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Factors that Affect Depression and Anxiety in Service and Sales Workers Who Interact With Angry Clients

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ABSTRACT

Introduction: We evaluated depression and anxiety in service and sales workers from Korea who interacted with angry clients to identify factors that mediated and moderated depression and anxiety in these workers.
Methods: This was a secondary analysis of data from the fifth Korean Working Conditions Survey conducted in 2017. A structural equation model was used for mediation and moderation analysis.
Results: Service and sales workers who had more interactions with angry clients had increased risk for depression and anxiety. Experiencing clients' adverse behaviors (acute episodes) mediated the relationship between interacting with angry clients (a chronic situation) on depression and anxiety. Job satisfaction and managers' support moderated the relationship between interacting with angry clients and mental health problems.
Conclusion: We suggest that employers of service and sales workers should recruit staff based on their aptitude for such work, thus ensuring job satisfaction, and train them to deal with angry clients in such a way that they experience less emotional burden. Employers should also make bylaws requiring managers to directly take care of adverse social behavior by clients. Furthermore, a sociocultural campaign to prevent adverse social behavior by clients is also needed.

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1. Introduction

Hochschild [1] defined "emotional labor" as "the management of feeling to create a publicly observable facial and bodily display" in service work. De Castro et al. [2] suggested several principal characteristics of emotional labor. First, it requires face-to-face or voice-to-voice contact with clients and thus often occurs in settings such as small shops, shopping malls, banks, hotels, and restaurants. Second, it requires workers to produce an emotional state that is necessary for their specific jobs and could be an essential component of their job duties [2].

According to the 6th European Work Conditions Survey (EWCS) report [3], emotional demands in the workplace occur when workers are expected to manage their emotions. Thus, workers may have to hide their true emotions, interact with angry clients, or work in emotionally disturbing situations, all of which require them to manage their emotions. Among these three components of

emotional demands, the EWCS found that workers who most commonly have to hide their emotions are service and sales workers (41%), followed by professionals (36%), and managers or technicians (35%). Workers interacting with angry clients are most frequently service and sales workers (25%), and those working in emotionally disturbing situations are most frequently professionals (15%), followed by service and sales workers (13%). Thus, the major emotional demand of service and sales workers are characterized by interacting with angry clients.

Exposure to adverse social behaviors by clients, such as verbal abuse, unwanted sexual attention, humiliating behaviors or threats, physical violence, and sexual harassment, can have serious harmful effects on workers' health and well-being. Almost all of the adverse social behaviors are reported by service and sales workers, and most of these workers are female [3].

According to the 2015 data from the World Bank, the service industry accounted for 68.9% of world gross domestic product,

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more than 10% greater than 20 years ago. This increase is more apparent in Asian countries, where recent economic development has increased the emphasis on customer satisfaction. During the past 20 years, the percentage of gross domestic product dedicated to the service industry increased by 17% in China, 13% in the Philippines, and 5% in Korea [4].

During the recent era of economic globalization, the competitive atmosphere of sales by the service industry has increased the emphasis on customer satisfaction, but government agencies responsible for occupational health and safety have been mostly indifferent to the consequent mental health problems experienced by service and sales workers. In response to increasing concerns about the mental health of workers who perform emotional labor in Korea, the Korean government and the Korea Occupational Safety and Health Agency developed "Guidelines on Assessment for Emotional Labor for Korean Workers" in 2014. Since 2016, the Workers' Compensation Act has recognized adaptation disorders or depressive episodes that result from physical or verbal violence in their interactions with clients as work-related diseases, and provides compensation to workers who experience these disorders. Since 2018, new regulations of the Occupational Safety and Health Act have required employers to implement measures that prevent mental health problems in workers caused by adverse social behaviors of clients.

Previous studies that examined emotional labor in Korea examined job stressors and relievers [5], mental health and presenteeism [6–8], insomnia [9,10], musculoskeletal disorders [11,12], emotion suppression, and insomnia [10], emotion suppression and engaging with complaining clients and the relationship with depression and anxiety [13], the moderating effect of female managers on job stress [14], the effect of a customer service manual [15], and service sector and workplace violence [16].

Many previous reviews and meta-analyses examined the antecedents and consequences of emotional labor [17–22]. However, emotionally demanding situations do not always give rise to stress and/or harm. Work involving such situations is frequently seen as both emotionally challenging and rewarding, particularly when it results in desirable outcomes [23]. Not all workers who perform emotional labor are vulnerable to mental health problems. Factors such as job satisfaction and social support may buffer the negative effects of high emotional demands on the individual or enhance the positive features of emotional labor. For example, service workers who fit for service jobs and then have job satisfaction may deal with angry clients in such a way that they experience less emotional burden. Furthermore, they may accept emotionally demanding jobs emotionally challenging and rewarding by obtaining desirable outcomes [23]. Manager's support may moderate the relationship between interaction with angry clients and mental ill health by buffering effect on work stressors [24]. However, little is known about the characteristics of workers who are vulnerable to mental health problems related to high emotional demand, among workers involved in emotional labor. In addition, little is known about the types of organizational culture which, through support of workers whose jobs have high emotional demands, effectively manage or reduce the negative features of such jobs while enhancing the positive features of emotional labor. This information on the worker and organizational characteristics may be helpful for developing strategies to protect the mental health of these workers.

Thus, we formulated the following four hypotheses:

H1. Workers who interact with angry clients are more likely to report depression and anxiety.

H2. Adverse behavior by clients mediates the influence of interacting with angry clients on depression and anxiety.

H3. The effect of interaction with angry clients on depression and anxiety depends on job satisfaction

H4. The effect of interaction with angry clients on depression and anxiety depends on managers' support.

Thus, we first compared self-reported depression and anxiety by service and sales workers who interacted with angry clients (a component of emotional demand) with service and sales workers who did not interact with angry clients. This comparison used representative survey data of the Korea Working Conditions Survey (KWCS) [25], a survey of all adult workers in Korea. In particular, we first examined whether the frequency with which employees interacted with angry clients was related to depression and anxiety after controlling for demographic, socioeconomic, and job-related factors. Second, we evaluated the effect of experiencing acute episodes of clients' adverse behaviors on mediating the effect of chronically interacting with angry clients on mental health problems. Finally, we examined the moderating effect of job satisfaction and managerial support on the relationship between interacting with angry clients and mental health problems.

2. Subjects and methods

2.1. Data source

This study was a secondary analysis of data from the fifth KWCS, conducted from June to September 2017 by the Korea Occupational Safety and Health Agency [25]. The KWCS is a triennial survey that evaluates the working conditions, exposure to hazards and work-related health problems in workplaces. The survey population was a representative sample of individuals who were 15 years or older who were workers at the time of the survey. An individual was classified as worker if he/she worked for pay or profit for at least 1 h during the week preceding the interview. Individuals who were retired, unemployed, homemakers, or students were excluded. The basic design was a multistage, stratified, random sampling in the enumeration districts used for the 2010 population and housing census.

The fifth KWCS consisted of 50,205 in-person household interviews, and data were weighted with reference to the economically active population of Korea. Thus, the characteristics of included individuals (region, locality, and population of residence; sex; age; employment status; and industry of employment) closely reflected those of the overall economically active working population at that time. The KWCS has high content validity and reliability [26].

2.2. Study subjects

Among the 50,205 interviewees, foreign workers, employers, and self-employed were excluded. Among the 37,081 workers classified as employees, 7465 workers (2654 men and 4811 women) were employed in "service jobs" or "sales jobs", one of the nine major groups in the Korean Standard Classification of Occupations (KSOC) [27] and the International Standard Classification of Occupations (ISCO) [28]. After explanation of the survey, all participants provided written informed consent to participate.

2.3. Measurements

2.3.1. Dependent variables (DVs)

To assess mental health problems regarding anxiety and depression, we asked the following question: "Have you suffered from anxiety or depression during the past 12 months?" The

response options were "yes" and "no." Respondents who chose "yes" were considered to have experienced depression or anxiety.

2.3.2. Independent variables (IVs)

To identify workers who interacted with angry clients, we asked the following question: "Does your paid job involve interacting with people (not from your workplace) who are clients, passengers, students, or patients with complaints?" The response options were always, almost always, 75% of the time, 50% of the time, 25% of the time, almost never, and never. We recategorized the responses of "always" and "almost always" as "always"; the responses of "almost never" or "never" as "rarely"; and the responses of "75% of the time", "50% of the time", or "25% of the time" as "sometimes." A 7-point score was used in this path analysis (always, almost always, 75% of the time, 50% of the time, 25% of the time, almost never, and never).

Exposure to adverse social behavior by clients (including students and patients) was measured using the question: "During the last month in the course of your work, have you been subjected to any of the following by clients (including students and patients): (a) verbal abuse, (b) unwanted sexual attention, (c) threats, (d) humiliating behaviors?". "During the last year have you been subjected to any of the following by clients: (e) physical violence, or (f) sexual harassment?" The response options were "yes" and "no." A "yes" response indicated "exposure to adverse social behavior by clients". A 6-point score was used in this path analysis. The concept of "exposure to adverse social behavior by clients" differs from the concept of "interaction with angry clients". "Interaction with angry clients" may be a chronic situation, whereas "exposure to adverse social behavior by clients" may indicate an acute episode. Thus, for example, workers experiencing acute episodes of adverse social behavior by clients may show mental health problems even though they have less frequent interactions with angry clients.

Satisfaction with working conditions, a potential moderator, was measured by the question: "On the whole, are you very satisfied, satisfied, not very satisfied, or not at all satisfied with working conditions in your main paid job?" We recategorized responses of "very satisfied" or "satisfied" as "satisfied" and responses of "not very satisfied" or "not at all satisfied" as "not satisfied". Support from the worker's manager, another potential moderator, was measured by asking if the manager (a) respected you as a person, (b) gave you praise and recognition when you did a good job, (c) was successful in getting people to work together, (d) was helpful in getting the job done, (e) provided useful feedback on your work, and (f) encouraged and supported your development. A five-point Likert scale ("agree strongly" [1], "tend to agree" [2], "neither agree nor disagree" [3], "tend to disagree" [4], "disagree strongly" [5]) was used to score the answers to each of these six topics. A score above the median for the study population indicated "support from manager."

2.3.3. Control variables

The following sociodemographic and work-related factors were recorded: sex, age (less than 40 years, 40–49 years, 50–59 years, 60 years or more), education level (less than high school, high school graduation, college or more), monthly income (<1000 USD, 1000 to less than 2000 USD, 2000 to less than 3000 USD, 3000 to less than 4000 USD, ≥4000 USD), and average weekly working time (<40 h, 40 to less than 48 h, 48 to less than 60 h, ≥60 h).

2.4. Statistical analysis

We used the Chi-square test to compare the different occupational and demographic characteristics of workers with and without depression and anxiety (Table 1). Structural equation modeling (SEM) was used for mediation analysis using SPSS version 23 and Analysis of Moment Structures (AMOS) version 23 [29]. Path analysis was used to determine the direction of dependencies among the variables. Path analysis contains only observed (measured) variables and is a type of SEM with a structural model, not a measurement model. The path analysis did not use latent variables and thus did not provide confirmatory factor analysis, because the aim was not to propose a latent variable, but to investigate the indirect effects of interaction with angry clients on depression or anxiety which occurred because of acute episodes of experiencing clients' adverse behaviors.

Path analysis provides standardized path regression coefficients, which indicate the direct effect of one variable (assumed to be a cause) on another variable (assumed to be an effect). The present analysis showed standardized path regression coefficients from the IV (interactions with angry clients) to the mediator (experiencing clients' adverse behaviors) and from the mediator to the DVs (depression and anxiety). This procedure also estimated total, direct, and indirect effects of the IV (interactions with angry clients) on the DVs (depression and anxiety) *via* the mediator (experiencing clients' adverse behaviors), with accounting for the effect of control variables.

In the SEM analyses, Bayesian estimation was used instead of maximum likelihood estimation because the SEM had categorical (dichotomous) outcomes: presence/absence of depression and anxiety. When the lower and upper bound values of the 95% credibility interval of the posterior mean do not include zero, this indicates that all relationships proposed in the model are statistically significant in the Bayesian estimation [30]. Bootstrapping with 5000 samples was used to test the significance of the indirect effects of interacting with angry clients on depression and anxiety *via* experiencing client's adverse behaviors to generate a bias-corrected 95% bootstrap confidence interval [31,32]. As mentioned earlier, the indirect effects are significant if the lower and upper values of the 95% confidence interval do not include zero.

The ratio of the standardized total effect to the standardized total indirect effect (proportion mediated) was also presented to indicate the strength of the mediating variable. Bootstrapping with an SEM approach has more benefits than the classical approach (Sobel's test) for several reasons. Firstly, bootstrapping is recommended for small to moderate sample sizes because it involves repeated random sampling of observations with replacements from

Table 1
Presence of depression and anxiety in male and female waged workers who always, sometimes, or rarely interacted with angry clients during the past 12 months

		Male						Female					
		Depression, n (%)			Anxiety, n (%)			Depression, n (%)			Anxiety, n (%)		
		Yes (n = 435)	No (n = 20,614)	P value	Yes (n = 622)	No (n = 20,451)	P value	Yes (n = 382)	No (n = 15,610)	P value	Yes (n = 429)	No (n = 15,565)	P value
Interacted with angry clients	Always	18 (3.0)	573 (97.0)	0.020	43 (7.3)	548 (92.7)	<0.001	46 (6.0)	726 (94.0)	<0.001	54 (7.0)	721 (93.0)	<0.001
	Sometimes	90 (2.5)	3484 (97.5)		129 (3.6)	3447 (96.4)		101 (2.8)	3422 (97.2)		126 (3.6)	3396 (96.4)	
	Rarely	327(1.9)	16,557(98.1)		450 (2.7)	16,436 (97.3)		235 (2.0)	11,462(98.0)		249 (2.1)	11,448(97.9)	

the dataset. Secondly, bootstrapping is a nonparametric test and can be performed even when the data have non-normal distributions [31,33].

Moderation analysis was performed with a multigroup test of the SEM model. Because there were two samples, the equivalence of the parameters of groups with and without job satisfaction or managers' support was tested by constraining the regression weights to be equal for samples in a multigroup analysis. Next, separate tests of each regression weight indicated that the three paths differed significantly for groups with and without job satisfaction or managers' support. The lower and upper bound values of 95% credibility interval of the posterior mean did not include zero, indicating that all the proposed relationships in the moderation model were statistically significant based on Bayesian estimation [30]. Bayesian analysis constructs a sample of the distribution and determines credible intervals directly from the sample. Thus, Bayesian methods do not depend on the assumption of normality to determine credible intervals [30]. The model included age, gender, education level, income, and weekly working hours as control variables.

3. Results

We initially examined the presence of anxiety and depression among Korean waged workers in all KSOC/ISCO categories during the last 12 months (Table 1). Overall, 2.1% of men and 2.4% of women reported depression, and 3.0% of men and 2.7% of women reported anxiety. In addition, those who were always interacting with angry clients were more likely to report depression and anxiety.

We also separately analyzed service and sales workers, as defined by KSOC/ISCO criteria (Table 2). Overall, 2.2% of service and sales workers reported depression, and 3.1% reported anxiety. Furthermore, those who always interacted with angry clients were more likely to report depression and anxiety. The proportion of workers who experienced depression was highest for those who were 60 years or older. However, age was unrelated to anxiety, monthly income was unrelated to depression, and gender was unrelated to depression or anxiety. The proportion of workers who reported anxiety was highest for those whose monthly income was 4000 USD or more, but monthly income was unrelated to depression. The proportion of workers who reported depression was highest in the least educated group, but anxiety was unrelated to educational level. The number of weekly working hours was unrelated to depression or anxiety. Workers who reported no job satisfaction were more likely to report depression and anxiety; those who reported no support from a manager were more likely to report depression and anxiety; and those who reported experiencing clients' adverse behaviors were more likely to report depression and anxiety.

We also found that the frequency of interacting with angry clients was positively associated with depression and anxiety, and this had direct and indirect effects (Table 3). We tested the mediating effect of experiencing clients' adverse behavior (acute episodes) on depression and anxiety using the SEM program with Bayesian bootstrapping. The hypothesized model thus examined the influence of chronic interactions with angry clients on depression and anxiety and mediation *via* acute episodes of experiencing clients' adverse behaviors. This model included age, gender, education level, income, and weekly working hours as control variables. The results show that having more frequent interactions with angry clients was associated with experiencing more acute episodes of experiencing clients' adverse behaviors, and that both of these led to depression and anxiety (Table 3). Furthermore, the total effect estimates confirmed that the

frequency of interacting with angry clients was significantly and positively associated with reporting of depression and anxiety. However, these results differed when the clients' adverse behaviors were included among the predictors. Analysis of the direct effects showed that interacting with angry clients remained significant when controlling for clients' adverse behavior. These results suggest that clients' adverse behaviors partially mediated the influence of interacting with angry clients on depression and anxiety. These indirect effects correspond to the influence of IVs on the DV *via* the mediator. The bootstrapping results showed a significant indirect effect of experiencing clients' adverse behaviors between the interaction with angry clients and depression and anxiety, through experiencing clients' adverse behaviors acted as a partial mediator. After adjustment for age, gender, education, income, and weekly working hours, the proportion mediated by experiencing clients' adverse behaviors accounted for 13.1% of the variance in depression and 10.8% of the variance in anxiety.

We also assessed the moderating effect of job satisfaction and managerial support on the relationship between interacting with angry clients and depression and anxiety (Tables 4 and 5). The results indicated that job satisfaction moderated the relationship between interacting with angry clients and reporting of depression and anxiety; thus, the effect of interacting with angry clients on depression and anxiety depended on job satisfaction. In particular, job satisfaction did moderate the relation between interacting with angry clients and clients' adverse behavior. Service and sales workers who reported job satisfaction had a weaker association between the frequency of interacting with angry clients and experiencing clients' adverse behaviors than those without job satisfaction (Table 4). However, managers' support moderated the relationship between interacting with angry clients and reporting of depression but not anxiety. Thus, the effects of interacting with angry clients on depression depended on the level of managerial support. In particular, managers' support moderated the relationship between clients' adverse behaviors and depression. Service and sales workers who had managerial support had a stronger association between experiencing acute episodes of clients' adverse behaviors and depression than those without managerial support (Table 5).

4. Discussion

Previous research of the relationship between employment as a service worker and mental health [8,13,14] showed the poor mental health of these individuals was due to the inherent nature of their jobs, which requires them to hide their emotions. However, according to the EWCS (2017), the proportion of workers who hide their emotions during work was also high for those who are professionals and managers or technicians, as well as service and sales workers. Thus, the present study focused on "interacting with angry clients" as a unique characteristic of service and sales workers, among the three components of emotional demands (hiding emotions, interacting with angry clients, and working in emotionally disturbing situations) [3].

The general finding of our nationwide cross-sectional study of service and sales workers is that depression and anxiety were significantly positively associated with interacting with angry clients after adjustment for demographic, socioeconomic, and job-related factors, thus confirming our first hypothesis (H1). These findings are compatible with a previous study [13], which showed a strong relationship between engaging in complaints from customers with the experience of depression and anxiety among service workers.

The present study also showed that experiencing clients' adverse behaviors functioned as a significant partial mediator in

Table 2
Association of the characteristics of service and sales workers with depression and anxiety

		Depression			Anxiety		
		Yes	No	P value	Yes	No	P value
Interacted with angry clients	Always	23	385	**<0.001**	32	377	**<0.001**
		5.6%	94.4%		7.8%	92.2%	
	Sometimes	55	2068		85	2038	
		2.6%	97.4%		4.0%	96.0%	
	Rarely	87	4837		116	4809	
		1.8%	98.2%		2.4%	97.6%	
Age (years)	<40	49	3471	**<0.001**	97	3423	0.178
		1.4%	98.6%		2.8%	97.2%	
	40 to <50	45	1565		50	1560	
		2.8%	97.2%		3.1%	96.9%	
	50 to <60	46	1553		54	1545	
		2.9%	97.1%		3.4%	96.6%	
	≥60	26	706		31	701	
		3.6%	96.4%		4.2%	95.8%	
Gender	Men	49	2605	0.099	86	2568	0.628
		1.8%	98.2%		3.2%	96.8%	
	Women	117	4690		146	4661	
		2.4%	97.6%		3.0%	97.0%	
Monthly income (USD)	<1000	20	1150	0.702	39	1131	**0.021**
		1.7%	98.3%		3.3%	96.7%	
	1000 to <2000	62	2585		66	2581	
		2.3%	97.7%		2.5%	97.5%	
	2000 to <3000	37	1782		52	1767	
		2.0%	98.0%		2.9%	97.1%	
	3000 to <4000	16	814		36	794	
		1.9%	98.1%		4.3%	95.7%	
	≥4000	14	546		25	534	
		2.5%	97.5%		4.5%	95.5%	
Education	<HS	22	561	**0.027**	22	561	0.240
		3.8%	96.2%		3.8%	96.2%	
	HS	78	3568		101	3545	
		2.1%	97.9%		2.8%	97.2%	
	>HS	65	3163		108	3120	
		2.0%	98.0%		3.3%	96.7%	
Weekly working hours	<40	36	1705	0.430	59	1682	0.272
		2.1%	97.9%		3.4%	96.6%	
	40 to <48	68	2547		90	2526	
		2.6%	97.4%		3.4%	96.6%	
	48 to <60	37	1819		54	1802	
		2.0%	98.0%		2.9%	97.1%	
	≥60	24	1203		29	1198	
		2.0%	98.0%		2.4%	97.6%	
Job satisfaction	Yes	93	5672	**<0.001**	153	5612	**<0.001**
		1.6%	98.4%		2.7%	97.3%	
	No	73	1617		79	1610	
		4.3%	95.7%		4.7%	95.3%	
Support from manager	Yes	47	3424	**<0.001**	80	3392	**<0.001**
		1.4%	98.6%		2.3%	97.7%	
	No	101	3248		126	3223	
		3.0%	97.0%		3.8%	96.2%	
Exposure to abusive behavior by clients	Yes	44	656	**<0.001**	56	644	**<0.001**
		6.3%	93.7%		8.0%	92.0%	
	No	122	6639		176	6585	
		1.8%	98.2%		2.6%	97.4%	

HS: high school; USD: United States Dollars. Bold style indicates statistical significance.

the relationship of depression and anxiety and interacting with angry clients. This mediation accounted for 13.1% of the variance for depression and 10.8% of the variance for anxiety, after adjustment for control variables. Thus, interacting with angry clients was positively associated with depression and anxiety, and this occurred directly and indirectly *via* experiencing clients' adverse behaviors. Thus, these findings confirmed our second hypothesis (H2). Previous studies showed that workplace violence was the most severely stressful event experienced by service workers [34] and was also related to depression and anxiety in these workers [35]. To our best knowledge, the present study is the first study to identify the experiencing of clients' adverse behaviors as a mediator of the relationship between interacting with angry clients and poor mental health.

In the present study, we identified a moderating effect of job satisfaction and managers' support on the relationship between interacting with angry clients and poor mental health, thus confirming our hypotheses 3 and 4 (H3 and H4). Service and sales workers interacting with angry clients who had high job satisfaction were less likely to experience clients' adverse behaviors than those without job satisfaction. This may be because workers who are most suitable for service jobs have greater job satisfaction and are better able to manage angry clients so that they do not experience the client's adverse behaviors. These results are in agreement those of previous studies [36,37], which showed that low job satisfaction was most strongly associated with mental/psychological problems. However, in service and sales workers, managerial support did not moderate the relationship between

Table 3
Results of the mediation analysis of clients' abnormal behavior in the relationship between handling angry clients and depression/anxiety using the structural equation model (SEM) program with Bayesian bootstrap method

Path	Total effects	Direct effects	Indirect effects
Interacting with angry clients → depression	0.137 (0.082—0.193)	0.119 (0.063—0.175	0.018 (0.012—0.025)
Interacting with angry clients → clients' adverse behavior	—	0.133 (0.110—0.156)	—
Clients' adverse behavior → depression	—	0.135 (0.092—0.176)	—
Interacting with angry clients → anxiety	0.157 (0.106—0.207)	0.140 (0.088—0.191)	0.017 (0.011—0.023)
Interacting with angry clients → clients' adverse behavior	—	0.133 (0.110—0.156)	—
Clients' adverse behavior → anxiety	—	0.127 (0.087—0.167)	—

Control variables: age, gender, income, educational level, and weekly working hours.

Table 4
Results of the mediation analysis of clients' abnormal behavior in the relationship between handling angry clients and depression/anxiety moderated by job satisfaction using the structural equation model (SEM) program with Bayesian bootstrap method

Moderator	Path	Total effects	Direct effects	Indirect effects
Job satisfaction	Interacting with angry clients → depression Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → depression	0.128 (0.058—0.195) — —	0.114 (0.044—0.182) 0.113 (0.086—0.140)* 0.122 (0.069—0.172)	0.014 (0.007—0.025) — —
Lack of job satisfaction	Interacting with angry clients → depression Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → depression	0.135 (0.038—0.228) — —	0.114 (0.017—0.208) 0.154 (0.105—0.201) 0.139 (0.059—0.217)	0.021 (0.009—0.036) — —
Job satisfaction	Interacting with angry clients → anxiety Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → anxiety	0.151 (0.090—0.211) — —	0.140 (0.077—0.201) 0.113 (0.086—0.140)* 0.100 (0.050—0.147)	0.011 (0.005—0.018) — —
Lack of job satisfaction	Interacting with angry clients → anxiety Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → anxiety	0.143 (0.049—0.239) — —	0.118 (0.022—0.215) 0.154 (0.105—0.201) 0.162 (0.080—0.237)	0.025 (0.011—0.040) — —

Numbers are expressed as posterior mean (95% lower bound credibility interval to 95% upper bound credibility interval). Control variables: age, gender, income, educational level, and weekly working hours.
 * statistically different from coefficient in the group without job satisfaction.

Table 5
Results of the mediation analysis of clients' abnormal behavior in the relationship between handling angry clients and depression/anxiety moderated by managerial support using the structural equation model (SEM) program with Bayesian bootstrap method

Moderator	Path	Total effects	Direct effects	Indirect effect
Manager's support	Interacting with angry clients → depression Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → depression	0.183 (0.099—0.262) — —	0.161 (0.074—0.241) 0.120 (0.087—0.153) 0.181 (0.121—0.237)*	0.023 (0.014—0.033) — —
Lack of manager's support	Interacting with angry clients → depression Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → depression	0.106 (0.029—0.177) — —	0.092 (0.016—0.164) 0.146 (0.113—0.178) 0.094 (0.031—0.154)	0.014 (0.004—0.023) — —
Manager's support	Interacting with angry clients → anxiety Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → anxiety	0.207 (0.135—0.272) — —	0.190 (0.118—0.257) 0.120 (0.087—0.153) 0.137 (0.081—0.191)	0.016 (0.009—0.025) — —
Lack of manager's support	Interacting with angry clients → anxiety Interacting with angry clients → clients' adverse behavior Clients' adverse behavior → anxiety	0.108 (0.032—0.183) — —	0.092 (0.015—0.167) 0.146 (0.113—0.178) 0.108 (0.046—0.166)	0.016 (0.007—0.026) — —

Numbers are expressed as posterior mean (95% lower bound credibility interval to 95% upper bound credibility interval). Control variables: age, gender, income, educational level, and weekly working hours.
 * Statistically different from coefficient in group without managers' support.

experiencing clients' adverse behavior and reporting anxiety, but did moderate the relationship between experiencing clients' adverse behavior and reporting depression. This difference between the relationships of anxiety and depression with managerial support may be partly due to the distinct characteristics of anxiety and depression. Specifically, although anxiety and depression are sometimes expressed simultaneously, depression is a chronic state of mood and more likely to be related to emotional demands in service and sales jobs, whereas anxiety is more likely to be related to experiencing an acute episode of clients' adverse behavior. Thus, managerial support may affect the relationship between clients' adverse behavior and depression while having little effect on the relationship between clients' adverse behavior and anxiety. Furthermore, support from a manger strengthened the association between experiencing clients' adverse behavior and depression. In other words, workers who experienced adverse behaviors by clients and had managerial support were more likely to report depression than those without managerial support. These findings differ from previous studies, which reported that stress in service workers could be caused by poor psychosocial conditions at work (lack of control, social support, or rewards) and by workers' individual capacities or characteristics (motivation and emotional intelligence) [38]. There is also evidence that a lack of job control and manager's support moderated the association between emotional labor and well-being [24]. This discrepancy may be partly attributable to sociocultural differences between the West and Korea. Specifically, in the vertical, authoritarian and patriarchal Korean culture, managerial support may be experienced as interpersonal conflict (stress factor) rather than as a mitigating factor, whereas in the West managerial support may have a buffering effect on work stressors [39]. However, further study is needed to clarify this discrepancy.

However, the present study found that the number of weekly working hours was unrelated to depression and anxiety among service and sales workers. These findings differ from those of some previous studies [40–42]. This discrepancy may be partly due to differences in the study subjects, because workers who have long working hours may work in different sectors or have different occupations [43].

The present study is the first to evaluate the mediating and moderating factors that affect depression and anxiety in service and sales workers who interact with angry clients. Our results may have important public health implications. In particular, to prevent depression and anxiety among service and sales workers, employers of service and sales workers should recruit staff based on their aptitude for such work, thus ensuring job satisfaction, and train them to deal with angry clients in such a way that they experience less emotional burden. Employers should also make bylaws requiring managers to directly take care of adverse social behavior by clients. Furthermore, a sociocultural campaign to prevent adverse social behavior by clients may help to protect mental health of service and sales workers.

A major strength of this study is that the data were from the KWCS. These data are representative of all adult workers in Korea, and this survey implemented rigorous quality control of the procedures [26]. This study also has several limitations. First, our results are based on cross-sectional analysis; therefore, we cannot infer causality of the reported associations because unknown intermediary factors may have contributed to the associations. It is also possible that workers who experienced depression or anxiety were more likely to drop out early (the healthy worker effect). A prospective study is needed to establish the causal bases for the associations identified here. Second, we partly relied on self-reported data, instead of objective findings. The validity of self-reported questionnaires is not necessarily ensured; therefore, these data should be interpreted with caution.

In conclusion, reporting depression and anxiety were significantly associated with the frequency of interacting with angry clients. Experiencing clients' adverse behaviors mediated the relationship between interacting with angry clients and mental health problems, and job satisfaction or managers' support moderated this relationship. We suggest that employers of service and sales workers should recruit staff based on their aptitude for such work, thus ensuring job satisfaction, and train them to deal with angry clients in such a way that they experience less emotional burden. Employers should also make bylaws requiring managers to directly take care of adverse social behavior by clients. A sociocultural campaign to prevent adverse social behaviors by clients is also needed.

Declaration

Ethics approval and consent to participate

All participants provided written informed consent.

Consent for publication

Not applicable.

Availability of data and materials

Available.

Conflicts of interest

All authors have no conflicts of interest to declare.

Authors' contributions

Design and concept of the study: Park J, Kim Y.
The acquisition, analysis of data for the work: Kim Y.
Drafting the manuscript of the study: Park J.
Revising manuscript critically: Kim Y.
Final approval of the version to be published: Park J, Kim Y.
Accountability for the accuracy and integrity of any part of this paper: Kim Y.

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