

Work Environment and Workers' Smoking: The Impact of Affect and Social Support Among Korean Workers

GIHWAN GU | KOREA UNIVERSITY*

JAEIN LEE | GETTYSBURG COLLEGE

MYOUNGJIN LEE | KOREA UNIVERSITY**

The main goal of this study is to investigate the causal pathways of work environment and smoking habits. We also tested whether socio-psychic variables influence this pathway. By bridging the affective events theory framework, we compose two categories of work environment according to the affective events theory model: work features and emotional labor. Using the Korean Working Conditions Survey (N = 50,032), we analyzed the mediating effects after inputting negative affect, the interaction effects of social support, to predict smoking behaviors. The results reveal a direct relationship between lower job autonomy and smoking due to negative sentiments and the infringement of working-time flexibility. Lower levels of social support also impacted smoking in interactions with low-job autonomy. Therefore, we suggest that work environment, and primarily work features, induces stress-related adverse affects and promotes smoking, while an environment of social support can reduce smoking.

Keywords: *work environment, smoking, negative affect, smoking, social support*

*First Author

**Corresponding Author

Introduction

Work is an essential part of daily life. As a core area of life, the workplace brings various emotions to people such as happiness, activeness, fear, sadness, and many more. At their places of work, people perform their specific job duties as well as performing personal deeds such as drinking coffee or tea, eating food together, and smoking. While perhaps it is fair to say that all workers enjoy drinks and food, smoking cigarettes is not a universal behavior or habit. Above all, smoking is a tool for relaxation and temporarily decreases psychological stress (Parkes 1983; Chassin et al. 1992). This article's research questions originate from these differences in smoking habits between people. Inquiring into the relationship between work environment and smoking may improve our understanding of smoking. Moreover, negative affects such as stress and depression caused by the workplace are essential factors that influence smoking behaviors (Green and Johnson 1990; Yoon et al. 2006; Lim et al. 2015). Similarly, prior studies have also considered social support as a conditioning variable of the variety of determinants between work and health (LaRocco et al. 1980; Morris and Feldman 1996; Lee 2007).

This article aims to investigate the impact of relevant socio-psychic factors and test the hypothetical pathways of multi-dimensional factors of the work environment that lead to smoking. In our pathway model, the intensity of one's work environment is predicted to influence smoking by mediating adverse affects, such as stress and depression, that workers experience. Additionally, social support can moderate the pathway between a person's work environment and smoking.

This pathway model is based on affective events theory (Weiss and Cropanzano 1996; Ashkanasy and Daus 2002; Wegge et al. 2006). What differentiates our model is that we use the same theoretical frameworks but find a causal pathway to health behaviors. Former studies examine this issue just from a management perspective (e.g., organizational commitments and satisfaction, productive work, effort, and performance, etc.), not from public health perspectives. Accordingly, this new approach could broaden the theoretical applications and help bolster our causal understanding of workers' health risk behaviors and addiction.

Theoretical Background

Work Environment: Work Features and Emotional Labor

To define work environment, we first must understand affective events theory (AET) (see Figure 1). This theoretical model of workers' emotions in the workplace explains the relationship between work environment features and work attitudes (i.e., job satisfaction, organizational commitment) and mediate this pathway with work events (i.e., work hassles, work lift-up) and affective reactions (i.e., adverse and positive affects). Moreover, personal disposition (i.e., emotional intelligence) moderate these parameters, driving behaviors through the factors of affective experiences (Weiss and Cropanzano 1996; Ashkanasy and Daus 2002).

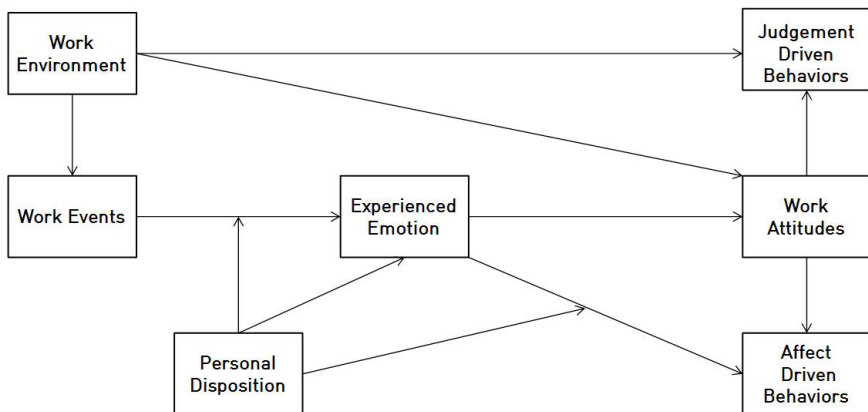


FIG. 1.— AET MODEL OF ASHKANASY AND DAUS (2002)

According to the model created by Ashkanasy and Daus (2002), work environment encompasses job characteristics, role stressors, and the requirement for emotional labor. More specifically, work environment is composed of participation, autonomy, work overload, supervisory support, and welfare (Wegge et al. 2006). Overall, these multiple factors that make up a work environment are the aggregate dimension of stress and emotional problems in the workplace. These situational features of work environment have an indirect effect on emotions experienced by workers with the mediation of work events.

On the other hand, according to person-environment fit theory, organizational stress can be provoked by the interaction between an individual and their environment. The incompatibility of income, work, and business decision making is a core cause of stress. For example, when workers want to make specific decisions, it can be hard to make them according to their work conditions and limitations. They can also encounter complex and heavy duties that commonly raise the level of stress of workers (Karasek 1979; Caplan 1987).

Following the arguments of the discordance-congruence model of emotional labor (Mesmer-Magnus et al. 2012), the display rule and its correlates, including worker-related (i.e., self-monitoring, emotional intelligence, self-efficiency, affecting) and work-related (i.e., supervisor support, routines of the task, task variety, form of interaction, job autonomy) correlates, are the starting points of emotional labor. Emotional labor is also affected by discordant states (i.e., surface acting, emotional dissonance, and emotional suppression) and congruent states (i.e., deep acting, emotional consonance).

Emotional labor entails the worker's internal emotion being manipulated by displaying emotions and the consequent emotional dissonance (Sutton and Rafaeli 1988). Hochschild (1983) defined emotional labor as being composed of three criteria: (i) face-to-face or voice-to-voice work contact with the public; (ii) production of a specific emotional state with the customers or client; (iii) emotional management through supervision and training. From this perspective, efforts by workers to manage their emotions are strongly related to burnout and occupational stress. This performance is engaged in managing the emotions of workers and customers because of the belief that emotional control is a way to achieve organizational goals. Moreover, emotional labor is not limited to the profound and front-stage performances for consumers. In-depth exchange behavior becomes part of the market and turns workers' emotions into a commodity (Grandey 2000).

Accordingly, workers' work environment and emotional events become a condition for negative affect linked with low levels of work attitudes and worker's behavior. Then, in terms of the workplace's antecedent factor of emotional procedures, there are organizational factors perceived as being part of one's work environment, such as job autonomy and work roles, and individual factors, such as workers' emotions and emotional labor. Therefore, this study considers two-dimensional approaches of work environment: the individual factors of emotional labor (i.e., work feelings and facing customers), and organizational factors of work features (i.e., job autonomy

and working-time flexibility).

Based on these arguments, we suggest:

H1: Higher levels of (a) low job autonomy, (b) low working-time flexibility, (c) work feelings, and (d) facing customers increase negative affect.

The Mediating Role of Negative Affect in Smoking

According to the AET model, the experienced emotion (or affective reaction) variable is composed of positive affect and negative affect. The variable is considered a significant parameter between work environment and work attitudes (Weiss and Cropanzano 1996; Ashkanasy and Daus 2002; Wegge et al. 2006). This paper also deliberates on experienced negative emotions as a mediator.

Emotions are the general feelings associated with experiences, such as happiness or sadness, or the individual's response to a job or person in a particular situation. Furthermore, they include physical changes, cognitive assessment, interpretation of events, as well as mental states, emotions, and the moods of individuals in a specific situation (Lazarus 1991; 1993; Parrott 2001). Emotion is divided into two dimensions as positive and negative affects on workers. Positive affects are joyful, passionate, and intense. However, negative affects (NA) include pain and discomfort, and feelings such as anger, despair, and neurosis. Moreover, negative affect is associated with stress and health problems (Watson and Tellegen 1985; Watson et al. 1988; Watson and Pennebaker 1989; Cropanzano et al. 1993).

Workers tend to experience different emotions depending on the type of work they perform. Negative affect becomes more intense as employees suppress emotions during work (Wegner 1994; Scott and Barnes 2011). Short-term exposure does not increase stress, but the longer one is exposed to customers, the more likely that stress is reflected in emotions (Sutton and Rafaeli 1988). Emotions also have a connection to relationship length and frequency of exposure. Notably, long-term relationships with customers are associated with higher levels of emotional exhaustion (Hochschild 1983; Cordes and Dougherty 1993).

Mental problems such as stress, tension, boredom, and anger are the primary causes of smoking. In particular, depression and smoking are reported to have a tendency towards comorbidity. High negative affect and low positive affect significantly influence various smoking behaviors (Mathew et al. 2017). One of the most significant factors that contributes to a person's choice to smoke cigarettes is not simply nicotine-dependence, but

also temptation. The temptation to smoke is a desire to smoke because of psychological factors, and individuals are tempted to smoke when they experience negative feelings.

Smoking is a psychological factor that alleviates stress, and the psychological component of cigarettes functions for people when they are faced with psychological problems due to work or schooling (Parkes 1983; Chassin et al. 1992). According to studies carried out in Korea and the United States, work stress directly affects depression and is related to stress on smoking and drinking. Findings have shown that depression mediates smoking and drinking, and workers who experience more stress are more likely to smoke than workers who experience less stress. Therefore, emotional labor increases stress and smoking, especially when there are high labor demands and organizational control. Furthermore, stress and depressive emotions are associated with emotional labor, and smoking contributes psychologically to stress relief (Green and Johnson 1990; Yoon et al. 2006; Lim et al. 2015).

Consequently, negative affect in emotion is a primary reason for the adverse health outcome. Depression is a notably important factor in smoking. Previous studies have shown that depressive experience plays a role in smoking cessation and nicotine dependence as a full mediator and depression as a partial mediator. In summary, the intensity of work features and emotional labor can be expected to influence smoking by mediating negative affects such as stress and depression. Based on these arguments, we expect to find the relationships between working-time flexibility, work feelings, facing customers, and smoking mediated by the level of negative affects in their work.

Taken together, we propose:

H2: Higher levels of (a) low job autonomy, (b) low working-time flexibility, (c) work feelings, and (d) facing customers increase the smoking rate.

H3: Higher levels of negative affect increase the smoking rate that mediates the relationship between (a) low job autonomy, (b) low working-time flexibility, (c) work feelings, and (d) facing customers, and smoking.

The Moderating Role of Social Support in the Workers' Smoking

The basic assumption of the AET is the work events are a more important cause of affective reactions than work environment (Weiss and Cropanzano 1996; Ashkanasy and Daus 2002; Wegge et al. 2006). How do workers

experience work events? According to Basch and Fisher (2000), actions of colleagues are the most powerful job events influencing experienced negative affect and are considered important events to positive affect. Additionally, actions by management are the second most important events for negative affect. Accordingly, social support as a human-to-human interaction in the workplace is appropriate for work events in the AET model and a meaningful parameter of our pathway model.

Cassel (1976) and Cobb (1976) identified the function of interventions affecting social relationships and conceptualized them as social support theory. The quality of social relationships is an essential variable that affects an individual's health. In this context, social support refers to the resources an individual acquires from social relationships and includes all positive resources and help that could be obtained from those relationships (House et al. 1988a; 1988b). Furthermore, social support acts as a psychological stabilization mechanism for individuals. Providers of social support include an individual's parents, siblings, spouses, other family members, in addition to colleagues and close friends. In the context of work relationships, the closest person to the worker is a work associate.

Social support from colleagues in an organization can bring about positive impacts. Thus, when workers are in a close and supportive relationship with their colleagues, the emotional labor of other colleagues increases the level of the worker's own emotional labor. However, social support provides comfort and motivation among members of the organization through peer-to-peer troubleshooting (Ryu 2015). In prior studies on stress and social support, social support has been positively associated with stress factors and stress incidence. Social support has been recognized as a coping mechanism and as a critical regulatory variable in physical and mental illness (Pearlin and Schooler 1978; LaRocco et al. 1980). Similarly, social support helps alleviate personal stress and improve individual control (House 1981; Cohen and Wills 1985).

Since social support theory was established, most empirical studies examining social support's impact considered moderators between health behaviors (House et al. 1988a; 1988b). According to previous literature, social support plays a role as a moderator of organizational behavior when emotional labor is an independent factor, as studies of social support and health consistently have explained regarding individuals with low social support, depression, social and psychological isolation. Workers with low social support are more likely to suffer from health risks such as smoking and drinking (Berkman and Syme 1979; Nelson and Quick 1991; Murray et al.

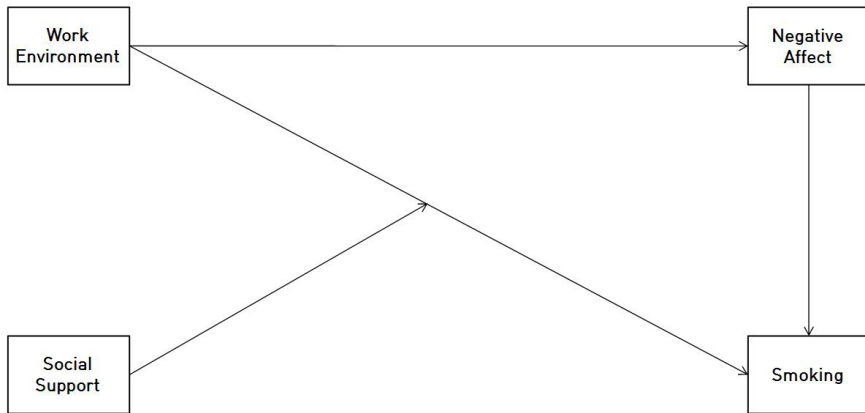


FIG. 2.— HYPOTHETICAL PATHWAY MODEL

1995; Elder et al. 2000). In Korea, the lower the amount of social support one receives and the less of a social network they have, the higher the smoking rate (Yoon et al. 2006). Furthermore, the relationship between social support and health behaviors shows that those with proper emotional support exhibit lower smoking rates than those who do not. However, the better one's social network, the higher the smoking rate.

In sum, social support is a significant explanatory variable for addictive health hazards. Therefore, smoking and social support are variables that can show varied results combined with diverse factors. Following these insights, we expect to find the relationships between working-time flexibility, work feelings, facing customers, and smoking mediated by the level of social support.

Following these insights, we suggest:

H4: The absence of social support increases the smoking rate.

H5: The absence of social support increases the smoking rate that moderates the relationship between, (a) low job autonomy, (b) low working-time flexibility, (c) work feelings, and (d) facing customers and smoking. In Figure 2, we have presented a hypothetical pathway model of this paper based on these arguments.

Methods

Data and Sample

This study uses data from the Korean Working Conditions Survey (KWCS) established by the Korea Occupational Safety and Health Agency. The KWCS is based on, and thus similar with, the UK Labour Force Survey and the European Working Conditions Survey. It aims to assess workers' working environments, including occupation, employment status, industry, exposure to hazards, and employment stability.

The data we use is taken from the third wave, collected in 2011, which included questions specifically related to smoking. Data was collected via one-on-one interviews with a professional interviewer using a structured questionnaire. Respondents are workers who are at least 15 years old in all households residing in Korea at the time of the survey. Data used probability sampling method controlling population size for major six metropolitan cities including Seoul, the capital city of South Korea, and nine provinces. The total sample is 50,032 cases. Formal ethical approval was obtained from the Korea University Institutional Review Board Committee (#KU-IRB-17-EX-243-A-1).

Measurement

The independent variable is working environment. To identify which items should be used in the scale and analysed with the correlation between variables, we conducted explanatory factor analysis using all the possible items and performed orthogonal (varimax) rotation. Factor analysis is a statistical method for extracting theoretical latent variables from various observed variables and categorizing the correlated factors using structural models.

Table 1 shows the factor analysis. We obtained a Kaiser-Meyer-Olkin (KMO) estimate of .67 and demonstrating these variables can explain the correlation. For Bartlett's spherical test, the Chi-square value was 90395.81, the degrees of freedom was 55, and the significance level was .000 ($p < 0.001$). The eigenvalues of the extracted four factors were: (i) 2.35; (ii) 1.87; (iii) 1.53; (iv) 1.01. The explanatory powers of these factors were: (i) 31.32%; (ii) 17.00%; (iii) 13.93%; (iv) 9.21%, then, accounts for 61.47% of the total.

Factor names of working environment were identified based on the

TABLE 1
FACTOR ANALYSIS

items	communality	loading of variables by factor			
		i	ii	iii	iv
Thoughts applicability	.683	.815			
Peer selection possibility	.626	.790			
Decision making	.599	.763			
Working hour autonomy	.666		.770		
Working hour flexibility	.540		.652		
Work stress	.667			.809	
Hiding emotions	.634			.781	
Emotional involvement	.560			.746	
Serving customers	.715				.832
Customer's direct request	.544				.714
Serving angry customers	.527				.701

working environment features of the AET (Weiss and Cropanzano 1996; Ashkanasy and Daus 2002; Wegge et al 2006). In terms of the dimension of work features as organizational factors, we identified (i) job autonomy and (ii) working-time flexibility. Furthermore, for the emotional labor dimension as individual factors, we identified (iii) work feelings and (iv) facing customers.

Specifically, job autonomy refers to the control of strategic and operational autonomy, such as participative decision making. Thus, we included three items measuring the application of ideas and decisions. Working-time flexibility consists of two items measuring the flexibility of one's working hours. The work feelings index consists of three items, such as emotional intervention, stress, and emotional concealment at work. Finally, facing customers consists of three items that include dealing with non-coworkers (e.g., customers, patients, students, and passengers), dealing with angry customers, and treating non-coworkers.

Each response used Likert scales, such as a 5-point scale (job autonomy and work feelings), 4-point scale (working-time flexibility), and a 7-point scale (facing customers). We reverse coded the variables so that a higher score indicates the higher frequency of work feelings and customer-facing.

Smoking is the dependent variable. Because the number of non-smokers ($N = 34,040$) is much higher than the number of smokers ($N = 15,992$), it would be inappropriate to measure smoking based on smoking frequency.

Accordingly, we used a smoking status question surveyed as “smoke every day” (=1), “smoke occasionally” (=2), and “smoke in the past but does not smoke now” (=3). This scale does not measure smoking in detail, such as the frequency. Furthermore, as a primary concept, smoking status could be an acceptable choice for measurement. As a result, we recoded it as “not smoking” (=0), “smoking” (=1).

Negative affect is the mediator in this study. In general, PANAS or SPANE scales are considering as a measurement for negative or positive emotions. We used similar emotional status variables. There is the sum of the 5 items on a 6-point scale related to the respondent's emotional state during the last two weeks, ranging from “always” (=1) to “never” (=6). Therefore, the higher the score, the stronger the respondent's negative affect. For the reliability analysis of these items, we obtained a Cronbach's alpha of .92.

The moderator of this study is social support. First, we tried to input the items for asking respondents for the status of support they received from coworkers and that from superiors. But the missing values are large ($N = 13,344$ and $20,824$), so it was not statistically appropriate. As a result, the following question was used to account for peer relationships and social support in the workplace: “I have a very intimate friend” is used to measure social support and was coded as a dummy variable, “yes” (=0) and “no” (=1).

Our model also included various demographic control variables. First, gender, occupation, and the status of worker variables are binary. Furthermore, we coded the nine job categories into a binary variable (0 = other occupations / 1= sales and service occupations) and the three statuses of a worker as into “regular position” (=0) and “temporary position” (=1). Second, we created and included three categorical variables: age, income level, and weekly working hours. Education level was already in a categorical format, but we reverse coded it. Lastly, work environment satisfaction is measured on a 4-point scale.

Data Analysis

This study analyses mediating effects and interaction effects with different variables using the causal step approach pioneered by Baron and Kenny (1986). The method of determining the mediating effect is as follows. In the first step, a regression analysis is performed to confirm the statistically significant effect of the independent variables on the mediator. Next, in the second step, the statistically significant effect of the independent variables on the dependent variables is evaluated. Finally, the statistically significant effect

of the independent variables and mediator on the dependent variables is checked. Partial mediation is observed when the results of the second step show that the coefficients of the regression analysis are less than the third criterion. In the third criterion, full mediation is observed if the relationship is no longer significant. Finally, to confirm the mediation effect's statistical significance, we check the mediating effect using Sobel's Z-test (1982).

Next, we examine the interaction effects through a three-step approach. In the first step, as in the analysis of mediating effects, regression analysis is performed by putting four factors of working environment as the dependent variable. In the second step, we apply the social support variable as a moderator to determine the effect of the variable. Finally, the moderator and independent variables are mean-centered and multiplied to create interaction terms in the third criterion. Here, the moderator is a third variable, which means controlling for the causality between the predictor and the output. If the interaction with the moderator is significant, then the independent variable is helped by the moderator.

Results

Descriptive Statistics

Table 2 displays descriptive statistics for the sample. The results show that 57.2% of participants were male, and 42.8% were female. About one-third of respondents (32.1%) are sales service workers; 13.5% are clerical workers, 13.5% are professionals, 10.5% are unskilled laborers, and 9.9% are equipment and machine assembly workers. The average age of respondents was 46 years old. The mode age group is 40 to 49 years old, accounting for 28.9%, followed by 30 to 39 years old, which accounted for 23.1% of the sample. The average monthly income of the respondents was approximately 2,780,000 KRW (equivalent to around 2,500 USD), but the respondents were distributed evenly across income groups. The average length of schooling for the respondents was 12.32 years, indicating that they had a high school education or higher. Of the respondents, 40.5% were high school graduates, and 40.2% had received some higher education above the community college level.

TABLE 2
DESCRIPTIVE STATISTICS

Sociodemographic features	N	%	M ± SD
Gender (N: 50,032)			
Female	21,392	42.8	
Male	28,640	57.2	
Occupation(N: 49,957)			
Sales and Service	16,052	32.1	
Others	33,905	67.8	
Age (yr/ N: 50,032)			46 ± 13
15-29	5,315	10.6	
30-39	11,570	23.1	
40-49	14,341	28.7	
50-59	10,704	21.4	
≤60	8,102	16.2	
Income Level (KWN/ N: 48,201)			2.07 ± 1.3
≥1 million	5,094	14.7	
≥2 million	17,539	36.4	
≥3 million	12,827	26.6	
≥4 million	6,663	13.8	
<4 million	4,078	8.5	
Education (N: 50,026)			
Graduate school	1,014	2.0	
2/4 yr College	19,115	38.2	
Secondary school	25,164	41.3	
≥Primary school	4,733	9.4	
Weekly Working Hours (N: 50,032)			50.58 ± 16
≥20	1,960	3.9	
≥60	39,345	78.7	
≥120	8,694	17.4	
≤140	33	.1	
Status of Worker (N: 29,711)			
Regularly	23,264	78.3	
Temporary	6,547	21.7	
Work Environment Satisfaction (N: 50,032)			
Very satisfied	2,789	5.6	
Satisfied	33,577	67.1	
Slight unsatisfied	12,644	25.3	
Unsatisfied	1,022	2.0	

Mediating Effect of Negative Affect between Work Environment and Smoking

In table 3, Model 1 shows the results of our linear regression analysis to verify the effect of the independent variables on the mediator. As a result of verifying the VIF-value to check for multicollinearity, all the remaining variables had a VIF less than 1.5, except for education level, which was 1.8. Additionally, the Durbin-Watson value was 1.72, which was close to two. This indicates independence, and confirms that there was no correlation between the residuals. The R-square value, which indicates the explanatory power of the model, was 15.2%; the modified decision coefficient adjusted R-square, reflecting the number of samples, and the independent variable was 15.1%. Further, the F-value found to be statistically significant at 707.92 ($p < .001$).

TABLE 3
EFFECTS OF WORK ENVIRONMENT ON NEGATIVE AFFECT (MODEL 1)

Variables	B		t	p
(Constant)	4.26		20.08***	.000
Gender	-.08	-.01	-1.69	.091
Occupation	-.11	-.02	-5.02***	.000
Age	.38	.09	17.10***	.000
Income level	-.00	.01	2.61**	.009
Education	.48	.11	19.08***	.000
Weekly working hours	.01	.00	.47	.638
Status of worker	-.14	-.01	-1.89	.053
Work environment satisfaction	2.30	.24	53.72***	.000
Job autonomy	.26	.12	26.10***	.000
Working-time flexibility	.37	.09	18.17***	.000
work feelings	.06	.03	5.89***	.000
Facing-customers	-.07	-.04	-9.20***	.000
R^2			.152	

* $p < .05$, ** $p < .01$, *** $p < .001$

The socioeconomic status variables and occupational satisfaction variables were significant except for weekly working hours and the status of the worker. Also, negative affects were higher with lower education levels and

older age. All the independent variables had significant effects on affect when independent variables were applied under the control of these variables. The β -values of job autonomy and working-time flexibility were .12 ($p < .001$) and .09 ($p < .001$) and had a positive effect on negative affects. Furthermore, work feelings was .03 ($p < .001$) and had a positive effect. Affect will be negative when there is less working-time flexibility. Additionally, negative affects appeared as the organization suppressed personal autonomy and emotions. However, the customer-facing was -.04 ($p < .001$), indicating a negative effect. Thus, H1(a), H1(b), and H1(c) are supported.

Table 4 provides the results of a logistic regression analysis to verify the effect of the independent variables and mediator on the dependent variable.

TABLE 4
MEDIATING EFFECTS OF WORK ENVIRONMENT ON SMOKING

Variables	Model 2			Model 3		
	B	Wals	OR	B	Wals	OR
(Constant)	-.52	24.84	.593***	-.557	27.96	.573***
Gender	-2.84	6863.39	.058***	-2.84	6862.04	.058***
Occupation	-.03	3.77	.973	-.03	3.59	.973
Age	-.24	502.25	.784***	-.25	510.81	.782***
Income level	.00	97.69	1.001***	.00	96.99	1.001***
Education	.13	127.43	1.140***	.13	121.27	1.137***
Weekly working hours	.07	24.36	1.076***	.07	24.18	1.076***
Status of worker	-.06	2.56	.942	-.06	2.50	.942
Work environment satisfaction	.18	76.87	1.201***	.17	59.69	1.181***
Job autonomy	.01	4.30	1.010*	.01	2.78	1.008
Working-time flexibility	.05	29.99	1.055***	.05	26.54	1.052***
work feelings	.01	2.13	1.007	.01	1.91	1.007
Facing-customers	-.02	13.85	.985***	-.01	12.72	.986***
Negative affects				.01	11.41	1.008***

* $p < .05$, ** $p < .01$, *** $p < .001$

Model 2 shows the Chi-square value is 13489.06 ($p < .001$). Hosmer-Lemeshow goodness-of-fit tests were also conducted. The probability of significance was higher than .05, which judged fitness as .05. The classification accuracy of the prediction of the dependent variable occurrence in logistic regression analysis was high at 71.9%.

All independent variables except work feelings are statistically significant. The B-values of job autonomy and working-time flexibility factors were .01 (Wals = 4.3, OR = 1.01, $p < .05$) and .05 (Wals = 29.99, OR = 1.06, $p < .001$) and had a positive relationship with smoking. Thus, there is a 6% increase in smoking when the respondent has low working-time flexibility and smoking also increases 1% when the worker is controlled and disciplined more frequently. In the case of work feelings, the B-value was .01, and smoking was a single percent higher (Wals = 2.13, O.R. = 1.01) but not statistically significant. However, we found that workers who are in customer-facing roles are associated with a 1% decrease in of smoking, stated with the B-values of -.02 (Wals = 13.85, O.R. = .99, $p < .001$). Therefore, H2(a) and H2(b) were supported.

As for Model 3, the Chi-square value was 13500.37 ($p < .001$), and the Hosmer-Lemeshow test showed an adequate model fit with a significance of .53. Additionally, classification accuracy was high at 71.8%. In Model 3, affects were used as a mediator to test whether workers' affects were mediated by smoking. As a result, affects was .01 and increase smoking by 1% (Wals = 11.41, OR = 1.01, $p < .001$). Smoking was more likely to when a respondent's affects were more negative.

The p-value of job autonomy, which was found to be significant in Model 2, exceeded .05. This finding indicates that affect completely mediated job autonomy and smoking. The remaining independent variables were similar to those of Model 2 ($B = .05$, Wals = 29.99 $\Rightarrow B = .05$, Wals = 26.54). In the case of working-time flexibility, the B and Wals values were lower than those in Model 2. Thus, negative affect is partly mediated between working-time flexibility and smoking. Additionally, in the case of the work feelings and facing customers related directly to negative affect, work feelings were not significant in Models 2 and 3. However, all values for facing customers ($B = -.02$, Wals = 13.85 $\Rightarrow B = -.01$, Wals = 12.72) were less than Model 2 and it had a partial mediating effect. The results show that smoking behaviors were less frequent when there was more customer-facing contact.

As shown in the mediating effect analysis, job autonomy was found to be a complete mediator. Moreover, working-time flexibility and facing customers were partially mediated, and work feelings was not mediated.

Therefore, we use Sobel (1982)'s Z-test formula to determine the statistical significance of the mediation effect.

$$Z\text{-value} = \frac{ab}{\sqrt{(b^2 * SE_a^2 + a^2 * SE_b^2)}}$$

To verify the complete mediation, a is the non-standardised path coefficient (β) between job autonomy and emotion .12, b is the non-standardised path coefficient (B) = .01, and SE is standard error ($a = .01$, $b = .00$). As a result, the Z-value was 3.78 ($p < .05$). Therefore, it confirms that the emotion was mediated completely by job autonomy and smoking. To verify the partial mediation, a refers to a non-standardized path coefficient (β) between facing customers \rightarrow negative affect = .09, while b is the non-standardized path coefficient between the same negative affect \rightarrow smoking; SE of a is .02. As a result, the Z-value founded to be 32.91 ($p < .05$), and thus, negative affect was found to especially mediate work features and smoking. This is consistent with H3(a) and H3(b).

Interaction Effects of Work Environment and Social Support among Smokers

Table 5 shows the results of logistic regression analysis conducted to verify the interaction effect between work environment and social support. The analysis was conducted by putting the control and independent variables in Model 1, the moderator in Model 2, and the interaction terms of independent variables and moderator in Model 3.

This study applied the mean-centering method utilized in Aiken and West (1991) to verify multicollinearity between variables. Since there is a linear relationship between the independent variables, moderator, and interaction terms, it is necessary to subtract the average value from the variables to reduce the correlation between the variables. The regression analysis results, the VIF value, and the tolerance value were 1.5 or more for the just control variables, such as the income variable and the education variable. However, the remaining variables, especially the independent variables and moderator, showed appropriate values for VIF values of 1.00 to 1.14 and allowance values of .87 to .99. Therefore, these findings confirm no multicollinearity between variables when analyzing the interaction effect between four sub-factors of work environment and social support.

The first-step analysis for the interaction effect verification is the same as the second-step analysis of the mediation effect analysis. Thus, the results of

TABLE 5
INTERACTION EFFECTS OF SOCIAL SUPPORT BETWEEN WORK ENVIRONMENT AND SOCIAL SUPPORT

Variables	Model 2			Model 3		
	B	Wals	OR	B	Wals	OR
(Constant)	-1.30	129.24	.272***	-1.32	129.72	.266***
Gender	-2.77	6450.70	.063***	-2.77	6446.76	.063***
Occupation	-.024	2.71	.977	-.02	2.67	.977
Age	-.235	473.39	.790***	-.23	473.14	.790***
Income level	.10	339.08	1.103***	.10	333.82	1.102***
Education	.19	249.20	1.207***	.19	251.29	1.208***
Weekly working hours	.05	13.26	1.056***	.06	13.49	1.057***
Status of worker	.04	1.28	1.044	.04	.93	1.038
Work environment satisfaction	.22	105.95	1.244***	.21	104.63	1.242***
Job autonomy	.01	4.81	1.011*	.01	3.90	1.001
Working-time flexibility	.04	20.84	1.045***	.04	20.75	1.039**
work feelings	.01	5.92	1.012*	.01	5.70	1.013*
Facing-customer	-.01	11.83	.987**	-.01	11.55	.987**
Social support	-.07	7.60	.935**	-.07	8.08	.933*
Social support × Job autonomy				.02	4.80	1.022*
Social support × Working-time flexibility				.01	.55	1.014
Social support × work feelings				-.00	.03	.998
Social support × Facing-customer				-.00	.03	.999

* $p < .05$, ** $p < .01$, *** $p < .001$

the first stage in Model 2 of Table 5. The result of the first analysis, the Chi-Square value was 13912.00 ($p < .001$), and the Hosmer-Lemeshow test results showed that the probability of the fit was .37. Control variables showed that a

worker's status was not significant, and gender and age were negative. The work environment variables such as working-time flexibility (Wals = 29.99, OR = 1.05, $p < .001$), job autonomy (Wals = 4.30, OR = 1.01, $p < .05$), and work feelings (Wals = 2.13, OR = 1.01, $p < .05$) influenced smoking and were statistically significant.

The results of the second-step analysis to determine the effect of the social support variable on smoking in Model 2 of Table 5. The fit of the model was 13919.60 ($p < .001$), and the significance of Hosmer-Lemeshow was .244. Regarding social support variables, the social support decreases smoking by 6%, within the significance level, with the B-value being -0.7 (Wals = 7.60, OR = .94, $p < .01$). Therefore, the absence social support influences the negative effect on smoking, and H4 not supported.

Unlike the previous first stage and the second stage, the interaction term is an input rather than a general variable in the case of third step analysis. The interaction term used to confirm that the effects between the different variables appear together rather than independently. To test the interaction effect of social support, four interaction terms were calculated by multiplying the four sub-factors of work environment and social support variables by mean centering. The analytical results of the interaction terms present in Model 3 in Table 5 below. The Chi-square value of 13925.90 was found to be appropriate at the significance level .001. Results of the Hosmer-Lemeshow test also showed a significance of .42 and a classification accuracy of 72.3%.

Consistent with H5(a), Model 3 indicates that job autonomy terms were found to have an interaction effect with a regression coefficient (B) of .02 and an odds ratio of 1.02 at the .05 level of significance. However, the remaining interaction terms did not reach significant levels, indicating that the interaction effect did not appear.

Discussion and Conclusion

The result of job autonomy was not partial mediation as we had expected, but instead full mediation. Working-time flexibility and having to face customers have partial mediating effects. Negative affects induced by work environment have an indirect effect that leads to smoking. Facing-customers has partly mediated the effect as well as the working-time flexibility, which exhibit negative effects on smoking. Particularly, in the first step analysis, having more contact with customers was shown to lead to more positive affects and fewer smoking behaviors. This contradicts findings from previous studies,

wherein customer-facing, an important axis of emotional labor, was found to negatively affect the overall psychological state of the worker. The odds ratio is .99, which is high, and produced a negative result with a small difference.

However, there are two possible contextual causes. First, our sample is comprised of all occupations. The chance of having to come face-to-face with an angry customer varies widely depending on the type of employment. Therefore, facing customers may not be an effective parameter to examine. Second, it is possible that sociable individuals experience positive affects, such as pleasure, rather than stress as a result of interacting with customers.

Moreover, if emotional labor is internalized and customized, workers may become insensitive to emotional labor without specific efforts (Ashforth and Humphrey 1993). Morris and Feldman (1996) suggest that those who feel more positive affects than negative affects usually experience less emotional dissonance in their work. Because of this, sociable people may choose customer-facing work. From this point of view, customer service workers may not be overwhelmed by stress but may appear to feel positive affects such as job satisfaction. Therefore, there is no reason for them to smoke to relieve negative sentiments.

If so, how can we explain that work feelings appears to have no mediating effect? It is necessary to consider that the questionnaire items, since work feelings has measures that include workers' negative affects, direct effects can influence smoking without the indirect effect of the emotional variables measured with a daily mood scale. Contrary to our hypothesis, it turned out that smoking did not occur when social support was absent. Previous research on smoking has shown that it is a psychological means of solving emotional problems (Cohen et al. 1983; Glassman 1993), and that things can be more stressful when the amount of social support one receives is low (Pearlin and Schooler 1978; LaRocco et al. 1980). Therefore, this hypothesis is theoretically suitable for investigation. So why do our results reject that hypothesis?

To explain this, we have to consider that close to half of Korean males report to smoke, with the figure approaching 43.1% (Statistics Korea 2014). Moreover, clan culture has a strong association with health climates and smoking status (Kava et al. 2019). With this in mind, if there are many smokers at work, smoking can become part of organizational culture. Also, smoking is a community ritual or habit if smokers make up the majority of workgroups. Smoking can complement and support emotional experiences by creating shared interactions through smoking habits. Moreover, frequent group smoking increases an individual's dependence on nicotine, which is

more likely to lead to chronic smoking.

In this context, non-smokers may be the minority in an organization and may not feel bonded to their coworkers through the ritual of smoking. This indicates that the bond with the smoker's colleagues is low. Frequent smoking often provides more peer contact points, while non-smokers may lack opportunities to interact socially with their peers. As a result, non-smokers who do not receive sufficient social support can explain the results of non-smoking behaviors with no social support.

The results of the regression analysis with social support showed that the absence of social support does not cause smoking. However, the interaction analysis showed different results. To illustrate this, we must consider the characteristics of job autonomy. In the mediating effect analysis, job autonomy was entirely influenced by mediating negative affects. As a result, job autonomy has weak explanatory power for smoking. Independent influences of job autonomy are vulnerable and should interact instead with social support to affect smoking. Otherwise, it is open to considering that workers may relieve stress by smoking behavior if they do not have friends with whom to share stressful experiences in the workplace.

Other interaction terms were not statistically significant. Nevertheless, we can extract some meaning. The work feelings variable has a positive effect on smoking in Model 2 of Table 5 but has a negative effect on the interaction term. This result could be understood as social support decreasing smoking that is caused by emotional control at work. As shown in previous studies, the need for smoking for stress relief may disappear as the social support lowers stress and depression caused by emotional labor (House 1981; Cohen and Wills 1985; Ryu 2015).

In conclusion, this study has broadened the research area of work environment to the health of workers, including addiction, contrary to former approaches to effective management and general psychological causality. Our attempt to find a new and meaningful pathway to health behaviors is not only significant for developing theoretical considerations, but also may be helpful for policymakers or managers when it comes to public health, human resource management, and labor rights.

Nonetheless, there are several limitations to this study. First, The KWCS data is easy to access, and the population size is statistically relevant. However, it difficult to sophisticate and measure because of the variety of scales and sampling. Therefore, only limited interpretation is possible, and the reported effect size is fairly small. Second, most people begin smoking during adolescence, and early smokers typically smoke more often than

people who started at a later age (Chen and Millar 1998; Hwang and Park 2014). Therefore, it is difficult to conclude that work environment, and emotional labor in particular, is an absolute determinant of smoking. Finally, this study shares the limitations of empirical research. The impact of work environment as work features and emotional labor on health behaviors cannot be explained solely by a quantitative approach showing a compact and specific phenomenon. Because it is not simple to explain why work environment is related to how often a worker meets with customers, how often their decisions are restricted, and how often they suppress their emotions at work.

This article has several drawbacks in its statistical method and description with the limitation of availability of data. However, with a new approach to AET (affective event theory), we found that worker health is critical to understanding the work and health of a workplace. This pathway model changes the company-friendly AET's goal to be worker-friendly. We hope that AET will be utilized for the further advancement of research on workers' health status, health positive and negative behaviors, as well as organization theory projects.

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GIHWAN GU is received his MA in Sociology from Korea University. The main focus of his work is on cultural sociology and health risk behaviours. [*E-mail*: robertgu@korea.ac.kr]

JAEN LEE is a visiting assistant professor at Gettysburg College. He received his Ph.D. from University of Maryland at College Park. His research includes inequality of death and family. [*E-mail*: jlee@gettysbur.edu]

MYOUNGJIN LEE is a professor at the Department of Sociology, Korea University. He received his Ph.D. in Sociology from the University of Iowa. His main interests are the comparative study of social stratification, quantitative analysis, and information society. [*E-mail*: leemj@korea.ac.kr]