

RESEARCH ARTICLE

Loneliness at Work and Job Performance: The Role of Burnout and Extraversion

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Abstract

Loneliness at work is characterized by emotional deprivation and lack of social companionship at work. It has received, over the last two decades, increased levels of attention from both researchers and practitioners, due to its estimated high prevalence rate and severe negative individual consequences. The current study attempted to provide an explanatory model in which extraversion influences loneliness at work, which in turn, is associated with burnout, thereby resulting in reduced job performance. The study was based on a serial mediation cross-sectional model. The participants ($n = 265$) were Romanian employees, and data were collected through self-report measures. The results confirm that extraversion predicts loneliness which, in turn, impacts job performance via burnout. The present study contributes to the sparse literature about loneliness at work by examining a plausible underlying mechanism by which loneliness at work can negatively affect job performance.

Keywords

Loneliness at work, Job performance, Burnout, Extraversion, Serial mediation

Loneliness refers to “a complex set of feelings that occurs when intimate and social needs are not adequately met” (Cacioppo et al., 2006, p. 1055), and has received increased levels of attention from both researchers and practitioners alike in the last two decades, due to its estimated high prevalence rate (e.g., McPherson, Smith-Lovin, & Brashears, 2006) and severe negative individual consequences (e.g., Holt-Lunstad, Smith, & Layton, 2010).

Present estimates of the prevalence of loneliness range from as high as approximately 60 percent (Mental Health Foundation, 2010) in the U.K. to varying

estimates that range between 46 percent (Cigna, 2018) to somewhere between 23 percent¹ (McPherson, Smith-Lovin, & Brashears, 2008) and 12 percent (Paik & Sanchagrin, 2013; Wilson & Moulton, 2010) in the U.S.

Loneliness and social isolation have a detrimental effect both on important organizational outcomes such as job performance (Ozcelik & Barsade, 2011), creativity (Peng, Chen, Xia, & Ran, 2017) and organizational commitment (Ayazlar & Güzel, 2014; Stoica & Brate, 2013) and on

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¹ This estimate has been subject to strong controversy. For a discussion see Paik & Sanchagrin (2013), Brashears (2011) and Fischer (2009).

crucial mental health conditions, such as depression (Erzen & Çikrikci, 2018).

Furthermore, loneliness has been found to increase the likelihood of mortality by 26% (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015) bearing an impact that is similar to that caused by smoking 15 cigarettes a day and higher than that of obesity or excessive alcohol consumption (Holt-Lunstad et al., 2010). Poor social relationships were also associated with a 29% increase in the risk of coronary heart disease incidents and a 32% risk of having a stroke (Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016).

Moreover, loneliness spreads through social networks, with people at the periphery of a social network (i.e., those individuals who have the smallest number of connections) being prone to cutting the few ties they have left, and, just before doing so, transmitting the same feeling of loneliness to their remaining relationships, restarting the cycle (Cacioppo, Fowler, & Christakis, 2009).

However, despite the well-documented detrimental effects on organizational outcomes and on employee health and despite an estimated annual cost of loneliness of £2.5 billion to employers in UK alone (Jeffrey, Abdallah, & Michaelson, 2017), there has been little attention given to the underlying mechanisms that can explain the effects of loneliness in the workplace, and, in particular, on employees' job performance.

To address this gap in the literature, we draw on the Basic Psychological Needs Theory (BPNT), one of the six mini-theories included in the Self-Determination Theory (SDT; Deci & Ryan, 2000) and build on the Stress-Buffering Model (Cohen, Gottlieb, & Underwood, 2000) to argue that loneliness at work is related to job performance due to it having a positive effect on employee burnout (Maslach, Schaufeli, & Leiter, 2001). Moreover, we propose that employees vary in their predisposition to experience loneliness at work as a function of their characteristics. We focus on employees' extraversion, which is a crucial personality trait characterized by sociability, high energy, optimism, friendliness, and assertiveness, that is known to be associated with higher social network size (Swickert, Rosentreter, Hittner, &

Mushrush, 2002). As such, we propose a serial mediation model in which extraversion predicts loneliness at work, which in turn, harms employee job performance via burnout.

This study offers several noteworthy contributions. While possible underlying mechanisms for the relationship between loneliness at work and job performance have been discussed (e.g., Ozelik & Barsade, 2011), no empirical examination has been conducted to our knowledge, to this date. Therefore, we address this gap by proposing employee burnout as an underlying mechanism for explaining the relationship between loneliness at work and employee job performance. Second, we examine extraversion as a predictor of the loneliness at work-burnout-job performance.

And finally, we integrate research from the loneliness, Basic Psychological Need Theory, and the Stress-Buffering Model to develop a research model that can allow a better understanding of the effects of loneliness in an organizational context and shed some light into what relatedness need frustration can lead up to, in terms of organizational outcomes.

Theory and Hypotheses

Extraversion and Loneliness at Work

Loneliness at work is characterized by emotional deprivation and lack of social companionship at work. Emotional deprivation at work has been defined as a qualitative measure which describes one's perception of the lack of meaningfulness and satisfaction with one's relationships with co-workers and lack of social companionship as a quantitative measure which describes the perceived adequacy of one's social network size (Wright, Burt, & Strongman, 2006).

To obtain a better understanding of the relationship between loneliness at work and employee burnout, and to examine whether all employees are equally prone to experience loneliness, we considered employee personality as a predictor for feelings of loneliness.

Thus, we focus on extraversion, one of the five factors that form the structure of personality (Costa & McCrae, 1992), as

extraversion is positively related with measures of social support (Swickert et al., 2002) and as findings from previous studies have shown that lonely subjects are less extraverted (Hojat, 1982; Van den Broeck, Ferris, Chang, & Rosen, 2016).

Extraversion is one of the personality traits most commonly associated with loneliness, alongside neuroticism (e.g., Saklofske & Yackulic, 1989). Such a relationship can be explained by the tendency to experience positive moods during social interaction, to prefer social interaction, and the sociable and people-oriented nature that characterizes people with high levels of extraversion (McCrae & Costa, 1987).

Concerning peer relations, extraversion was positively associated with the number of reciprocated friends (Jensen-Campbell et al., 2002), peer acceptance (Asendorpf & Wilpers, 1998), and perceived support from peers (Asendorpf & van Aken, 2003). Also, in terms of attitudes toward aloneness, more extraverted individuals showed lower affinity for and greater aversion to being alone (Teppers et al., 2013).

Namely, a person with higher levels of extraversion is more likely to have access to an accepting social network that would lend him/her support to help that person diminish his/her feelings of loneliness, thus reducing the risk for burnout. We also expect that a person with lower levels of extraversion would be less able to counter feelings of loneliness due to the smaller social networks, the lower number of reciprocated friends and more reduced support from peers (Jensen-Campbell et al., 2002; Asendorpf & van Aken, 2003).

As such, we expect individuals with higher levels of extraversion to be better able to rely on their social network and their relationships with others compared to individuals with lower levels of extraversion (introversion), in order to prevent and better recover from the detrimental effects of loneliness and impede the installation of burnout, while persons with lower levels of extraversion should lack the ability to obtain and utilize the social resources required to cope with loneliness and burnout.

Loneliness at Work and Employee Burnout

Multiple studies provide robust evidence that lack of perceived adequateness of emotional and social aspects of social connection leads to detrimental outcomes for the individual. For instance, feeling lonely is associated with high blood pressure (Hawkey, Thisted, Masi, & Cacioppo, 2010), worse sleep (Kurina et al., 2011), and weakened immunity (Dixon et al., 2006) all of which can severely affect a person's health and predispose them to other debilitating factors, such as burnout.

In order to investigate the effect of loneliness at work on employees' levels of burnout we turn to SDT and, in particular, Basic Need Satisfaction Theory (BNST) which argues that all individuals possess a natural inclination towards psychological growth, internalization, and well-being, and in order to realize these natural tendencies one must achieve satisfaction of three basic psychological needs: for autonomy, competence, and, of particular interest to our study, for relatedness (Deci & Ryan, 2000).

The need for relatedness, which, as the theory suggests, can be satisfied when "people see themselves as a member of a group, experience a sense of communion, and develop close relations" (Van den Broeck, Ferris, Chang, & Rosen, 2016, p. 1199, see also Baumeister & Leary, 1995) has been negatively linked to burnout, negative affect and turnover intentions (Van den Broeck et al., 2016). This finding is in line with one of the core assumptions of BPNT, which implies that not satisfying either one of the basic needs (defined as need frustration) leads to ill-being and increased vulnerabilities for defensiveness and psychopathology (Vansteenkiste & Ryan, 2013). These results also fit the conceptualization of loneliness at work (Wright et al., 2006), thus providing support for the assumption that loneliness at work and relatedness are different levels of the same construct. As such, since relatedness has been linked to reduced levels of burnout it seems reasonable to assume that loneliness would be positively related to employee burnout.

To further support our hypothesis that loneliness at work is associated with employee burnout, we also draw on the Stress-Buffering Model (Cohen et al., 2000) which states that social support, defined as “any process through which social relationships might promote health and well-being” (Cohen et al., 2000, p. 4) acts as a buffer of the relationships between stress and burnout. Research has deemed lack of appropriate social support as a strong predictor for loneliness (Rook, 1988), and higher levels of loneliness were found to be predictive of higher stress levels (Coan & Sbarra, 2015) and exaggerated physiological reactivity in response to acute stress (Brown, Gallagher, & Creaven, 2018).

Therefore, it is plausible to assume that loneliness acts as both a generator of stress and as a vulnerability towards stress. And as stress is one of the most well-established predictors of burnout (Bakker, Demerouti, & Verbeke, 2004; Maslach et al., 2001), a relationship between loneliness and burnout becomes plausible.

Burnout and Job Performance

Burnout, the consequence of prolonged exposure to stress on the job (Ganster & Schaubroeck, 1991), has become the most essential work-related illness of the 21st century (Weber & Jaekel-Reinhard, 2000) due to the fact that it has severe individual (e.g., reduced physical health, severe injuries, mortality) and organizational consequences (e.g., reduced job satisfaction, absenteeism) (Salvagioni et al., 2017).

Additionally, multiple studies have reported a rather strong relationship between employee burnout and job performance (e.g., Taris, 2006; Virgă, Schaufeli, Taris, van Beek, & Sulea, 2019).

It is plausible that the relationship between burnout and job performance can be explained by the former’s role in the association between job stressors and performance, as proposed by multiple studies (Bakker, Demerouti, & Verbeke, 2004; McGrath, 1976). In this approach, burnout is intended as a mediator of said association, since it indicates the depletion of an individual’s resources. As such, high levels of burnout would imply that employees do not possess sufficient resources

to deal effectively with their job demands, which in turn leads to lower levels of performance (Taris, 2006).

Serial Mediation

Building on the rationale above, we hypothesize a serial mediation model as extraversion should predict loneliness at work, which in turn predicts burnout, thereby influencing job performance. Based on previously discussed findings, we propose that less extraverted employees will be predisposed to experiencing loneliness at work, which in turn, will affect employee job performance through burnout, resulting in reduced job performance for employees who are low on extraversion.

We, therefore, hypothesize the following: *Employees’ loneliness at work and burnout act as serial mediators between extraversion and job performance.*

Method

Procedure and participants

To test our hypothesis, we collected data via an online questionnaire that was administered through the authors’ social media accounts (e.g., Facebook, LinkedIn), in various student, job search and professional groups. The questionnaire was made accessible for two and a half months and included a note explaining the objectives of the study and a GDPR statement which informed the respondents of the confidentiality of their responses, the voluntary nature of their participation and the way their data will be used to conduct this research.

The sample comprised of 265 employed individuals. The mean age of participants was 30.29 (SD = 8.39), and 55.8% of them were male. There were no missing data.

We calculated the Mahalanobis, Cooks, and Leverage distance values to check for outliers in our data (Field, 2018) and based on this analysis we excluded 11 cases.

At the time the questionnaire was completed, 88.8% of the respondents had a full-time contract, 9.6% responded that they had a part-time contract, and the remaining 1.5% reported having a project-based arrangement. Regarding the type of the work

they were performing, 46.9% said that they work mostly with information, 45% work primarily with people, and 8.1% work predominantly with things (objects, utensils, tools, electronic devices).

Measures

The questionnaires used in the current paper were translated into Romanian by students proficient in both English and Romanian, and the translations were reviewed by researchers with a vast experience in adapting research measures. In translating the items, the "back-translation" method described by Hambleton (2005) was employed.

The translation effort is part of an online project which aims to provide the academic community in Romania with quality translations of psychological measures (addressing a variety of constructs) that have demonstrated good psychometric properties in numerous research papers (Research Central, <http://researchcentral.ro/>).

Loneliness at work was measured using the Loneliness at Work Scale (Wright, Burt, & Strongman, 2006), which includes two dimensions of loneliness: emotional deprivation (e.g., "I often feel alienated from my co-workers.") and social companionship (e.g., "I feel part of a group of friends at work."). The instrument contained 16 items measured on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The coefficient alpha in this study was .95.

Extraversion was measured using The 5 NEO-PI-R Broad Domains, which comprised 10 items on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The adapted Romanian version (Ilescu, 2015) was used, item example e.g., "Feel comfortable around people". The coefficient alpha in this study was .88.

Burnout was measured using the Maslach Burnout Inventory. It assesses three dimensions, namely: emotional exhaustion (e.g., "I feel emotionally drained from my work."), depersonalization (e.g., "I feel used at the end of the workday.") and low personal accomplishments (e.g., "Working all day is really a strain for me."). The questionnaire

consisted of 16 items measured on a 7-point Likert scale ranging from 0 (*never*) to 7 (*daily*) (Maslach, Jackson, & Leiter, 1996). The coefficient alpha in this study was .94.

Job performance was measured using the Griffin's Performance Scale questionnaire (Griffin & Parker, 2007). This instrument assesses 9 dimensions: Individual task proficiency (e.g., "Carried out the core parts of your job well."), Individual task adaptivity (e.g., "Adapted well to changes in core tasks."), Individual task proactivity (e.g., "Initiated better ways of doing your core tasks."), Team member proficiency (e.g., "Coordinated your work with coworkers."), Team member adaptivity (e.g., "Responded constructively to changes in the way your team works."), Team member proactivity (e.g., "Suggested ways to make your work unit more effective."), Organization member proficiency (e.g., "Defended the organisation if others criticized it."), Organization member adaptivity (e.g., "Coped with changes in the way the organisation operates."), Organization member proactivity (e.g., "Come up with ways of increasing efficiency within the organization."). The instrument is comprised of 27 items measured on a 5-point Likert scale ranging from 1 (*very little*) to 5 (*a great deal*). The coefficient alpha in this study was .94.

Data analysis

Since only self-report scales were employed in the present study, the model was checked for common method bias using Harman's single factor test, which indicated that one factor explained only 30.85% of the total variance. Because this value is much lower than the established 50% cutoff point (Mat Roni, 2014), we conclude that it is rather unlikely that the results of the study were influenced by common method bias.

Furthermore, to test the study's hypothesis, we used Hayes' (2013) PROCESS macro add-on in SPSS 25. PROCESS uses an ordinary least squares regression-based path analytic framework to estimate direct and indirect effects and allows for the estimation of serial mediation models (Hayes, Montoya, & Rockwood, 2017).

Variable scores were automatically mean centered in PROCESS. The indirect effects were tested based on a 5.000 sample bootstrapping procedure with a bootstrap confidence interval of 95%, to control for bias in the collected data.

Results

The means, standard deviations, and bivariate correlations are presented in Table 1. Correlation coefficients between the 4 variables are all significant at $p < .01$. Table 2 shows the results of the Process Model 6, which tested the serial mediation model.

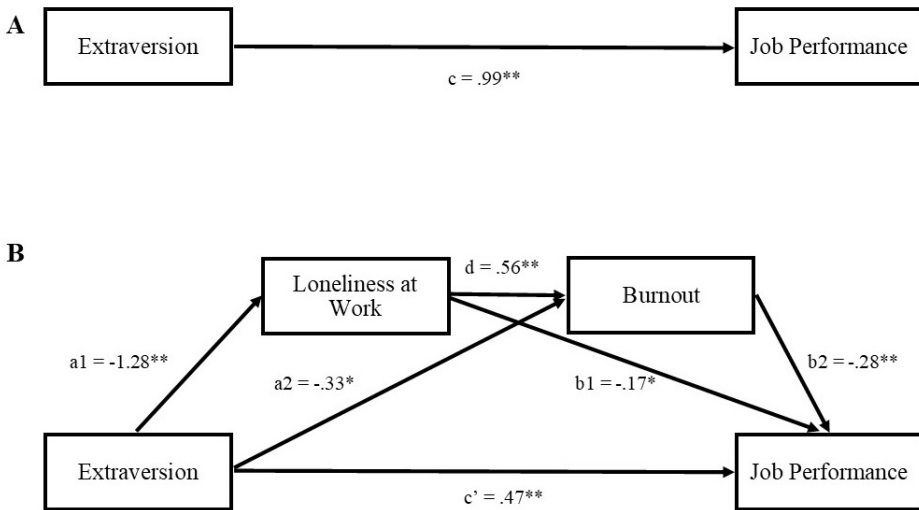
Table 1. Means, Standard Deviations and Bivariate Correlations

Variable	M	SD	1	2	3	4
1. Extraversion	31.81	7.76	-			
2. Burnout	33.58	20.31	-.42**	-		
3. Loneliness at Work	48.30	22.18	-.46**	.68**	-	
4. Work Performance	103.26	18.32	.42**	-.52**	-.50**	-

Note. $n = 254$. Correlations ≥ 0.42 are significant with $p < .01$ (1-tailed).

Figure 1 depicts the Model 6 that was tested in the PROCESS add-on for SPSS (Hayes, 2013). Namely, Figure 1A shows the path coefficient between Extraversion and Job

Performance, which indicates that the total effect, without the mediators in the model, is significant ($c = .99, p < .001$).



Note. ** $p < .001$; * $p < .05$

Figure 1. The statistical diagram of the serial multiple mediator model.

Furthermore, as shown in Figure 1B, the path coefficient between the two variables (c') decreases to .47 ($p < .001$), when Loneliness at Work and Burnout are added to the analysis as serial mediators, suggesting that the total indirect effect of Extraversion on Job

Performance through both mediators is significant. As displayed in Table 2, the 95% bias-corrected confidence interval produced by the PROCESS Macro, based on 5000 bootstrap samples, confirms that this total

indirect effect is significant ($B = .52$, boot SE = $.10$, 95% CI [$.3326$, $.7219$]).

Lastly, the indirect effect of Extraversion on Job Performance through both mediators in

serial is also significant ($B = .20$, boot SE = $.06$, 95% CI [$.0969$, $.3322$]) therefore providing support to our hypothesis.

Table 2. Total, direct and indirect effects of extraversion (X) on job performance (Y) through loneliness at work (M_1) and burnout (M_2); $N = 254$

Effects	Point estimate	SE	t	p	Lower	Upper
Total effect	.993	.141	7.060	.000*	.716	1.270
Direct effect	.475	.129	3.684	.000*	.221	.729
Total indirect effect	.518	.099 ^b			.333 ^{a,b}	.722 ^{a,b}
Indirect effect ($X \rightarrow M_1 \rightarrow M_2 \rightarrow Y$)	.202	.059 ^b			.097 ^{a,b}	.332 ^{a,b}
Indirect effect ($X \rightarrow M_1 \rightarrow Y$)	.224	.087 ^b			.060 ^{a,b}	.403 ^{a,b}
Indirect effect ($X \rightarrow M_2 \rightarrow Y$)	.092	.043 ^b			.013 ^{a,b}	.185 ^{a,b}

Note. * $p < .001$

^a 95% Bias Corrected Confidence Interval

^b Based on 5000 bootstrap samples

Discussion

The present study contributes to the sparse literature on loneliness at work by examining a plausible underlying mechanism by which loneliness at work can negatively affect job performance. Specifically, based on Basic Psychological Needs Theory (Deci & Ryan, 2000) and the Stress-Buffering Model (Cohen et al., 2000), we proposed a research model that took into consideration the joint effect of loneliness at work, employee burnout and employee extraversion on job performance (see Figure 1). Although previous studies reported a direct link between loneliness and job performance (e.g., Ozcelik & Barsade, 2011), this study showed that an indirect path also exists in the relationship.

Our findings supported our initial proposed model such that employees' extraversion predicted loneliness at work which was negatively related to job performance and, as expected, this effect was mediated by employee burnout.

These findings align with previous research that established extraversion and neuroticism as robust predictors of loneliness (Flett et al., 2016; Saklofske & Yackulic, 1989), and burnout as a significant predictor of job performance (Taris, 2006) but they also expand our understanding of how these phenomena occur jointly and establish loneliness at work as an essential

psychological state to be taken into consideration by both researchers and practitioners alike.

One possible explanation for the role of extraversion in predicting loneliness could be formed on the basis that extraverts have a greater aversion and lower affinity of being alone (Teppers et al., 2013). As personality traits tend to be stable across the lifespan (Costa, McCrae, & Löckenhoff, 2019) it is plausible that more extraverted individuals spend considerable and continuous efforts to ensure that they are embedded in a broader social network and that they are content with the quality of their relationships with others. Alternatively, a less extraverted individual might be more predisposed to feelings of loneliness since they do not actively avoid positioning themselves in social contexts which can favor the development of feelings of loneliness. This, in turn, facilitates the installation of burnout and, subsequently, translate to lower levels of job performance.

Theoretical implications

Based on Self-Determination Theory (Deci & Ryan, 2000) and the Stress-Buffering Model (Cohen et al., 2000), this study makes a relevant theoretical contribution by proposing a path by which loneliness at work can affect job performance. Notably, and in line with previous work done by Ozcelik and Barsade

(2011), loneliness was both directly and indirectly associated with job performance.

Another significant contribution of the current study is the conceptualization of loneliness as a frustration of the universal need for relatedness, as defined in the Basic Psychological Needs Theory (BPNT), a mini-theory pertaining to Self-Determination Theory and the inclusion of the Stress-Buffering Model as a framework through which the impact of the perceived lack of adequate social resources on employees well-being can be better understood. Such a conceptualization enables us to realize that not satisfying a basic human need such as relatedness leads to a susceptibility to stress and to subsequent negative individual and organizational consequences.

Additionally, the role of employees' personality was also considered, as the impact of extraversion on the variables of interest was assessed. The findings highlighted the significant effect of extraversion on loneliness at work and showcased the importance of considering the individual characteristics of employees in determining how different psychological states can impact the workplace.

Practical implications

From a practical standpoint, our study highlights the detrimental effects that loneliness at work can have on organizational outcomes such as job performance. As loneliness has been found to have a strong impact on one's health, even increasing the mortality risk (e.g., Holt-Lunstad et al., 2015), and as our study reveals the fact that loneliness can also have an impact on critical organizational outcomes, it becomes clear that organizations have ethical, legal and pragmatic reasons for actively engaging in initiatives which aim to prevent the installation of feelings of loneliness. Since work occupies most of our awake hours, and organizations tend to rely more and more on teamwork in order to reach their financial and operational goals, it becomes apparent that organizations find themselves in a good position to elicit a strong positive impact on the health, well-being, and productivity of

employees by fostering meaningful relationships in the workplace.

In that respect, organizations should look for meaningful ways to increase social connection by improving the structural (e.g., frequency of social contact, size of work-related social network), functional (e.g., perceived or received support, loneliness) and quality aspects (e.g., relationship satisfaction, conflict, strain) of workplace interactions (Holt-Lunstad, 2018) especially for employees low on extraversion who are at a higher risk of experiencing loneliness at work. These improvements can be attained by, for instance, providing increased opportunities for socialization by organizing private events in which employees may freely participate, providing workplace perks which foster activities that encourage teamwork, such as ping-pong tables or video-game consoles. In addition to these measures aimed at improving structural support, organizations need to address the quality of the interactions that it encourages, because if the interactions between co-workers are primarily trivial or superficial or they have the potential to turn into negative forms of social interaction (such as bullying or conflict), then their efforts may not necessarily have the desired effect. Truly addressing the issue of loneliness at work means going beyond merely increasing opportunities for interaction to implementing strategies that foster high-quality interactions that help build high-quality relationships.

Therefore, further efforts should focus on increasing trust, collaboration, and positivity, as well as promoting a feeling that one is valued and respected in the workplace. All these factors having been linked to better quality relationships and improved well-being (Mastroianni & Storberg-Walker, 2014).

Limitations and future research directions

We acknowledge some limitations to our study. The first limitation of the current research is its cross-sectional nature which doesn't allow us to infer causality between the variables measured. This limit could be addressed by employing longitudinal, quasi-experimental or experimental designs to

robustly establish causality between the variables of interest.

Secondly, the self-reported nature of our data may include the risk of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, Conway and Lance (2010) suggested that self-report data is the most appropriate form of measurement in certain circumstances. We argue that this might be especially true for emotional states characterized by subjective feelings, such as loneliness, which can prove challenging to be assessed by others or by employing an objective measure. Furthermore, we checked for common method bias using Harman's single factor test, which indicated that the data is not likely to be influenced by this type of bias. Also, the possibility of socially desirable responses could account for distortions in the data which could bear a particular impact on the study's findings although we informed the participants of the anonymity of their answers.

Another limitation was the use of convenience sampling via online social media platforms. Future studies should focus on a more representative sample that allows the researchers to draw more robust and generalizable conclusions.

Finally, given the fact that recent findings point out that neuroticism largely accounts for the relationship between personality traits and loneliness (Abdellaoui et al., 2019), more attention should be directed towards the interplay and joint impact of neuroticism and loneliness on organizational outcomes.

Conclusion

According to our results, extraversion predicts loneliness at work which in turn has an effect on employees' burnout and job performance. These findings stress the importance of addressing loneliness at work within organizations by highlighting the negative impacts it has on organizational outcomes.

Many employers offer wellness programs and access to various perks and compensation packages to their employees in an attempt to boost their motivation and subsequently, their productivity. We argue that fostering social connection needs to be one of the organizational initiatives that, alongside

current workplace resources offered by employers to their employees, should receive more attention and effort, in light of the profound adverse effects that social connection impairments have on employees' health and productivity.

References

- Abdellaoui, A., Chen, H. Y., Willemsen, G., Ehli, E. A., Davies, G. E., Verweij, K. J. H., ... Cacioppo, J. T. (2019). Associations between loneliness and personality are mostly driven by a genetic association with Neuroticism. *Journal of Personality*, 87(2), 386–397. <https://doi.org/10.1111/jopy.12397>
- Asendorpf, J. B., & van Aken, M. A. G. (2003). Personality-relationship transaction in adolescence: Core versus surface personality characteristics. *Journal of Personality*, 71, 629–666.
- Asendorpf, J. B., & Wilpers, S. (1998). Personality effects on social relationships. *Journal of Personality and Social Psychology*, 74, 1531–1544.
- Ayazlar, G., & Güzel, B. (2014). The Effect of Loneliness in the Workplace on Organizational Commitment. *Procedia – Social and Behavioral Sciences*, 131, 319–325. <https://doi.org/10.1016/j.sbspro.2014.04.124>
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43(1), 83–104. <https://doi.org/10.1002/hrm.20004>
- Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. *Psychological Bulletin*, 117(3), 497–529. <https://doi.org/10.1037/0033-2909.117.3.497>
- Brashears, M. E. (2011). Small networks and high isolation? A reexamination of American discussion networks. *Social Networks*, 33(4), 331–341. <https://doi.org/10.1016/j.socnet.2011.10.003>
- Brown, E. G., Gallagher, S., & Creaven, A. M. (2018). Loneliness and acute stress reactivity: A systematic review of psychophysiological studies. *Psychophysiology*, 55(5), e13031. <https://doi.org/10.1111/psyp.13031>
- Cacioppo, J. T., Fowler, J. H., & Christakis, N. A. (2009). Alone in the Crowd: The Structure and Spread of Loneliness in a Large Social Network. *Journal of Personality and Social Psychology*, 97(6), 977.
- Cacioppo, J. T., Hawkey, L. C., Ernst, J. M., Burleson, M., Berntson, G. G., Nouriani, B., & Spiegel, D. (2006). Loneliness within a nomological net: An evolutionary perspective. *Journal of Research in Personality*, 40(6), 1054–1085. <https://doi.org/10.1016/j.jrp.2005.11.007>
- Cigna U.S. Loneliness Index. (May, 2018). Retrieved from: <https://www.cigna.com/assets/docs/newsroom/loneliness-survey-2018-full-report.pdf>

- Coan, J. A., & Sbarra, D. A. (2015). Social baseline theory: The social regulation of risk and effort. *Current Opinion in Psychology*, 1, 87–91. <https://doi.org/10.1016/j.copsyc.2014.12.021>
- Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). Social Relationships and Health. In S. Cohen, L. G. Underwood, & B. H. Gottlieb (Eds.), *Measuring and intervening in social support* (pp. 3–25). New York: Oxford University Press.
- Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology*, 25(3), 325–334. <https://doi.org/10.1007/s10869-010-9181-6>
- Costa, P. T. J., & McCrae, R. R. (1992). Four ways the five factors are basic. *Personality and Individual Differences*, 13(6), 653–665. <https://doi.org/10.1177/171516350613900508>
- Costa, P. T., McCrae, R. R. & Löckenhoff, C. E. (2019). Personality across the life span. *Annual Review of Psychology*, 70(1), 423–448, DOI: 10.1146/annurev-psych-010418-103244
- Deci, E. L., & Ryan, R. M. (2000). The “What” and “Why” of goal Pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268. <https://doi.org/10.1046/j.1537-2995.1992.32192116425.x>
- Dixon, D., Cruess, S., Kilbourn, K., Klimas, N., Fletcher, M. A., Ironson, G., ... Antoni, M. H. (2006). Social support mediates loneliness and human herpesvirus Type 6 (HHV-6) antibody titers. *Journal of Applied Social Psychology*, 31(6), 1111–1132. <https://doi.org/10.1111/j.1559-1816.2001.tb02665.x>
- Erzen, E., & Çikrikci, Ö. (2018). The effect of loneliness on depression: A meta-analysis. *International Journal of Social Psychiatry*, 64(5), 427–435. <https://doi.org/10.1177/0020764018776349>
- Field, A. (2018). *Discovering Statistics using SPSS*. University of Sussex, UK: Sage Publications LTD.
- Fischer, C. S. (2009). The 2004 GSS finding of shrunken social networks: An artifact? *American Sociological Review*, 74(4), 657–669. <https://doi.org/10.1177/000312240907400408>
- Flett, G.L., Goldstein, A.L., Pechenkov, I.G., Nepon, T., & Wekerle, C. (2016). Antecedents, correlates, and consequences of feeling like you don't matter: Associations with maltreatment, loneliness, social anxiety, and the five factor model. *Personality and Individual Differences*, 92, 52–56. <https://doi.org/10.1016/j.paid.2015.12.014>
- Ganster, D. C., & Schaubroeck, J. (1991). Work, stress and employee health. *Journal of Management*, 17(2), 235–271. <https://doi.org/http://dx.doi.org/10.1177/014920639101700202>
- Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal*, 50(2), 327–347.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis*. New York: The Guilford Press.
- Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal*, 25, 76–81. <http://dx.doi.org/10.1016/j.ausmj.2017.02.001>
- Hambleton, R. K. (2005). Issues, designs, and technical guidelines for adapting tests into multiple Languages and Cultures. In R. K. Hambleton, P. F. Merenda, & C. D. Spielberger (Eds.) *Adapting educational and psychological tests for cross-cultural assessment* (pp. 3–38). New Jersey: Lawrence Erlbaum.
- Hawkley, L. C., Thisted, R. A., Masi, C. M., & Cacioppo, J. T. (2010). Loneliness predicts increased blood pressure: 5-year cross-lagged analyses in middle-aged and older adults. *Psychology and Aging*, 25(1), 132–141. <https://doi.org/10.1037/a0017805>
- Hojat, M. (1982). Loneliness as a function of selected personality variables. *Journal of Clinical Psychology*, 38(1), 137–141. [https://doi.org/10.1002/1097-4679\(198201\)38:1<137::AID-JCLP2270380122>3.0.CO;2-2](https://doi.org/10.1002/1097-4679(198201)38:1<137::AID-JCLP2270380122>3.0.CO;2-2)
- Holt-Lunstad, J. (2018). Fostering Social Connection in the Workplace. *American Journal of Health Promotion*, 32(5), 1307–1312. <https://doi.org/10.1177/0890117118776735a>
- Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality. *Perspectives on Psychological Science*, 10(2), 227–237. <https://doi.org/10.1177/1745691614568352>
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*, 7(7). <https://doi.org/10.1371/journal.pmed.1000316>
- Iliescu, D., Popa, M., & Dimache, R. (2015). Adaptarea românească a setului International de Itemi de Personalitate: IPIP-Ro [The Romanian adaptation of the International Personality Item Pool: IPIP-Ro]. *Psihologia Resurselor Umane*, 13(1), 83–112.
- Jeffrey, K., Abdallah, S., & Michaelson, J. (2017). *The cost of loneliness to UK employers*. Retrieved from: http://neweconomics.org/2017/02/cost-loneliness-uk-employers/?sft_latest=research
- Jensen-Campbell, L. A., Adams, R., Perry, D. G., Workman, K. A., Furdella, J. Q., & Egan, S. K. (2002). Agreeableness, extraversion, and peer relations in early adolescence: Winning friends and deflecting aggression. *Journal of Research in Personality*, 36, 224–251.
- Kurina, L. M., Knutson, K. L., Hawkley, L. C., Cacioppo, J. T., Lauderdale, D. S., & Ober, C. (2011). Loneliness is associated with sleep fragmentation in a communal society. *Sleep*, 34(11), 1519–1526. <https://doi.org/10.5665/sleep.1390>
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory manual* (Vol. 4). Palo Alto, CA: Consulting psychologists press.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- Mastroianni, K., & Storberg-Walker, J. (2014). Do work relationships matter? Characteristics of workplace interactions that enhance or detract from employee perceptions of well-being and health behaviors. *Health Psychology and Behavioral Medicine*, 2(1), 798–819. <https://doi.org/10.1080/21642850.2014.933343>
- Mat Roni, S. (2014). *Introduction to SPSS*. Australia: Edith Cowan University, SOAR Centre.
- McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments

- and observers. *Journal of Personality and Social Psychology*, *52*, 81–90.
- McGrath, J. E. (1976). Stress and behavior in organizations. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1351–1396). Chicago: Rand-McNally.
- McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2006). Social isolation in America: Changes in core discussion networks over two decades - refuted by multiple follow-up studies. *American Sociological Review*, *71*(3), 353–375. <https://doi.org/10.1177/000312240607100301>
- McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2008). Social isolation in America: Changes in core discussion networks over two decades. *American Sociological Review*, *73*(6), 1022. <https://doi.org/10.1177/000312240807300610>
- Griffin, Jo. (2010). *The Lonely Society?*. Mental Health Foundation. Retrieved from: https://www.mentalhealth.org.uk/sites/default/files/the_lonely_society_report.pdf
- Ozcelik, H., & Barsade, S. (2011). Work Loneliness and Employee Performance. *Academy of Management Proceedings*, *2011*(1), 1–6. <https://doi.org/10.5465/AMBP.2011.65869714>
- Paik, A., & Sanchagrin, K. (2013). Social Isolation in America: An Artifact. *American Sociological Review*, *78*(3), 339–360. <https://doi.org/10.1177/0003122413482919>
- Peng, J., Chen, Y., Xia, Y., & Ran, Y. (2017). Workplace loneliness, leader-member exchange and creativity: The cross-level moderating role of leader compassion. *Personality and Individual Differences*, *104*(November), 510–515. <https://doi.org/10.1016/j.paid.2016.09.020>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Rook, K. S. (1988). Toward a more differentiated view of loneliness. In *Handbook of personal relationships: Theory, research and interventions*. (pp. 571–589). Oxford, England: John Wiley & Sons.
- Saklofske, D. H., & Yackulic, R. A. (1989). Personality predictors of loneliness. *Personality and Individual Differences*, *10*(4), 467–472. [https://doi.org/10.1016/0191-8869\(89\)90011-1](https://doi.org/10.1016/0191-8869(89)90011-1)
- Salvagioni, D. A. J., Melanda, F. N., Mesas, A. E., González, A. D., Gabani, F. L., & De Andrade, S. M. (2017). Physical, psychological and occupational consequences of job burnout: A systematic review of prospective studies. *PLoS ONE*, *12*(10), 1–29. <https://doi.org/10.1371/journal.pone.0185781>
- Stoica, M., & Brate, A. T. (2013). Resilience, organizational commitment, supervisory support and loneliness at work in a medical unit. *Psychology of Human Resources Journal*, *11*(2), 71–82.
- Swickert, R. J., Rosentreter, C. J., Hittner, J. B., & Mushrush, J. E. (2002). Extraversion, social support processes, and stress. *Personality and Individual Differences*, *32*(5), 877–891. [https://doi.org/10.1016/S0191-8869\(01\)00093-9](https://doi.org/10.1016/S0191-8869(01)00093-9)
- Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work and Stress*, *20*(4), 316–334. <https://doi.org/10.1080/02678370601065893>
- Teppers, E., Klimstra, T. A., van Damme, C., Luyckx, K., Vanhalst, J., & Goossens, L. (2013). Personality traits, loneliness, and attitudes toward aloneness in adolescence. *Journal of Social and Personal Relationships*, *30*(8), 1045–1063. <https://doi.org/10.1177/0265407513481445>
- Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke: Systematic review and meta-analysis of longitudinal observational studies. *Heart*, *102*(13), 1009–1016. <https://doi.org/10.1136/heartjnl-2015-308790>
- Van den Broeck, A., Ferris, D. L., Chang, C. H., & Rosen, C. C. (2016). A Review of Self-Determination Theory's Basic Psychological Needs at Work. *Journal of Management*, *42*(5), 1195–1229. <https://doi.org/10.1177/0149206316632058>
- Vansteenkiste, M., & Ryan, R. M. (2013). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*, *23*(3), 263–280. <https://doi.org/10.1037/a0032359>
- Virgă, D., Schaufeli, W. B., Taris, T. W., van Beek, I., & Sulea, C. (2019). Attachment Styles and Employee Performance: The Mediating Role of Burnout. *The Journal of Psychology*, *0*(0), 1–19. <https://doi.org/10.1080/00223980.2018.1542375>
- Weber, A., & Jaekel-Reinhard, A. (2000). Burnout Syndrome: A Disease of Modern Societies? *Occupational Medicine*, *50*(7), 512–517. <https://doi.org/10.1093/occmed/50.7.512>
- Wilson, C., & Moulton, B. (2010). Loneliness among Older Adults : A National Survey of Adults 45 +. In *AARP*. Washington, DC.
- Wright, S. L., Burt, C. D. B., & Strongman, K. T. (2006). Loneliness in the workplace: Construct definition and scale development. *New Zealand Journal of Psychology*, *35*(2), 59–68.