Social and psychological resources moderate the relation between anxiety, fatigue, compliance, and turnover intention during the COVID-19 pandemic

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Abstract

Purpose – The workplace health management lessons to be learned from the pandemic, are important. However, few studies have examined the relationship between workplace anxiety, resources, and behaviors during the pandemic. Therefore, this paper aims to investigate the relationship between anxiety, fatigue, compliance, turnover intention, and social and psychological resources during the COVID-19 pandemic by applying the conservation of resource (COR) theory.

Design/methodology/approach – Path analysis was carried out using data obtained from a questionnaire survey conducted on 2,973 Chinese employees of Japanese companies in China.

Findings– The analysis showed that anxiety had a positive correlation with compliance, but simultaneously had a positive correlation with fatigue and turnover intention;

psychological resources moderated to weaken the relationships between anxiety and compliance/fatigue; social resources moderated to strengthen the negative correlation between compliance and willingness to leave.

Research limitations/implications – This study targeted employees of Japanese companies in China. Therefore, in the future, it is necessary to verify generalizability as to whether it applies to employees of companies of other nationalities in other countries. Also, we used newly developed scales instead of the general psychological scales. Therefore, it is necessary to verify the reproducibility using a more general scale.

Practical implications: Anxiety encourages compliance practices but also increases fatigue and willingness to leave. Therefore, a method of inciting anxiety and making employees follow rules reduces the strength of an organization. To overcome this dilemma, managers need to provide psychological and social resources.

Originality/value – This study is the first to show how effective social and psychological resources are in the management of anxiety and fatigue in achieving high performance during the COVID-19 pandemic. This study was conducted in the very early days of the COVID-19 pandemic with the cooperation of employees working for Japanese companies in China. However, the importance of utilizing resources in a crisis revealed by this study can be applied to all kinds of disasters.

Introduction

During the COVID-19 pandemic, healthcare as well as non-healthcare workers have experienced lower psychological well-being and higher anxiety, depression, and exhaustion compared to the period before the pandemic (Evanoff et al., 2020; Salari et al., 2020; Vindegaard and Benros, 2020). Leaving these adverse conditions of employees unattended leads to a loss of unity and an increase in turnover intention (Jung et al., 2021; Lee and Jang, 2020; Modaresnezhad et al., 2021; Probst et al., 2020; Sinclair et al., 2020); therefore, an organization is required to take measures in advance. For example, a study showed that Chinese luxury hotel employees were more willing to leave their jobs due to anxiety about losing their jobs during the COVID-19 pandemic (Jung et al., 2021).

Therefore, in a stressful state, such as the COVID-19 pandemic, it is necessary to practice human resource management focusing on the mental state of employees more than usual. Specifically, the greatest attention should be paid to workers in non-healthcare-related occupations, and of lower economic status because they tend to be less

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knowledgeable about COVID-19 and less likely to participate in behaviors regarding spread prevention behaviors (Zhong et al., 2020). It has been shown that human resource management that has incorporated health and safety measures has contributed substantially to the variance in task performance, engagement, and productivity in developing countries before and during the pandemic (Hoque and Shahinuzzaman, 2021; Liu et al., 2021; Meegahapola and Prabodanie, 2018; Sutarto et al., 2021).

Considering the argument that organizations should emphasize long-term as well as short-term goals to measure their success or failure in a crisis (Rao and Greve, 2018), an organization should prevent an increase in fatigue and willingness to leave the job (a long-term goal), as well as protect their employees from the infection (a short-term goal). However, to our knowledge, sufficient research has not been conducted so far on whether the anxiety felt by employees in a disaster promotes compliance related to infection control, or increases fatigue and willingness to leave the job. Furthermore, research on how employees' resources affect these relationships is insufficient. Therefore, in this study, using the data from a questionnaire survey conducted on 2,973 Chinese employees working for Japanese companies in China from February 15th to May 31, 2020, under the COVID-19 pandemic, we investigated how the human resource management of a company is related to the psychological conditions of employees, such as anxiety and

fatigue, and behaviors such as compliance and willingness to leave the job, focusing on social and psychological resources based on the conservation of resources theory (COR theory; Hobfoll, 1989).

2. Literature review

2-1. COVID-19 disaster in China and the response of Japanese companies

First, we would like to review the period from mid-February to May 2020 when the survey was conducted. It can be found from the published data of the World Health Organization that the number of new infections per day in China, which had exceeded 1,000 since late January, fell below 1,000 for the first time on February 20, and the infection had been converging since then (World Health Organization, 2021). Therefore, it can be said that the time of this survey was after the worst had passed and more companies had started resuming their activities. However, the environment surrounding companies was still harsh, and Japanese companies were no exception.

According to a survey conducted by the Roundtable of Eastern Region Japanese Commerce and Industry Club on 800 member companies in the Eastern region from the evening of March 4 to March 6, only 39% of the companies with manufacturing bases (n = 481) and 43% of companies without manufacturing bases (n = 319) were able to resume

100% of their businesses as of the date of the survey (The Roundtable of Eastern Region

Japanese Commerce and Industry Club, 2020). Around the same time, a survey of 457

Japanese companies operating in the southern region of China from February 24-28, 2020

showed that only 6.7% of the companies achieved a 100% occupancy rate. It is analyzed

in the report that the reason for the restriction of the operations was the delay in employees'

return to work due to the regulations of the authorities and the awareness of the employees

about the infection (Japan External Trade Organization, 2020).

Therefore, this survey corresponds to the time when companies paid the most

attention to the health of their employees toward the full-scale resumption of activities.

2-2. Conservation of resources theory

Long before the COVID-19 pandemic, many researchers had pointed out that

infectious diseases have historically caused anxiety, suspicion, and panic, weakening trust

in the policies or weakening the cohesion of the organization (Edelstein, 1988; Erikson,

1994; Peckham, 2015; Picou et al., 2004). Anxiety and fatigue have consistently been

reported to increase turnover intention during the pandemic (Jung et al., 2021; Lee and

Jang, 2020; Modaresnezhad et al., 2021; Probst et al., 2020; Sinclair et al., 2020). This

phenomenon can be explained by the COR theory proposed by Hobfoll (1989). COR

theory is a stress theory that describes the motivation that drives humans to both maintain their current resources and to pursue new resources (Hobfoll, 1989). According to COR theory, the workforce experiences anxiety and indulges in undesirable organizational behaviors, including leaving the workplace to prevent the reduction of mental health, when they do not have resources to sustain an appropriate behavior at work (Jung et al., 2021; Lee and Jang, 2020; Modaresnezhad et al., 2021; Probst et al., 2020; Sinclair et al., 2020). Alternatively, if the workplace can be kept safe by an effective measurement such as workplace infection control, it will not be necessary for the workers to leave the job for fear of resource decline (Falco et al., 2021; Hu et al., 2021).

2-3. Social and psychological resources

However, a company may not always reduce employee anxiety perfectly. Furthermore, for disasters such as COVID-19 that have never been experienced before, companies also do not have accurate information on how to deal with them; it is believed that many issues cannot be resolved by the efforts of company management alone. At the same time, employees need to be able to cope with stress themselves to compensate for the limitations of the company's response. The concepts that can be used as references for this theme are social and psychological resources. Social resources refer to resources such

as relationships and mutual help, and psychological resources refer to internal resources such as self-efficacy and resilience (Luo et al., 2021; Maykrantz et al., 2021; van Emmerik, 2006).

Research using these resources is increasing in models based on the COR theory (Huang et al., 2020; Kim et al., 2017; Luo et al., 2021), which suggests that an employee who has a vast reservoir of resources from which to draw is motivated to protect their current limited resources and obtain new resources (Alarcon et al., 2013; Hobfoll, 1989; Kim et al., 2017). For instance, it is argued that people often use their relationship resources in terms of information, support, and control to resolve crises and protect other resources when faced with uncertainty, problems, and pressure, whereby social resources reflect the degree to which these resources are accessible (Luo et al., 2021; van Emmerik, 2006). It is also argued that psychological resources including self-efficacy and resilience have a positive effect on employees' adaptive performance and could be a fundamental resource for coping with crises and stress (Luo et al., 2021; Maykrantz et al., 2021). As such, previous studies have shown that these resources not only positively correlate with desirable behaviors for organizations, such as safety behaviors (Li et al., 2020; Tang et al., 2014; Wang et al., 2018), or negatively correlate with undesirable behaviors such as turnover (Avey et al., 2009; Bouzari and Karatepe, 2017; Boyas et al., 2013; Çelik, 2018;

Iida et al., 2020), but also contribute to mitigating the relationship between stress and behaviors (Aguiar-Quintana et al., 2021; Ngo et al., 2013; Pihl-Thingvad et al., 2021; Shoss et al., 2018; Wang et al., 2018). However, to the best of our knowledge, no studies have shown that these resources moderate the relationship between anxiety and compliance, anxiety and fatigue, and compliance and willingness to leave during a crisis. Therefore, it is necessary to test the applicability of these resources during the COVID-19 pandemic.

2-4. Two sides of anxiety

Anxious individuals tend to define situations as threatening from ambiguous stimuli (Ellis, 1962; Eysenck, 1992), making them prone to heightened distractibility (Bar-Haim et al., 2007). They also often lack confidence in their ability to manage threatening situations (Shell and Husman, 2008). Therefore, workplace anxiety has substantial implications for employees and organizations in terms of unethical behaviors (Kouchaki and Desai, 2015), lower performance (McCarthy et al., 2016), risk-taking behaviors (Mannor et al., 2016), and organizational turnover (Rodell and Judge, 2009).

However, anxiety is not always detrimental to the situation. Workplace anxiety is experienced as an unpleasant feeling that inherently triggers motivation to reduce or

eliminate anxiety (Prem et al., 2016; Spielberger, 1985). For example, anxious individuals are more sensitive to feedback, careful in monitoring their surroundings (Eysenck, 1992; Eysenck and Derakshan, 2011), and take strategic actions to avoid harm (Izard and Youngstrom, 1996; Mathews, 1990). Therefore, some empirical evidence has found a positive relationship between anxiety and performance (Bozo et al., 2009; Mughal et al., 1996; Xia et al., 2017). Research dealing with workplace management during a disaster is required to consider these dualities of anxiety.

3. Hypotheses

3-1. Association between emotions (fatigue and anxiety) and behaviors (compliance and turnover)

COR theory suggests that individuals carry a finite store of resources, such as energy and focus, and these resources are depleted with use (Hobfoll, 1989). If not replenished over time, resource depletion results in chronic symptoms, such as emotional exhaustion (Maslach and Leiter, 2008). For instance, it has been empirically confirmed that anxiety that consumes energy will lead to a depletion of resources and emotional exhaustion (Cheng and McCarthy, 2018; McCarthy et al., 2016), which in turn increases turnover intention (Howard and Cordes, 2010; Jung et al., 2021; Lee and Jang, 2020;

Modaresnezhad et al., 2021; Probst et al., 2020; Sinclair et al., 2020). This is consistent

with COR theory, where workers respond to anxiety minimizing further resource loss

without any help or intervention (Jung et al., 2021; Lee and Jang, 2020). Therefore, the

following hypotheses were derived:

H1a. Anxiety is positively related to turnover intention.

H1b. Anxiety is positively related to fatigue.

H1c. Fatigue is positively related to turnover intention.

Anxiety can sometimes be a motivation to take specific actions by raising

awareness of dangers to avoid, and problems to address (Strack et al., 2017) because

anxiety serves as a signal of a discrepancy between desired and actual conditions (Carver

and Scheier, 2011). This signal can lead to greater effort and an increase in task

engagement (Norem and Chang, 2002; Schwarz and Bless, 1991). Empirical studies have

shown that emotional risk perception predicts higher safety compliance and participation

(Bozo et al., 2009; Xia et al., 2017). Therefore, if there is a great deal of anxiety among

the workers about COVID-19, it is assumed that they are willing to cooperate with

COVID-19 countermeasures, and thus the following hypothesis was derived.

H1d. Anxiety is positively related to compliance with COVID-19-related measures.

3-2. Association between behaviors (compliance and turnover)

It has been reported that safety climate is negatively associated with turnover intention (Balogun et al., 2020; Smith, 2018; Suárez-Albanchez et al., 2021). It has also been reported that workers who feel that their employer is concerned about their health and safety will be more reluctant to leave the organization before (Amponsah et al., 2016; Firth et al., 2004; Michael et al., 2005; Staufenbiel and König, 2010) and during the pandemic (Jung et al., 2021; Suárez-Albanchez et al., 2021). According to COR theory, these phenomena can be explained as follows: practicing COVID-19-related compliance makes the workplace safer and reduces the need for turnover to prevent the resource reduction of a sense of security. Therefore, the following hypothesis was derived:

H2. Compliance with COVID-19-related measures is negatively related to turnover intention.

3-3. Moderation of resources (social and psychological resources) on the association between anxiety and compliance, anxiety and fatigue, and compliance and turnover)

According to COR theory, when some required resources are not available, they can be substituted with an alternative resource that is easier to provide (Duran et al., 2019; Foa and Foa, 2012). Hobfoll (2002) points out that the basic resources of employees can be divided into two categories: social and psychological resources.

Psychological resources, often represented by psychological capital based on the elements of positive psychology, including self-efficacy and resilience, enable employees to adapt to adversity, cope with difficulties, and perform well in the workplace (Kim et al., 2017; Paek et al., 2015; Song et al., 2020). Therefore, it has been shown that psychological resources are negatively related to emotional exhaustion because workers with higher levels of psychological resources can cope with stressors by internal strength (Moyer et al., 2017; Vîrgă et al., 2020; Wang et al., 2012). In the same vein, empirical studies have found positive effects of psychological resources on safety compliance and participation (Eid et al., 2011; Wang et al., 2018). Furthermore, previous studies have shown that psychological resources moderate the relationships between variables. For instance, it was found that psychological resources weaken the negative association between safety-related stress and safety participation in the workplace (Wang et al., 2018).

Similarly, another study showed that psychological resources weaken the negative relationships between perceived job insecurity and attitudinal outcomes (Ngo et al., 2013). Similarly, resilience has been found to weaken the relationship between job insecurity, emotional exhaustion (Shoss et al., 2018), and depression (Aguiar-Quintana et al., 2021). These are because when highly resilient individuals face uncertainties and obstacles at work, they tend to be creative, adaptive, and persistent in dealing with adversity as they have the energy to combat stress, uncertainty, fear, and anxiety (Avey et al., 2009; Luthans et al., 2007). Applied to the setting of this study, it is thought that even in a workplace where COVID-19 causes anxiety; employees with higher psychological resources can alleviate or weaken their influence on their health and behavior. Thus, the following hypotheses were derived:

H3a. Psychological resources weaken the positive relationship between anxiety and fatigue.

H3b. Psychological resources weaken the positive relationship between anxiety and compliance with COVID-19-related measures.

Social resources, often represented by social capital based on trust, norms, and networks can improve social efficiency by activating people's coordinated actions (Putnam et al., 1994). Therefore, members unite and exchange information to achieve their goals in a high social resource organization (Leana and Van Buren, 1999). A previous study found that there was a significant negative association between workplace social resources and intention to leave (Boyas et al., 2013; Iida et al., 2020). This is because, in a workplace with high social resources, workers might experience more emotional support and respect, which leads them to act more politely and develop norms of high civility and justice in the workplace, which in turn leads to low intention to leave (Iida et al., 2020).

This story can be applied to the moderating effect of social resources on the relationship between compliance and turnover during the COVID-19 pandemic. In other words, it can be predicted that social capital will strengthen the relationship between compliance and turnover. Under normal circumstances, compliance practices should reduce the risk of infection, increase the feeling of safety, and, as a result, reduce the willingness to leave the job. However, whether following the company's COVID-19 measures leads to safety and security depends on the social resources people in the workplace have because richer social resources allow higher visibility of others' actions and a stronger pressure against their negative behaviors (Coleman, 1990; Podolny and

Baron, 1997). If social resources are low, employees may feel that others are not fully trustful and simultaneously look for job-change opportunities to avoid resource depletion, even if they superficially practice compliance. Thus, we proposed the following hypothesis:

H3c. Social resources strengthen the negative relationship between compliance with COVID-19-related measures and turnover intention.

4. Research methodology

4.1 Data

The questionnaire consisted of attributes, including age, sex, position, and tenure, as well as 50 question items based on a 5-point Likert response scale from 1 (I do not think this way) to 5 (I do think this way). Of the 50 questions, 14 items were regarding social resources, 5, regarding fatigue, and 2, the intention to leave the job. These items were developed and have been used by IEWRI Japan Co., Ltd. for the past 15 years in its awareness surveys conducted in various parts of Asia to support the sound management of Japanese foreign affiliates. The remaining 29 questions regarding COVID-19 were newly created items in this survey. Of these, social resources were created by combining

the organizational support items and organizational commitment items of Kokubun (2017). We define social resources as the reciprocal of organizational support and employee commitment. This composition is justified because Putnam et al. (1994) defined social capital as consisting of three elements: trust, reciprocity, and social networks. Based on this idea, Boyas et al. (2013) defined employment-based social capital as consisting of six separate variables: communication, co-worker support, influence, fairness, organizational commitment, and supervisory support. However, they found that only organizational commitment and supervisory support were significantly associated with turnover intention among less-experienced workers, i.e. working less than three years (n = 100) among the six variables. As this study includes such inexperienced workers, it is considered reasonable to construct social resources with these two components developed by IEWRI Japan Co., Ltd., which has been empirically confirmed to constitute a single variable emphasizing the easier interpretation of analysis results.

For the variable of psychological resources, we combined nine of the 11 items of the disaster self-efficacy scale developed by Motoyoshi (2017) and 5 of the 7 items of the competency scale developed by Saito and Okayasu (2010). The former includes, for example, "I think I can handle various things well even in a mess," and the latter includes, for example, "I think I have the power to achieve my goals". Compared to PsyCap, a

representative psychological capital scale that consists of self-efficacy, optimism, hope, and resilience (Luthans et al., 2007), our items are overemphasized for self-efficacy and resilience. There are two reasons: First, optimism and hope are closer to the state than trait, unlike the other two (Carver and Scheier, 2002). It is also stated that optimists interpret bad events as external, unstable, and specific (Buchanan and Seligman, 1995; Larson and Luthans, 2006; Peterson, 2000; Seligman, 1998), and therefore are often less enthusiastic about preparing for a crisis (Druică et al., 2020; Sharot, 2011). Therefore, it was considered that such optimistic thinking could be a disturbance in compliance in the event of a disaster, which was used as an objective variable in the current research. The second reason is that we considered that the psychological resources required in the event of a disaster may be different from those required in normal times. Based on this understanding, in the field of disaster prevention research, a model including a sense of self-efficacy for disaster prevention action has been proposed (Paton, 2003）, and it has been empirically shown that the higher the sense of self-efficacy for action, the higher the disaster preparedness (Tang and Feng, 2018; Toyosawa et al., 2010). Therefore, Nypaver (2011) defined the ability of nurses to play an effective and accurate role in disaster as disaster self-efficacy. Motoyoshi's scale was developed based on Nypaver's idea of measuring the degree of self-confidence in how well people can take appropriate actions

in the event of a disaster. However, his original scale had a two-factor structure, lacking

the convenience of a single-factor structure such as PsyCap. In addition, as the scale name

indicates, it specializes in items related to self-efficacy only, so we added another scale

that includes the content of resilience because emerging research proposes incorporating

resilience into disaster prevention studies (Khan et al., 2018; Madrigano et al., 2017).

Resilience refers to the ability of people, society, and organizations to control damage and

increase sustainability in adversity (Serfilippi and Ramnath, 2018). Previous studies have

shown that highly resilient employees can respond appropriately to organizational

problems (Avey et al., 2009) and tend to be more flexible in accepting and adapting to

organizational changes (Shin et al., 2012; Wanberg and Banas, 2000). Therefore, it was

also shown that resilience is related to disaster preparedness behaviors (Weber et al.,

2020). The method of creating a variable that combines different variables is not unusual.

For instance, PsyCap is developed by extracting data from four different representative

scales (Luthans et al., 2007).

Five items of COVID-19 compliance were newly developed. An example of the

item is, "I would like to cooperate with the hygiene management of the company to

prevent COVID-19 infection". Likewise, we newly developed the COVID-19 anxiety

scale composed of five items including, for example, "I'm worried about the COVID-19".

To create these variables, we referred to information obtained through interviews with the managers of the companies that participated in the survey. The reason why we developed these new COVID-19 related scales is that we couldn't find suitable scales at the time we initiated this survey.

Besides, fatigue was composed of the three items of Kokubun (2017), which have been used in a survey of many employees working for Japanese companies in China and other East Asian countries (Kokubun, 2018, 2019; Kokubun and Yasui, 2020, 2021), adding the following two newly developed items: "I always feel gloomy because of my work", and "I sometimes feel frustrated while working". This is because we thought that observing not only physical but also mental fatigue was more appropriate in the analytical model to see the employee conditions under COVID-19, which has caused various forms of severe mental distress (Evanoff et al., 2020; Salari et al., 2020; Vindegaard and Benros, 2020). Lastly, for the scale of turnover intention, we used two of three items in the turnover intention scale developed by Takata and Kawamura (2018), with minor changes in some words. We used two items about turnover intention within or after six months but did not use an item within three months. This is because we wanted to exclude the effect of the financial crisis as much as possible, where many workers are reported to show lower immediate turnover intention due to scarce employment opportunities in the labor

market, partly canceling the effect of complaints on insecure workplaces (Kim et al., 2012; Wynen and Op de Beeck, 2014).

This questionnaire, after being translated into Chinese by the back-translation method, was distributed to more than 10,000 Chinese employees at 32 companies in the eastern and southern areas from February 15 to May 31, 2020 A total of 6,673 people responded to it online. However, this analysis uses data from 2,973 people from 26 companies who answered all the questions. Most of the target people were manufacturing employees (94.7%), and the rest were design, finance, consulting, etc. This study was approved by the Ethics Committee of IEWRI Japan Co., Ltd. (which is kept anonymous during the review) (approval number 2020-01) and was conducted following the institutes' guidelines and regulations. All participants provided written informed consent before participation and their anonymity was maintained.

5. Analysis and findings

All statistical analyses were performed using IBM SPSS Statistics/AMOS Version 26 (IBM Corp., Armonk, NY, USA). As a result of factor analysis by varimax rotation, the following six factors, as shown in Table 1, were extracted: social capital (14 items), resilience (11 items), compliance (5 items), fatigue (5 items), anxiety

(4 items), and turnover intention (2 items). The following nine items were excluded from variable creation. Three items with a factor load of less than 0.4: "I think there are many bosses and colleagues I can rely on," "I think I will do my best for this job even when I am not feeling well," "I can go to work without worrying about COVID-19 infection." Three items with a multiple factor load of higher than 0.4: "The company encourages me to work harder for its further development," "I think I can ask the company for help when I have a problem," "I will do my best no matter what happens." The three items that formed one factor but the reliability coefficient was less than 0.7: "I will not easily leave this company except in special circumstances," "I rarely think about changing jobs," "If my friends and relatives are looking for a job, I would like to introduce them to my company."

Before proceeding to the main analyses, Harman's single-factor analysis was used to check whether the variance in the data could be largely attributed to a single factor, while the confirmatory factor analysis (CFA) was used to test whether the factors were related to the measures. First, the factor analysis indicated that only 36.3 percent of the variance could be explained by a single factor, which was <50 percent. Thus, it was established that the data did not suffer from common method variance (Chang et al., 2010). Next,

for CFA, the model fit was evaluated by examining the chi-square (χ^2), comparative ft index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA). Values above 0.95 are deemed to indicate a good fit for CFI, and values below 0.08 indicate a good fit for RMSEA and SRMR (Hu and Bentler, 1998). It was shown that the 6-factor model (χ^2 (685) =2923.169, p<0.001; CFI=0.975; RMSEA=0.033, p<0.001, 90% CI=0.032–0.034; SRMR=0.064) fits better than the 1-factor model that added 6 variables (χ^2 (641) = 5642.941, p<0.001; CFI=0.945; RMSEA=0.051, p<0.001, 90% CI=0.048–0.052; SRMR=0.115).   Table   2 shows the results of the descriptive statistics and the correlation analysis between variables. For each variable, 1 to 5 points were assigned to the individual response items of the 5-point Likert response scale, and the average was calculated for easy comparison. The highest score was 4.64 for compliance with COVID-19 measures, followed by 4.35 for resilience and 3.92 for social capital. On the contrary, at 1.81, the turnover intention was the lowest, followed by 2.51 for fatigue and 3.63 for anxiety about COVID-19. It can be said that overall positive awareness is high and negative awareness is low. However, looking at the standard deviation, the former is 0.71 to 0.94,

while the latter is 1.12 to 1.17, indicating that the latter has more variation. Therefore, it should be noted that negative consciousness, especially turnover intention, is not so high on average, but the difference between employees is relatively large. Regarding age, 1 to 4 points were assigned to the options of "under 30", "30-39", "40-49", and "50 or older". Similarly, concerning the length of service, 1 to 4 points were assigned to the options "less than 1 year", "1 year to less than 3 years", "3 years to less than 5 years", and "5 years or more".

Figure 1 and Table 4 show the results of path analysis. In the analysis, modification indices were used to improve the model fit (Civelek, 2018). Gender, age, regional, and positional paths were omitted (available upon request). First, anxiety and fatigue were positively correlated with each other and with the intention to leave the job. This supports H1a, H1b, and H1c. Anxiety was also positively correlated with compliance. This is in favor of H1d. Compliance was shown to have a negative correlation with turnover intention. This is in favor of H2. Psychological resources weakened the relationship between anxiety and fatigue/compliance. These are in favor of H3a and H3b. Finally, social resources strengthened the relationship between compliance and turnover intention. This is in favor of H3c.

Social resources were positively correlated with compliance and fatigue. These results are not in the hypothesis. However, the results of empirical studies have also shown that workers' social resources have a significant and direct influence on their safety behaviors (Guo et al., 2019; Li et al., 2020; Tang et al., 2014). Likewise, it has been shown that greater social resources are significantly related to lower levels of emotional exhaustion because workers with higher levels of social resources are more likely to develop a bond with the organization that creates a safeguard against adverse work-related stressors (Boyas and Wind, 2010; Kowalski et al., 2010; Murayama et al., 2020).

The relationship between anxiety and turnover intention is complicated. Anxiety has the effect of lowering turnover intention through an increase in COVID-19 compliance ($\beta=0.16 \times -0.28 = -0.04$). However, at the same time, it has the effect of directly ($\beta=0.09$) and indirectly increasing turnover intention through the fatigue increase ($\beta=0.36 \times 0.25 = 0.09$). As a result, the overall effect of anxiety on willingness to leave was positive ($\beta=0.13$), indicating that anxiety enhanced the willingness to leave the job.

To further understand the significance of the interaction terms, in Figure 2, the data were divided into a group with high psychological resources and a group with low psychological resources. The horizontal axis shows the group with high anxiety and the group with low anxiety, and the vertical axis shows compliance. Similarly, in Figure 3,

the data was divided into a group with high psychological resources and a group with low

psychological resources; the horizontal axis shows the group with high anxiety and the

group with low anxiety, and the vertical axis shows fatigue. In Figure 4, the data is divided

into a group with high social resources and a group with low social resources; the

horizontal axis shows the group with high compliance and the group with low compliance,

and the vertical axis shows turnover intention. The criterion for high and low is whether

the score is 1 SD higher or lower than the average, following the recommendation of

Aiken et al (1991).

First, Figure 2 shows that within the group with abundant psychological

resources, the level of compliance was higher in the group with less anxiety than in the

group with greater anxiety. On the other hand, it has been shown that within the group

with low psychological resources, the group with high anxiety had higher compliance

than the group with low anxiety. Therefore, it can be said that the method of practicing

compliance in a way that incites anxiety is most effective for those with low psychological

resources. However, at the same time, it should be noted that the group with low anxiety

and abundant psychological resources exceeds the level of compliance of the group with

high anxiety and low psychological resource. This indicates that keeping anxiety low and

enriching psychological resources is the most effective for COVID-19 compliance.

As shown in Figure 3, fatigue is low regardless of the size of the psychological resources when anxiety is low, but when anxiety is higher, fatigue is lesser in the group with higher psychological resources and more in the group with lesser psychological resources. This indicates that those who are more anxious and do not have psychological resources as an alternative resource are more likely to consume energy and become more exhausted. On the other hand, Figure 4 shows that the group with high compliance has a lower turnover intention than the group with low compliance, and this difference is steeper within the group with high social resources than the group with low social resources. This indicates that people with abundant social resources have the greatest effect of lowering their willingness to leave their jobs by practicing compliance with COVID-19-related measures.

Table 1 Results of factor analysis

Item	Social resources	Psychological resources	Compliance	fatigue	Anxiety	Turnover intention
I like working in a company	*0.81*	0.18	0.10	-0.15	0.02	-0.11
I am generally satisfied with my current work	*0.77*	0.15	0.11	-0.17	-0.01	-0.06
Work at the company is fun	*0.75*	0.16	0.08	-0.21	-0.03	-0.02
The company cares about its employees	*0.74*	0.20	0.13	-0.16	-0.03	0.00
I find my job very rewarding	*0.74*	0.17	0.04	-0.15	-0.03	-0.01
The company trusts its employees	*0.74*	0.21	0.16	-0.13	0.02	-0.03
I am proud of my work	*0.72*	0.15	0.02	-0.15	-0.05	0.02
I want to work hard at this company	*0.71*	0.24	0.22	-0.03	0.02	-0.23

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The company treats its employees fairly	*0.71*	0.18	0.06	-0.19	-0.07	0.05
I want to work for this company forever	*0.70*	0.25	0.19	-0.03	0.02	-0.26
I want to continue my current work	*0.70*	0.22	0.17	-0.07	0.03	-0.18
The company is reliable	*0.69*	0.25	0.29	-0.07	0.05	-0.14
I want to contribute to the growth of the company	*0.67*	0.27	0.24	-0.03	0.01	-0.19
Satisfaction with work content	*0.54*	0.30	0.12	-0.23	-0.02	-0.01
I think I can handle various things well even in a mess	0.21	*0.85*	0.12	-0.03	0.02	-0.01
I think I can flexibly respond to various things when an emergency occurs	0.20	*0.82*	0.12	-0.02	0.03	-0.01
I think I can act calmly even in an emergency	0.21	*0.81*	0.16	-0.05	0.03	-0.02
I think I can stay relatively calm even during chaos	0.20	*0.77*	0.15	-0.05	0.02	-0.02
I think I can overcome pain and tragedy	0.22	*0.73*	0.21	-0.05	0.02	-0.03
I am confident that I will manage to live even if I encounter difficulties	0.24	*0.70*	0.31	-0.06	0.07	-0.09
I think I have the power to achieve my goals	0.28	*0.62*	0.24	-0.09	0.07	-0.03
I think that if I make an effort, I can solve anything by myself	0.26	*0.60*	0.26	-0.06	0.15	-0.06
Even if something unpleasant happens, I often think that my present experience should be good for the future	0.27	*0.56*	0.33	-0.06	0.04	-0.09
No matter how difficult the situation is, I will not give up	0.35	*0.53*	0.36	-0.10	0.11	-0.13
I think I can help each other with colleagues around me	0.34	*0.49*	0.38	-0.09	0.10	-0.09
I would like to cooperate with the hygiene management of the company to prevent the COVID-19 infection	0.18	0.34	*0.78*	0.00	0.15	-0.07
I would like to cooperate with the instructions of the company related to work attendance to prevent the COVID-19 infection	0.19	0.36	*0.78*	0.02	0.13	-0.07
The company gives its employees information and measures regarding the COVID-19	0.21	0.33	*0.76*	0.00	0.13	-0.04
The company has adequate hygiene measures against the new COVID-19virus	0.31	0.34	*0.62*	-0.06	0.10	-0.04
I personally take measures against the new COVID-19virus infection	0.17	0.35	*0.62*	0.02	0.10	-0.02
I am often tired and tired	-0.17	-0.04	0.01	*0.83*	0.16	0.03
I am exhausted when I finish my work	-0.16	-0.04	0.06	*0.73*	0.18	0.02
I always feel gloomy because of my work	-0.24	-0.08	-0.03	*0.72*	0.13	0.13
I sometimes feel frustrated while working	-0.24	-0.08	-0.05	*0.66*	0.10	0.18
I'm tired since I woke up in the morning	-0.17	-0.07	-0.04	*0.62*	0.15	0.14
I'm worried about the COVID-19	0.04	0.07	0.13	0.09	*0.71*	0.00
Feelings are blocked due to anxiety about the COVID-19	-0.06	0.02	-0.03	0.26	*0.65*	0.13
My co-workers are worried about getting the COVID-19 at the company	-0.09	0.07	0.08	0.21	*0.61*	0.07
I'm feeling financially uncertain because of the COVID-19	0.04	0.12	0.25	0.11	*0.55*	-0.02
Within a half year, I will quit my current job	-0.23	-0.09	-0.11	0.27	0.12	*0.82*
After half a year, I will quit my current job	-0.21	-0.09	-0.07	0.28	0.11	*0.81*

Note(s): The italic values are the scores higher than 0.4.

Table 2 Results of descriptive statistics and correlation analysis

		Mean	SD	1	2	3	4	5	6	7	8	9	10
1	Social resource	3.92	0.94	(0.95)									
2	Psychological resource	4.35	0.76	0.58**	(0.94)								
3	Fatigue	2.51	1.17	-0.39**	-0.20**	(0.87)							
4	Anxiety	3.63	1.12	-0.03	0.15**	0.35**	(0.75)						
5	Compliance	4.64	0.71	0.47**	0.67**	-0.08**	0.25**	(0.93)					
6	Turnover intention	1.81	1.13	-0.38**	-0.24**	0.42**	0.20**	-0.21**	(0.92)				
7	Eastern region	0.27	0.44	0.08**	0.00	-0.05*	-0.25**	0.02	-0.13**				
8	Age	1.96	0.79	0.15**	0.13**	-0.14**	-0.06**	0.08**	-0.18**	0.01			
9	Tenure	2.76	1.13	0.01	0.03	0.02	0.00	0.08**	-0.11**	-0.07**	0.42**		
10	Manager	0.05	0.22	0.07**	0.06**	-0.07**	-0.12**	0.05**	-0.08**	0.07**	0.18**	0.17**	
11	Sex	0.38	0.48	0.05*	0.02	-0.01	0.08**	0.09**	-0.10**	0.09**	0.10**	0.07**	-0.14**

Note(s): n = 2973. **p < 0.01, *p < 0.05. The numbers in parentheses are the reliability coefficients, α. The other variables are the correlation coefficients.

Figure 1 Results of path analysis
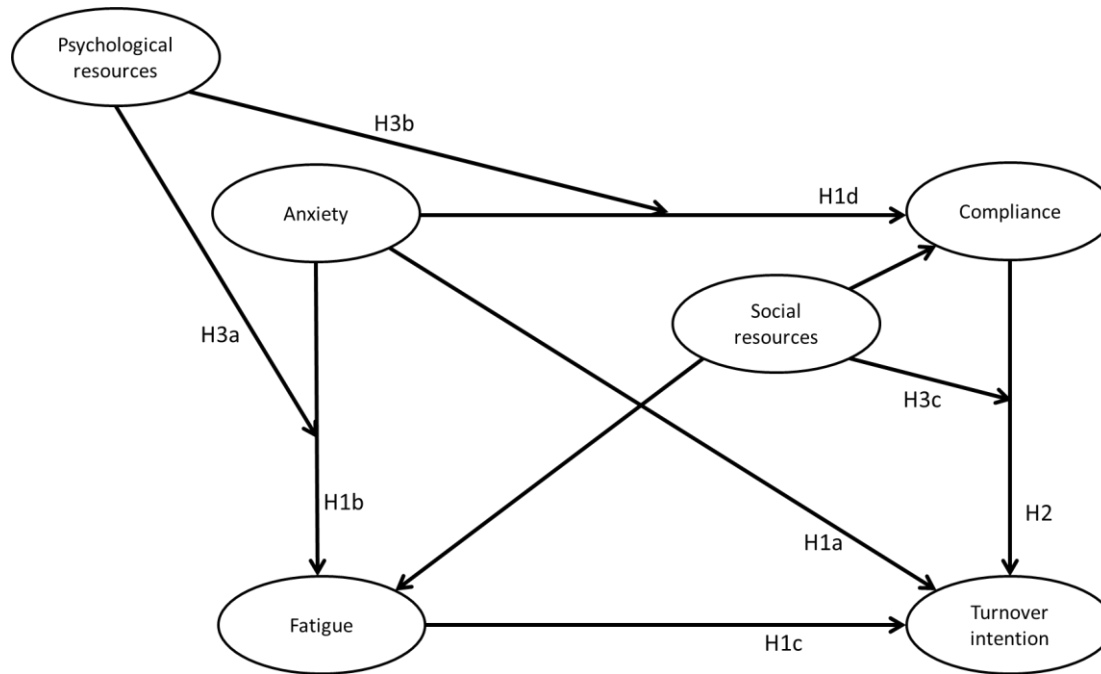
All paths are significant at the 1 % level. Goodness-of-fit indices: $\chi^2 = 33.55$, df $= 22$, root mean square error of approximation (RMSEA)

$= 0.013$, probability of close fit (PCLOSE) $= 1.000$, goodness of fit index (GFI) $= 0.998$, adjusted goodness of fit index (AGFI) $= 0.993$,

normed fit index (NFI) $= 0.997$, comparative fit index (CFI) $= 0.999$. n $= 2,973$.

Table 3 Results of path analysis

Path			Estimate
Anxiety	--->	Compliance	0.162
Sex	--->	Compliance	0.045
Tenure	--->	Compliance	0.050
Social resources	--->	Compliance	0.129
Psychological resources	--->	Compliance	0.308
Anxiety × Psychological resources	--->	Compliance	-0.673
Anxiety	--->	Fatigue	0.363
Social resources	--->	Fatigue	-0.356
Psychological resources	--->	Fatigue	-0.088
Anxiety × Psychological resources	--->	Fatigue	-0.113
Age	--->	Fatigue	-0.079
Eastern region	--->	Fatigue	0.066
Tenure	--->	Fatigue	0.065
Compliance	--->	Turnover intention	-0.275
Sex	--->	Turnover intention	-0.071
Fatigue	--->	Turnover intention	0.247
Anxiety	--->	Turnover intention	0.089
Eastern region	--->	Turnover intention	-0.077
Tenure	--->	Turnover intention	-0.080
Age	--->	Turnover intention	-0.049
Social resources	--->	Turnover intention	-0.214
Social resources × Compliance	--->	Turnover intention	-0.268

Note(s): The numbers in the table are standardized path coefficients. All paths are significant at the 1 % level.

Correlation between variables are omitted (available upon request).

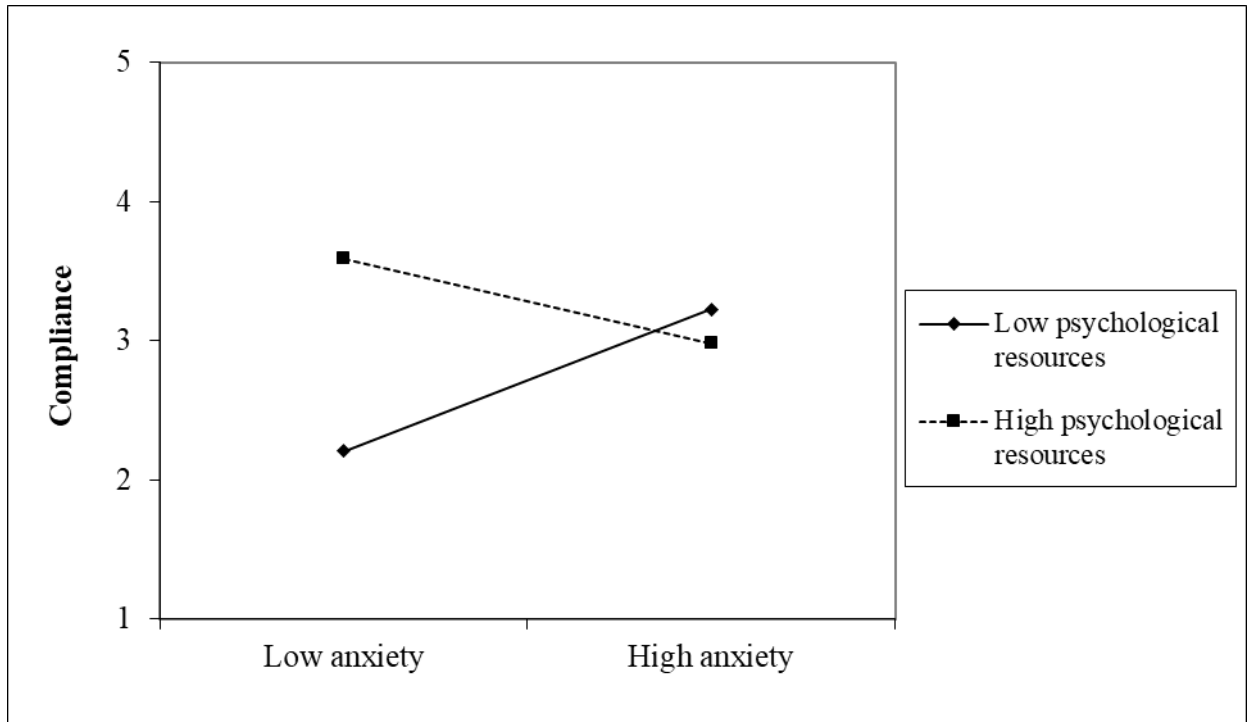Figure 2 The moderating effect of psychological resources between anxiety and compliance

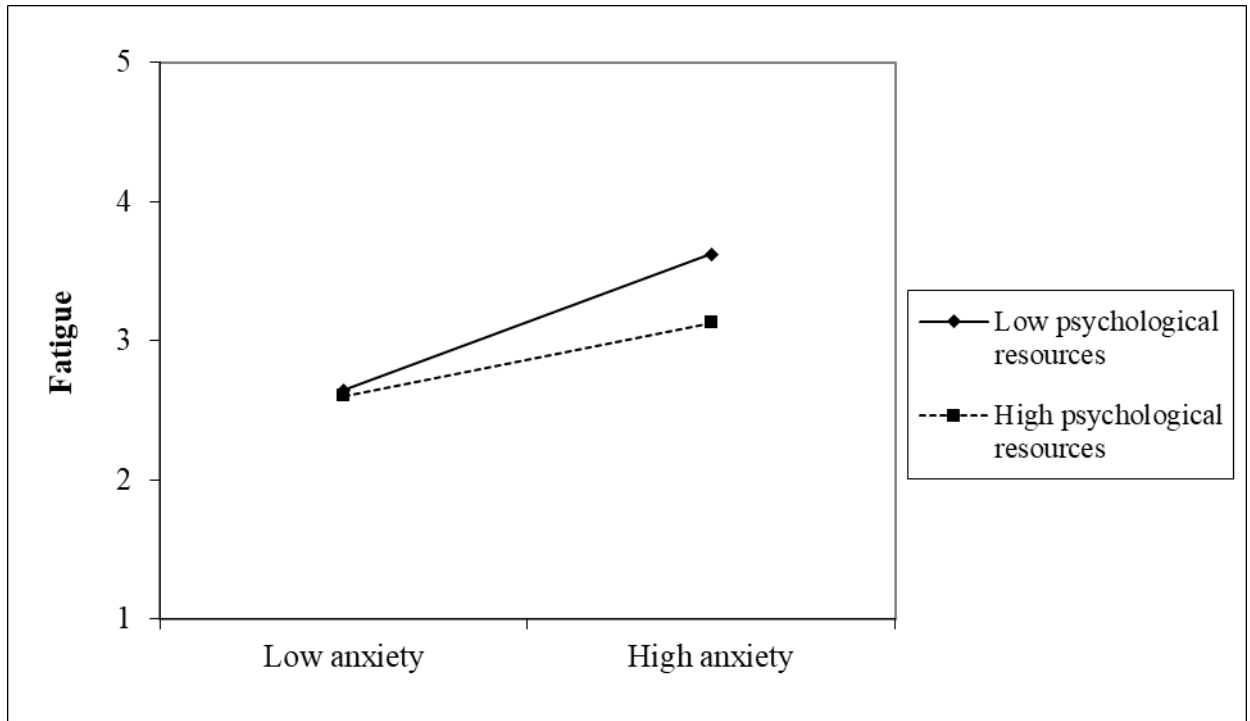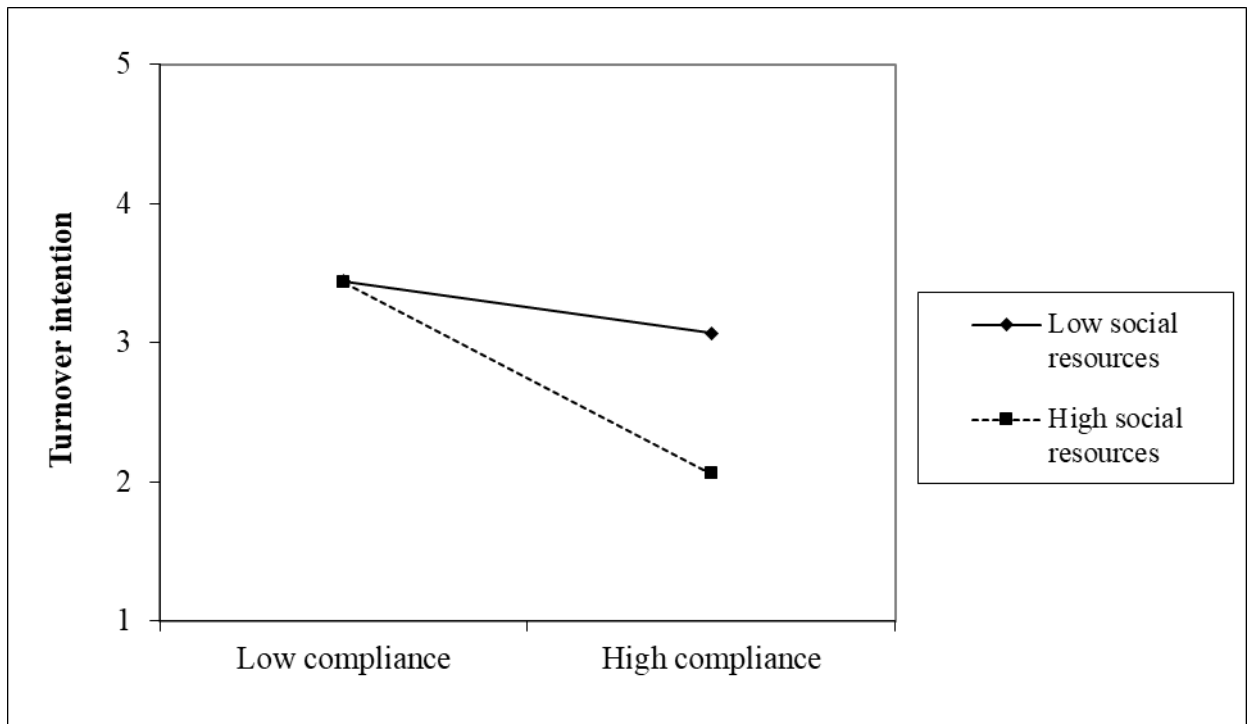Figure 3 The moderating effect of psychological resources between anxiety and fatigue

Figure 4 The moderating effect of social resources between compliance and turnover intention

Discussion

This study revealed four main points. First, employees with greater anxiety had higher compliance. Previous studies have discussed that anxiety promotes compliant behavior, and the results of this study support this statement. However, it was shown that employees with greater anxiety are more tired and therefore more willing to leave their jobs. These show the risk of a method that incites anxiety to make them comply, increasing employee fatigue and turnover intention.

Second, it was shown that psychological resources weakened the relationship between anxiety and compliance. Anxiety has the effect of increasing compliance for people with low psychological resources, but it also has the effect of slightly lowering compliance for people with large psychological resources. Furthermore, it was shown that those with low anxiety and abundant psychological resources had higher compliance than those with high anxiety and low psychological resources. This shows that people with smaller psychological resources can improve compliance by inciting anxiety, and at the same time, increasing psychological resources and maintaining low anxiety is the most effective way to improve compliance.

Third, it was shown that psychological resources strengthen the relationship between anxiety and fatigue. In other words, people with high psychological resources were shown to be less tired, even with greater anxiety, than those with low psychological resources. On the other hand, for people with small psychological resources, great anxiety tends to lead to great fatigue, and therefore, it can be said that the intention to leave the job is likely to increase.

Finally, it was shown that social resources weaken the relationship between compliance and willingness to leave. In other words, the results suggested that compliance has a small effect on employees with low social resources to reduce their

willingness to leave, but for people with large social resources, compliance has a significant effect on reducing their willingness to leave. Therefore, it has been shown that there is no difference in the willingness to leave a job depending on the size of social resources among employees with low compliance, but there is a difference in the willingness to leave a job depending on the size of social resources among employees with high compliance. These results suggest that employees with higher compliance can reduce their willingness to leave their jobs by having access to more social resources.

Implication

The results that anxiety and fatigue increase the willingness to leave a job are consistent with COR theory and previous empirical studies (Jung et al., 2021; Lee and Jang, 2020). However, anxiety about COVID-19 is complicated because it not only has the effect of increasing fatigue and intention to leave the job but also leads to higher compliance about COVID-19. The consequences of anxiety increasing fatigue and turnover intention, as well as increasing compliance, indicate that employees understand that these actions can conserve their resources, which is consistent with COR theory. However, these results indicate that both a company with high employee psychological resources and a company where employees feel anxious were able to have employees

cooperate with the company's measures against COVID-19. Therefore, from the appearance of employee compliance, it is favorably evaluated that most companies responded well to the crisis, whether these behaviors were supported by psychological resources or the positive aspect of anxiety, as shown by the high score of compliance (Table 2). However, even for employees who seemed to comply with the company's measures, there would be some differences in fatigue and intention to leave the job due to the negative aspect of anxiety. This result shows the dangers of methods such as inciting anxiety and encouraging employee compliance and provides useful suggestions from the perspective of human resource management to many companies that continue to suffer from the COVID-19 pandemic.

How can we interpret the consequences of moderating psychological resources that weaken the relationship between anxiety and compliance? COR theory indicates that employees who are rich in psychological resources do not need to prevent resource decline compared to those who have scarce resources (Foa and Foa, 2012). In other words, the results suggest that people with abundant psychological resources practice more intrinsic compliance based on self-confidence and thought, and have less anxiety-driven extrinsic compliance. From the management perspective, it may be difficult to see the difference between them because they both appear to be compliant. However, as

mentioned above, since anxiety has a positive correlation with fatigue and willingness to leave the job, it is necessary to pay attention to the fact that compliance that incites anxiety simultaneously leads to deterioration of employee health and turnover.

In addition, given that anxiety often interferes with proper information processing (Cheng and McCarthy, 2018; Easterbrook, 1959), it will also be necessary to pay attention to the fact that anxiety-induced infection control participation does not guarantee the quality, even if it is high. Therefore, to achieve truly meaningful rather than superficial compliance, psychological and social resources should be enhanced while maintaining anxiety to a certain degree and allowing employees to make accurate decisions.

It was also shown that compliance has a negative correlation with the intention to leave the job and that social resources moderate the relationship between them. It is reasonable to consider that compliant behavior reduces the willingness to leave the job because the safety of the company is improved by lowering the risk of infection. However, even if some employees practice compliance, while others do not, they will not consider the workplace safe. The presence of free riders has often been shown to diminish the effectiveness of infection control (Cato et al., 2020; Yong and Choy, 2021). Therefore, it is believed that the reason why social resources strengthen the negative relationship

between compliance and willingness to leave is that many employees follow norms and prevent betrayal. Many studies have shown that the presence of social resources with these effects prevents COVID-19 infection (Bartscher et al., 2021; Borgonovi and Andrieu, 2020; Kokubun and Yamakawa, 2021).

Previous studies have shown that certain interventions enhance these resources (Framke et al., 2019; Luthans et al., 2007; Masten and Reed, 2002; Meng et al., 2019; Newman et al., 2014). For example, Framke et al. showed, from the results of intervention experiments, that employee participation in management may have the effect of preventing certain social resource declines (Framke et al., 2019). The current study analyzed psychological data obtained from a questionnaire survey conducted on Chinese employees working for Japanese companies in China and found how employees' social and psychological resources, anxiety, and fatigue would affect their compliance with the measures against COVID-19 and intention to leave the job. The results show that although it is possible to encourage employees to comply even by fueling the anxiety of COVID-19, it is also indicated that the same employees will experience an increase in fatigue and intention to leave to avoid resource deprivation. By creating a work environment that allows employees to build good social and psychological resources, not only can a workplace successfully implement crisis countermeasures, but the employee's intention

to leave the job can also be lowered. It is important to invest in these unobservable

resources to prepare for the next possible wave of COVID-19.

This study was conducted in the very early days of the COVID-19 pandemic

with the cooperation of employees working for Japanese companies in China. However,

the importance of utilizing resources in a crisis revealed by this study can be applied to

all kinds of disasters. In other words, increasing their psychological and social resources

daily, rather than aggravating the anxiety of employees, is the most effective way to

improve compliance in the event of a disaster and at the same time prevent turnover of

employees.

Study limitations and suggestions for future research

There are several limitations to this study. First, this study targeted employees of

Japanese companies in China. Therefore, in the future, it is necessary to verify

generalizability as to whether it applies to employees of companies of other nationalities

in other countries. Also, in this study, we used some newly developed scales instead of

the general psychological scales. Therefore, it is necessary to verify the reproducibility

using a more general scale. Lastly, this study used self-reported data from individual

respondents, which may have resulted in common method bias, although we ensured that

the impact was not large. Future research might consider including supervisor-rated scales to strengthen the study design and reduce common method bias.

Conclusion

An important theme of this study was how to maximize employee compliance during crises. Therefore, the purpose of this paper was to study the relationship between anxiety, fatigue, compliance, willingness to leave work, and social and psychological resources by applying COR theory. As a result of path analysis using data collected from a questionnaire survey of 2,973 Chinese employees from Japanese companies in China, anxiety and fatigue were positively correlated with intention to leave the job, and anxiety had a positive correlation with compliance. It was also shown that compliance negatively correlated with the intention to leave the job. In addition, psychological resources weakened the positive relationship between anxiety and compliance. Further, social resources strengthened the negative relationships between compliance and willingness to leave. In summary, anxiety encourages compliance practices but increases fatigue and willingness to leave. Therefore, even if a method that heightens anxiety and makes employees follow COVID-19 compliance has a certain effect, it encourages employees to leave their jobs and weakens the organization. To overcome this dilemma, we need to

bolster our psychological and social resources so that employees are willing to comply and are confident that the practice of compliance will lead to workplace safety.

Author Contributions

KK performed the data analysis, wrote the main manuscript text, prepared the figures and tables, and conducted the supervisory work. YI and KI were responsible for project administration. All authors reviewed, edited, and agreed to the published version of the manuscript.

Acknowledgments

Conflicts of Interest

YI and KI were employed by IEWRI Japan Co., Ltd. The remaining author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The raw data supporting the

conclusions of this manuscript will be made available by the authors, without undue

reservation, to any qualified researcher

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