Brief report

Emotional exhaustion among the South Korean workforce before and after COVID-19

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Since the outbreak of the COVID-19 pandemic in South Korea in January 2020, many South Korean employees have been experiencing work stressors, threats of job insecurity, and feelings of isolation, which together lead to emotional exhaustion. The present study aimed to compare the emotional exhaustion of South Korean employees before and after the pandemic, as well as to examine how the demographic characteristics of employees affected their emotional exhaustion. We administered surveys to 276 employees before the COVID-19 pandemic (from July to October 2019) and 301 employees after its onset (from March to April 2020). A series of *t*-tests demonstrated that both employee samples were similar demographically. Hierarchical regression analyses revealed that even when controlling for baseline emotions, the employees assessed after the COVID-19 experienced significantly higher emotional exhaustion than those assessed before. Furthermore, in reaction to COVID-19, female employees felt more emotionally exhausted than their male counterparts. Finally, after the COVID-19 pandemic, younger and short-tenured employees reported higher emotional exhaustion than older and more experienced employees. These findings provide insight into managing the mental health of employees during the COVID-19 crisis.

Practitioner points

- The emotional exhaustion of the South Korean workforce increased after the COVID-19 pandemic.
- After the pandemic, female employees experienced a higher level of emotional exhaustion than their male counterparts.
- After the pandemic, younger and short-tenured employees experienced a higher level of emotional exhaustion than older and long-tenured employees.

The coronavirus disease 2019 (COVID-19) has spread worldwide since its first incidence in Wuhan, China, in December 2019. The first case in South Korea – a country adjacent to China – occurred on 20 January 2020. Since then, the number of confirmed cases increased drastically due to a sudden outbreak that started at a religious facility in Daegu on February 18. On March 22, the government issued nationwide social distancing, which dramatically altered the work habits and lifestyle of the South Korean workforce. Most South Korean employees (i.e. individuals in non-managerial positions who are employed

for wages or salary) were required to engage in virtual work arrangements such as telework and videoconferencing (The Korea Herald, 2020). The economic recession triggered by COVID-19, along with the spread of temporary work arrangements and unpaid leave, has caused the South Korean workforce to experience increased job insecurity (Yonhap News Agency, 2020). Despite the apparent negative effect of the COVID-19 pandemic on employees' mental health, there is a paucity of research on this topic.

Although scholars have called for more research on the mental health of individuals exposed to COVID-19 (Ho, Chee, & Ho, 2020; Rajkumar, 2020), the extant research has mainly focused on stressors during quarantine resulting from general pandemics (Brooks *et al.*, 2020) and the mental health of medical staff treating COVID-19 patients (Xiao, Zhang, Kong, Li, & Yang, 2020). To our knowledge, Tan *et al.*'s (2020) research on the psychological symptoms of employees who returned to work after lockdown and quarantine is the sole study that examined the effects of the COVID-19 pandemic among non-health care workers. However, how employees' mental health changed before and after the COVID-19 remains unknown. In response, our research aimed to compare the emotional exhaustion of South Korean employees who were and were not exposed to COVID-19. Emotional exhaustion – a core dimension of burnout – refers to strain arising from prolonged exposure to chronic stressors (Maslach, Schaufeli, & Leiter, 2001), as well as to a chronic state of physical and emotional depletion (Zohar, 1997). Given that emotional exhaustion is a psychological symptom that bears a negative effect on important work outcomes (Lee, Lim, Yang, & Lee, 2011), examining its symptoms in employees exposed to COVID-19 could provide insights on managing their mental health and assisting them in coping with the COVID-19 crisis. As such, it is necessary to investigate which demographic characteristics are more strongly associated with emotional exhaustion in the context of COVID-19. Therefore, we focused on the gender, age, job tenure, and employment status of employees, and examined how these characteristics were related to emotional exhaustion during the pandemic. This study aimed to assess whether emotional exhaustion significantly differed between the samples assessed before (BC) and after (AC) the COVID-19 pandemic, as well as which demographic characteristics were associated with emotional exhaustion after COVID-19.

Method

Data collection procedure

Given that social distancing during the COVID-19 pandemic damaged the service industry (e.g. airlines, travel agencies, restaurants, and retail stores) most seriously (Korea Institute for Industrial Economics & Trade, 2020), we contacted frontline service employees from a pool of 1.2 million South Koreans of an online survey company (https://embrain.com/eng/power/power3.asp). When these subjects registered for the online survey system, their background information, such as demographic characteristics, years of employment, occupation, and email address, was solicited. With the permission of the online survey company, we randomly selected potential participants among employees who worked in the service sector and held non-managerial positions. We then sent a survey invitation to these individuals along with an informed consent form that guaranteed voluntary participation and the anonymity and confidentiality of their responses. We emailed a survey link to the individuals who signed and submitted the informed consent.

There were no missing entries, because the online survey system did not allow participants to skip responding to any of the survey items.

For both BC and AC samples, we administered online questionnaires at two points in time. Given that individuals' stable affective dispositions influence their experience of subsequent emotional exhaustion, it was necessary to measure in advance the baseline positive and negative affect of participants and control for them in the main analysis. Prior research has used one- to three-month intervals between the measurement of positive and negative affect and emotional exhaustion (Baranik, Wang, Gong, & Shi, 2017; Martínez-Iñigo, Bermejo-Pablos, & Totterdell, 2018; Thompson, Carlson, Kacmar, & Vogel, 2020). In line with these practices, we measured the baseline positive and negative affect and demographic characteristics of participants in the Time 1 (T1) survey and assessed their emotional exhaustion in the Time 2 (T2) survey. The BC surveys were administered in July (T1 survey) and October (T2 survey), 2019 (i.e. three-month delay). The AC surveys were carried out in March (T1 survey) and April (T2 survey) 2020 (i.e. 1.5-month delay). Among the 651_{BC} and 537_{AC} employees who responded to the T1 survey, 276_{BC} and 301_{AC} also completed the T2 survey (retention rate = $42.4\%_{BC}$, $50.3\%_{AC}$).

Sample characteristics

The final sample consisted of 577 employees who worked in various service sectors: retail (e.g. department stores and retail stores; $62.0\%_{BC}/58.1\%_{AC}$), tourism/ hospitality (e.g. hotels, hospitals, and airlines; $14.1\%_{BC}/16.6\%_{AC}$), restaurant and foodservice ($15.6\%_{BC}/18.6\%_{AC}$), and banking/insurance industries ($7.2\%_{BC}/6.6\%_{AC}$). Approximately 60% of the participants were female ($61.6\%_{BC}$, $62.8\%_{AC}$). The average age of BC and AC participants was 36.81 (SD_{BC} = 8.49; Min = 22, Max = 54) and 36.49 (SD_{AC} = 8.52; Min = 20, Max = 54), respectively. The majority of the participants had a four-year university education ($49.3\%_{BC}$, $48.8\%_{AC}$), followed by those with a two-year college education ($21.4\%_{BC}$, $21.6\%_{AC}$), a graduate-level education ($2.5\%_{BC}$, $4.0\%_{AC}$), and a high school education ($26.8\%_{BC}$, $25.6\%_{AC}$). On average, the participants reported 4.82 (SD_{BC} = 4.25; Min = 1.00, Max = 24.42) and 4.85 (SD_{AC} = 4.54; Min = 1.00, Max = 28.17) years of job tenure (i.e. years of employment in the current organization).

Measures

The survey items were translated into Korean and then back-translated into English to ensure that the Korean translation was equivalent to the original English version (Brislin, 1970). All variables were measured on a 5-point Likert scale (Appendix 1). Consistent with prior research on emotional exhaustion (Shin & Hur, 2019), we measured emotional exhaustion using four items from the emotional exhaustion dimension of the Maslach Burnout Inventory (Maslach, Jackson, & Leiter, 1996). Our emotional exhaustion scale was equivalent to the Korean version of the Maslach Burnout Inventory (Shin, 2003). The test–retest reliability of this abbreviated scale was .89 (Malach-Pines, 2005), and its external validity has been established (Malach-Pines, 2005; Maslach *et al.*, 1996). A sample item (α_{BC} = .88, α_{AC} = .90) was 'I feel emotionally drained from my work'. The respondents reported the extent to which they agreed to each item on a 5-point Likert scale (1 = 'strongly disagree' and 5 = 'strongly agree'). To control for the baseline affective disposition of participants, we used three items each to represent positive (α_{BC} = .89, α_{AC} = .81) and negative affect (α_{BC} = .85, α_{AC} = .87) from the Positive and Negative Affect Schedule (PANAS) Short Form (Thompson, 2007; Watson, Clark, & Tellegen, 1988). The

Table 1. Results of hierarchical regression model

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Gender	.02	.02	.26**	.03	.03	.03
Age	−.01	−.01	−.01	.01	−.01	−.01
Job tenure	.01	.01	.01	.01	.03	.01
Employment status	.01	.00	.01	.00	.00	−.00
Positive affect	−.12*	−.11**	−.12**	−.11**	−.10*	−.11**
Negative affect	.31**	.31**	.31**	.31**	.31**	.31**
COVID-19		1.22**	1.39**	2.70**	1.38**	1.12**
COVID-19 and gender			−.46**			
COVID-19 and age				−.02**		
COVID-19 and job tenure					−.03*	
COVID-19 and employment status						.01
R^2	11.3%	44.5%	45.6%	45.3%	44.9%	44.5%
f^2		.60	.02	.02	.01	.00

Note. $N = 577$; Unstandardized coefficients are reported; Gender: 0 = female, 1 = male; Employment Status: 0 = temporary, 1 = permanent.
$^{\dagger}p < .10$; $^*p < .05$; $^{**}p < .01$

Table 2. Test of the conditional effect of COVID-19 on emotional exhaustion at the levels of demographic variables

Variable	Category	b	$CI_{95\% \text{ low}}$	$CI_{95\% \text{ high}}$
Gender	Female	1.40	1.23	1.56
	Male	0.93	0.72	1.14
Age	Low	1.42	1.24	1.60
	Mean	1.22	1.09	1.35
	High	1.02	0.84	1.20
Job Tenure	Low	1.34	1.17	1.52
	Mean	1.22	1.09	1.35
	High	1.08	0.89	1.26

Note. CI = confidence interval; b = unstandardized coefficient; High = mean + 1 *SD*; Low = mean − 1 *SD*.

psychometric properties of this shortened scale and its equivalence to the original PANAS and the Korean version of the PANAS have been validated (Lee, Kim, & Lee, 2003; Thompson, 2007).

Results

Equivalence of the BC and AC samples

To assess the equivalence of the BC and AC samples, we performed a series of t-tests on demographic characteristics; the two samples did not significantly differ in terms of gender ($t = .09, p > .05$), age ($t = .46, p > .05$), education ($t = .50, p > .05$), and job tenure ($t = .08, p > .05$). Furthermore, we compared the demographic characteristics of our sample and those of the subject pool from the online survey company and found that there were no significant differences in the demographic characteristics of the two groups.

Reliability and validity

Cronbach's alpha for the variables used in the analyses demonstrated a high level of internal consistency (Nunnally, 1978). Additionally, to evaluate convergent and discriminant validities, we employed a confirmatory factor analysis using Mplus Version 8.4. The suggested three-factor model (emotional exhaustion, positive affect, and negative affect) exhibited an acceptable fit for both samples: ($\chi^2_{(32)BC/AC}$ = 94.30/68.96, p < .05, CFI [comparative fit index] = .96/.98, TLI [Tucker Lewis index] = .94/.97, RMSEA [root mean square error of approximation] = .08/.06, and SRMR [standardized root mean square residual] = .05/.03). Furthermore, the three constructs displayed a sufficient level of composite reliability ranging from .85/.82 to .89/.87. The average variance extracted values were larger than the squared correlation between the target and other constructs (Fornell & Larcker, 1981). Taken together, these findings suggest that the measures used in the analyses possessed sound psychometric properties.[1]

Analysis

First, to determine whether the BC and AC samples reported different levels of emotional exhaustion, we created a dummy variable that represented scenarios before/after COVID-19 and tested its main effect on emotional exhaustion. Second, to assess whether demographic characteristics affected emotional exhaustion after COVID-19, we tested the interaction of the COVID-19 dummy variable and the four demographic variables on emotional exhaustion. Before the main analysis, continuous exogenous variables were mean-centred (Aiken & West, 1991). The effect sizes were measured using f^2, which is defined as the 'ratio of variance explained by the interaction term alone to the unexplained variance in the final model (Dawson, 2014, p. 14)'. According to Cohen *et al*. (2003), the cutoffs for f^2 of small, medium, and large effect sizes are .02, .15, and .35, respectively.

Table 1 indicates the large effect size of COVID-19 on emotional exhaustion (b = 1.22, p < .01, f^2 = .60), suggesting that respondents exposed to COVID-19 reported a significantly higher level of emotional exhaustion than those who were not exposed. It further indicates significant interaction effects of COVID-19 and gender (b = −0.46, p < .01, f^2 = .02), age (b = −0.02, p < .01, f^2 = .02), and job tenure (b = −0.03, p < .05, f^2 = .01) on emotional exhaustion. However, employment status did not moderate the positive relationship between COVID-19 and emotional exhaustion (b = 0.01, p > .05). We carried out simple slope tests (plotting simple slopes at ± 1 *SD* of the moderator) to probe the nature of the three interaction effects (Hayes, 2017). As reported in Table 2, while COVID-19 was associated with increased emotional exhaustion for all respondents, this association was more pronounced in females (high: b = 1.40, 95% CI = [1.23, 1.56]) than males (high: b = 0.93, 95% CI = [0.72, 1.14]). Table 2 also demonstrates that the positive relationship between COVID-19 and emotional exhaustion was the strongest for younger respondents (low: b = 1.42, 95% CI = [1.24, 1.60]; mean: b = 1.22, 95% CI = [1.09, 1.35]; high: b = 1.02, 95% CI = [0.84, 1.20]) and those with shorter job tenures (low: b = 1.34, 95% CI = [1.17, 1.52]; mean: b = 1.22, 95% CI = [1.09, 1.35]; high: b = 1.08, 95% CI = [0.89, 1.26]).

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[1] *For more details about the factor analysis, please see the Appendices 1–3.*

Discussion

The results demonstrated that even when controlling for baseline affective dispositions, those exposed to COVID-19 displayed a significantly higher level of emotional exhaustion than those who were not. Furthermore, we found significant interaction effects of COVID-19 with gender, age, and job tenure on emotional exhaustion. More precisely, after the spread of COVID-19, female employees were more emotionally exhausted than their male counterparts. Younger employees (i.e. mean – 1 SD = age below 28) exhibited higher emotional exhaustion than older employees (i.e. mean + 1 SD = age above 45), and those with shorter job tenures (i.e. mean – 1 SD = less than one year) reported higher emotional exhaustion than those with longer tenures (i.e. mean + 1 SD = more than nine years). However, there were no significant differences between respondents with permanent and temporary employment after the COVID-19 pandemic. These findings are consistent with prior findings reporting higher emotional exhaustion among employees who were female, (Purvanova & Muros, 2010) younger, and inexperienced (Brewer & Shapard, 2004). In general, while employees who were female, younger, and shorter-tenured felt more emotionally exhausted, their emotional exhaustion was found to be aggravated in the COVID-19 context, which is consistent with prior finding suggesting that younger individuals, and women display more severe psychological symptoms under COVID-19 (Fu *et al*., 2020; Park *et al*., 2020). This may be because younger individuals have immature and ineffective stress-coping strategies than older individuals (Aldwin, Sutton, Chiara, & Spiro, 1996; Diehl, Coyle, & Labouvie-Vief, 1996; Whitty, 2003). Women are likely to feel more emotionally exhausted after the COVID-19 pandemic because of increased caring responsibilities. Furthermore, as social relations are deemed more important by women than by men, social distancing resulting from COVID-19 may have been more detrimental to women, thereby causing female employees to experience higher emotional exhaustion than their male counterparts.

Our research is an inceptive study on the mental health of employees exposed to COVID-19. Similar to medical staff, students, and the general public (Cao *et al*., 2020; Lauri Korajlija & Jokic-Begic, 2020; Xiao *et al*., 2020), the mental health of employees was also impaired by COVID-19 (Tan *et al*., 2020). The significant differences in emotional exhaustion between two equivalent samples were presumed to be caused by COVID-19. The present findings have implications for organizational management during the COVID-19 crisis. Based on our findings, organizational leaders are advised to pay close attention to their employees' emotional exhaustion. Given that employees experienced increased emotional exhaustion after the COVID-19 pandemic, organizations are advised to increase peer support to help employees better cope with emotional exhaustion resulting from COVID-19 (Tan *et al*., 2020). As peer support is particularly important in alleviating emotional exhaustion in service occupations (Ducharme, Knudsen, & Roman, 2007), service organizations may need to consider using intranet applications or instant messengers to foster peer support among service employees. Additionally, online mental health services (e.g. online counselling hotlines or self-help services) can be used for the alleviation of stress and anxiety and sharing of information to cope with the pandemic while minimizing face-to-face interactions (Liu *et al*., 2020; Rajkumar, 2020).

It should be noted that we did not employ a one-group pre-test–post-test design. Although the BC and AC samples were found to be equivalent in terms of key demographic characteristics, we did not have data regarding the past and current mental health of participants, making it difficult to determine whether the difference in emotional exhaustion between the BC and AC samples is solely attributable to the COVID-19

pandemic. Therefore, we recommend that future researchers conduct longitudinal research that assesses the trajectory of employee emotional exhaustion before and after COVID-19. Another limitation of our research is that we did not use other standardized mental health measures or evaluate specific mental health disorders (e.g. depression, anxiety, and post-traumatic stress disorder). For a complete understanding of the impact of COVID-19 on the mental health of the South Korean workforce, more diverse indices of mental health need to be used in future research. Finally, although we investigated the moderating roles of demographic characteristics in the reactions of employees to COVID-19, emotional exhaustion may have been affected by other job characteristics and working conditions (e.g. job role, job rank, pay grade, and peer support). Future investigations into the moderating roles of these variables can provide more elaborate knowledge on the impact of the COVID-19 pandemic on the mental health of workforces.

Conflicts of interest

All authors declare no conflict of interest.

Author contribution

Hansol Hwang: (Conceptualisation; Writing – original draft; Writing – review and editing). Won-Moo Hur: (Conceptualisation; Funding acquisition; Formal analysis; Methodology; Resources; Writing – original draft; Writing – review and editing). Yuhyung Shin (Conceptualisation; Project administration; Supervision; Writing – original draft; Writing – review and editing).

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Appendix 1: *Factor analytic results of measurement items*

Construct	Measurement items	Before COVID-19	After COVID-19
Emotional exhaustion	I feel emotionally drained from my wor.	.75	.87
	I feel fatigued when I get up in the morning and have to face another day on the job	.74	.86
	Working with people all day is really a strain for me	.91	.82
	I feel burned out from my work	.85	.81
Positive affect	Active	.86	.78
	Enthusiastic	.86	.89
	Attentive	.84	.65
Negative affect	Nervous	.78	.79
	Scared	.89	.87
	Upset	.76	.83

$\chi^2_{(32)BC} = 94.30$; $p < .05$, CFI $= .96$, TLI $= .94$, RMSEA $= .08$, SRMR $= .05$
$\chi^2_{(32)AC} = 68.96$; $p < .05$, CFI $= .98$, TLI $= .97$, RMSEA $= .06$, SRMR $= .03$

All items were measured on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Appendix 2: *Means, standard deviations, and correlations for the before-COVID-19 sample*

Variables	*M*	*SD*	α	CR	1	2	3	4	5	6	7
1. Gender	0.38	0.48	–	–	–						
2. Age	36.81	8.49	–	–	.07	–					
3. Job tenure	4.82	4.25	–	–	.00	.41**					
4. Employment status	0.70	0.46	–	–	−.09	−.19**	.04	–			
5. Positive affect	2.69	0.90	.89	.89	.10	.07	−.14**	−.03	.67		
6. Negative affect	2.92	0.95	.85	.85	−.04	−.27	−.08	.04	.25	.73	
7. Emotional exhaustion	2.20	0.78	.88	.89	.13*	−.02	.12*	.03	−.24**	.19**	.65

The values in italics did not provide statistical significance.
$N = 276$; Numbers along the diagonal are average variance extracted values; CR = composite reliability; Gender: 0 = female, 1 = male; Employment status: 0 = temporary, 1 = permanent; [†]$p < .10$; *$p < .05$; **$p < .01$.

Appendix 3: ?Means, standard deviations, and correlations for the after-COVID-19 sample

Variables	M	SD	α	CR	1	2	3	4	5	6	7
1. Gender	0.37	0.48	–	–	–						
2. Age	36.49	8.52	–	–	.15*	–					
3. Job tenure	4.85	4.54	–	–	.11†	.41**	–				
4. Employment status	0.71	0.45	–	–	−.01	−.18*	.03	–			
5. Positive affect	2.65	0.80	.81	.82	.00	.05	−.04	−.04	*.61*		
6. Negative affect	2.96	0.96	.87	.87	−.11†	−.26**	−.02	.11†	−.14*	*.69*	
7. Emotional exhaustion	3.43	0.93	.90	.86	−.14*	−.22**	−.04	.05	−.14*	−.54**	*.62*

The values in italics did not provide statistical significance.

CR = composite reliability.

$N = 301$; Numbers along the diagonal are average variance extracted values; Gender: 0 = female, 1 = male; Employment status: 0 = temporary, 1 = permanent; $^\dagger p < .10$; $*p < .05$; $**p < .01$.