3.

- Li, I.-C., Lee, S.-Y. D., Chen, C.-Y., Jeng, Y.-Q., & Chen, Y.-C. (2014). Facilitators and barriers to effective smoking cessation: Counselling services for inpatients from nurse-counsellors' perspectives — A qualitative study. *International Journal of Environmental Research and Public Health*, 11(5), 4782–4798. Retrieved from <http://doi.org/10.3390/ijerph110504782>
- Malasch, C. (1982). *Burnout: The cost of caring*. Cambridge: Malor Books.
- Meyer, B. (2001). Coping with severe mental illness: Relations of the Brief COPE with symptoms, functioning, and well-being. *Journal of Psychopathology and Behavioral Assessment*, 23(4), 265–277.
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91(6), 1321.
- Motschman, C. A., & Tiffany, S. T. (2016). Cognitive regulation of smoking behavior within a cigarette: Automatic and nonautomatic processes. *Psychology of Addictive Behaviors*, 30(4), 494.
- Morreall, J. (1991). Humor and work. *Humor-International Journal of Humor Research*, 4(3–4), 359–374.
- National Institute on Drug Abuse (2017). Health Consequences of Drug Misuse. Retrieved from <https://www.drugabuse.gov/related-topics/health-consequences-drug-misuse>
- Pipe, A., Sorensen, M., & Reid, R. (2009). Physician smoking status, attitudes toward smoking, and cessation advice to patients: An international survey. *Patient Education and Counseling*, 74(1), 118–123.
- Portoghese, I., Galletta, M., Coppola, R. C., Finco, G., & Campagna, M. (2014). Burnout and workload among health care workers: The moderating role of job control. *Safety and Health at Work*, 5(3), 152–157.
- Richter, L., Pugh, B. S., Smith, P. H., & Ball, S. A. (2017). The co-occurrence of nicotine and other substance use and addiction among youth and adults in the United States: Implications for research, practice, and policy. *American Journal of Drug & Alcohol Abuse*, 43(2), 132–145. doi:10.1080/00952990.2016.1193511
- Romero, E. J., & Cruthirds, K. W. (2006). The use of humor in the workplace. *The Academy of Management Perspectives*, 20(2), 58–69.
- Snyder, K. A., & Green, A. I. (2008). Revisiting the glass escalator: The case of gender segregation in a female dominated occupation. *Social Problems*, 55(2), 271–299.
- Stansfeld, S., Bosma, H., Hemingway, H., & Marmot, M. (1998). Psychosocial work characteristics and social support as predictors of SF-36 health functioning: The Whitehall II study. *Psychosomatic Medicine*, 60, 247–255.
- Varescon, I., Leignel, S., Poulain, X., & Gerard, C. (2011). Coping strategies and perceived stress in pregnant smokers seeking help for cessation. *Journal of Smoking Cessation*, 6(02), 126–132.
- Velicer, W. F., DiClemente, C. C., Rossi, J. S., & Prochaska, J. O. (1990). Relapse situations and self-efficacy: An integrative model. *Addictive Behaviors*, 15, 271–283.
- Wyer, R. S., & Collins, J. E. (1992). A theory of humor elicitation. *Psychological Review*, 99(4), 663–688. doi:10.1037/0033-295X.99.4.663