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Barriers and facilitators of productivity while working from home during pandemic

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ABSTRACT

Objectives: This study aims to characterize the working environment, stress levels, and psychological detachment of employees working from home during the COVID-19 pandemic in the Philippines and investigate their relationship to productivity and musculoskeletal symptoms.

Methods: Structural equation modeling was used to examine the direct effect of workstation characteristics, stress, and musculoskeletal symptoms to productivity and the indirect effect of psychological detachment to productivity. Data were gathered from a survey of employees working from home during the pandemic from different industries ($n = 352$). Multigroup analysis was also conducted to determine the effect of age, having a spouse, and having children less than 18 years old, to the model.

Results: Ergonomic suitability of the workstation (WES) has a significant effect on musculoskeletal symptoms (MSS) ($\beta = -0.31$, $SE = 0.06$; $p < .001$). Both workstation suitability ($\beta = -0.24$, $SE = 0.03$; $p < .001$) and workstation ergonomic suitability ($\beta = -0.18$, $SE = 0.01$; $p < .01$) inversely affect STR. Psychological detachment has a significant inverse effect on stress ($\beta = -0.31$, $SE = 0.07$; $p < .001$) and stress has a significant negative effect on productivity ($\beta = -0.13$, $SE = 0.09$; $p = .03$). Multigroup analyses showed that stress significantly affected the productivity of those without spouses and young employees.

Conclusion: Workstation suitability helps improve the productivity of people working from home while stress negatively affects it. Workstation ergonomic suitability and musculoskeletal symptoms have no significant effect.

KEYWORDS

ergonomics, musculoskeletal symptoms, pandemic, productivity, stress, workstation

1 | INTRODUCTION

The COVID-19 pandemic forced many workers to work from home (WFH) in order to curb the spread of infection[1]. While WFH arrangements had been popular in recent years, the majority of companies and institutions were not able to prepare their employees for this arrangement when the pandemic broke out. Many were caught off guard with the quick turn of events and found themselves confined in their homes after the announcement of a lockdown.

Working from home affords many benefits that include flexibility in schedule, more time to take care of the family, less expenses, and increased productivity[2,3]. Employees also save time from commuting to and from the office especially during rush hours. With these benefits, companies may consider the possibility of allowing their employees to continue teleworking even after the pandemic[4].

On the other hand, there are also many factors that negatively affect productivity when working from home. Studies showed that job environment and management support have the strongest impacts (direct and indirect) on job performance[5]. Limited workspace has been cited as a challenge of working from home in Hong Kong, famous for having tiny homes, during the COVID-19 pandemic[6]. A small house can hinder employee productivity because of the need to share the available space with other people in the household who are either working or studying. Setting up an effective work space to promote health, safety and productivity can be difficult in a work from home setting. Studies have documented the difficulty of setting a boundary between household and office tasks at home if there is no dedicated work space[7].

The space within the home may be limited in relation to the occupants or the furniture available may not be suitable for prolonged work affecting habitability defined as the physical environment's capability to meet health and safety, functional and task performance, and physical comfort of the user[3]. Individual task performance is affected by environmental conditions such as lighting and visual conditions, variations in temperature and humidity, furniture ergonomics, and, to some degree, acoustics. Positive individual productivity outcomes mean improved speed and accuracy of the tasks performed, whereas negative outcomes might include adverse health effects on workers, such as eye strain, musculoskeletal symptoms (MSS), fatigue or upper respiratory problems.

Most employees working from home use computers, especially laptops that caused different types of musculoskeletal injuries and health problems. MSS are prevalent among computer users in various industries that manifest in terms of pain and other complaints in the neck, shoulders, arms, wrists, and lower back region[8]. Prolonged sitting, inappropriate workstations, awkward body postures and task repetitions are the common causes of MSS among computer users. Discomfort or pain has an adverse impact on several aspects of a worker's performance, such as concentration, cognitive capacity, rationality or mood, mobility, stamina, and agility, as well as other physical aspects. Work-related musculoskeletal disorders (MSDs) are responsible for 40-50% of the costs of all work-related diseases. Previous studies indicated a significant positive association between MSDs and fatigue, stress, psychosocial distress, and sleep disruption[9]. MSDs are also known to result in loss of productivity at work. Outcomes of MSDs can range from symptoms to major impairment losses, such as reduction of quality of life, reduction of productivity (eg, lost time), and increase in medical expenses due to disability. Studies also showed a significant association between MSDs and productivity loss in terms of "presenteeism"[10].

The design of the computer workstation influences performance in terms of productivity. Employees that received training in ergonomics increased their productivity with well-equipped and correctly adjusted workstations[11]. Improvement on workstations such as chair modifications has been known to reduce MSS of workers[12]. The suitability of the workstation at home is an important resource that reduces musculoskeletal complaints, increases productivity and satisfaction. Performance of individuals in terms of speed and accuracy is influenced by furniture ergonomics and environmental conditions[13].

Poor design of workstation can also contribute to high stress levels. Some stress factors are office workstation type, ownership of desk, working position, and type of furniture[14–16]. Workstations designed following ergonomic guidelines significantly improved cognitive functioning and human capabilities and decreased physiological measures of stress[14].

Stress can also be brought about by the physical working environment. Office workstation type and their physical activity while at the office are related to physiological stress levels[15]. Workstations that allow employees more physical activities such as open bench seating arrangement are related to lower stress levels. There is a significant decrease in perceived occupational stress in work that involves flexible work arrangements in open work spaces as it provides a greater sense of job control and autonomy resulting in higher productivity and efficiency[17].

The inability to detach from work can be a cause of stress and one of the potential effects of working from home. Psychological detachment implies not thinking about work or doing work-related duties at home[18]. The boundaries between work and personal time becomes blurred because the physical space does not afford decoupling of tasks. Psychologically detaching oneself from work has shown to reduce the level of stress among employees. Detaching from work in the evenings lessens fatigue the following day and during the week[19].

The ability to handle stress differs with respect to age. Yang et al.[20] noted that younger workers (21-30 years of age) were able to translate challenge stress into decreased productivity loss unlike older workers (age 31-69 years). Similarly, marital status is also related to perceived stress. Single workers are prone to stresses associated with social commitments, loneliness, and economy/money[21].

The objective of the current study was to characterize the working environment, stress levels, and psychological detachment of these employees and investigate their relationship to MSS and productivity through a structural equation model. The hypothesized relationships of the variables shown in Figure 1 were based on the literature review conducted.

This study also described the sociodemographic profile of respondents working from home during the pandemic; assessed their workstation ergonomic suitability; determined their most commonly affected body parts with MSS, their psychological detachment, stress, and productivity levels. The effect of age and having a spouse on the relationship of stress and productivity was also investigated.

Investigating the above mentioned factors as potential barriers or facilitators for productivity helps employees to determine and modify aspects in their WFH arrangements that do not contribute to work efficiency and wellness. Moreover, the results of this study may guide employers and administrators in designing interventions and programs for their employees on WFH. The end result is increased productivity with greater satisfaction and well-being of employees. WFH may even become a better alternative to reporting in the office, thus opening greater possibilities for both employees and employers especially during a pandemic.

2 | METHOD

2.1 | Respondents and recruitment procedure

The respondents in the study were employees that worked from home during the time of COVID-19 pandemic in Metro Manila, Philippines coming from different sectors. Only employees that use computers and have worked from home for at least 2 months were included in the survey.

Recruitment was done by sending emails to company administrators. The letter explained the objectives of the study and the rights of respondents. The anonymity and confidentiality of the data were also emphasized. An electronic copy of the questionnaire was also sent to the administrator. An ethics approval was received in 2020 (FAF.007.2019-2020. T2.GCOE) to administer the questionnaire.

Through convenience sampling, a total of 503 people responded to the online survey but only 352 responses were included in the analysis. Of the 503, 26 did not work from home, 18 did not use a computer, 59 started working from home prior to COVID-19 and 48 only answered the profile questions.

2.2 | Measures

The items on the questionnaire assessing workstation suitability were adapted from a web-based survey used in a study determining the characteristics and outcomes of telework[3]. Workstation suitability (WS) was assessed with the item "*The workstation is suitable for work*" measured on a 5-point Likert scale (1-strongly disagree to 5-strongly agree). Workstation ergonomic suitability (WES) was measured using the Computer Workstation Ergonomics: Self-Assessment Checklist shown in Table 1 [22]. Respondents were asked to assess their workstation and indicate with a "yes" if the condition applies to their workstation at home. The total number of "yes" answers to these nine questions was used to measure the variable "workstation ergonomic suitability" (WES).

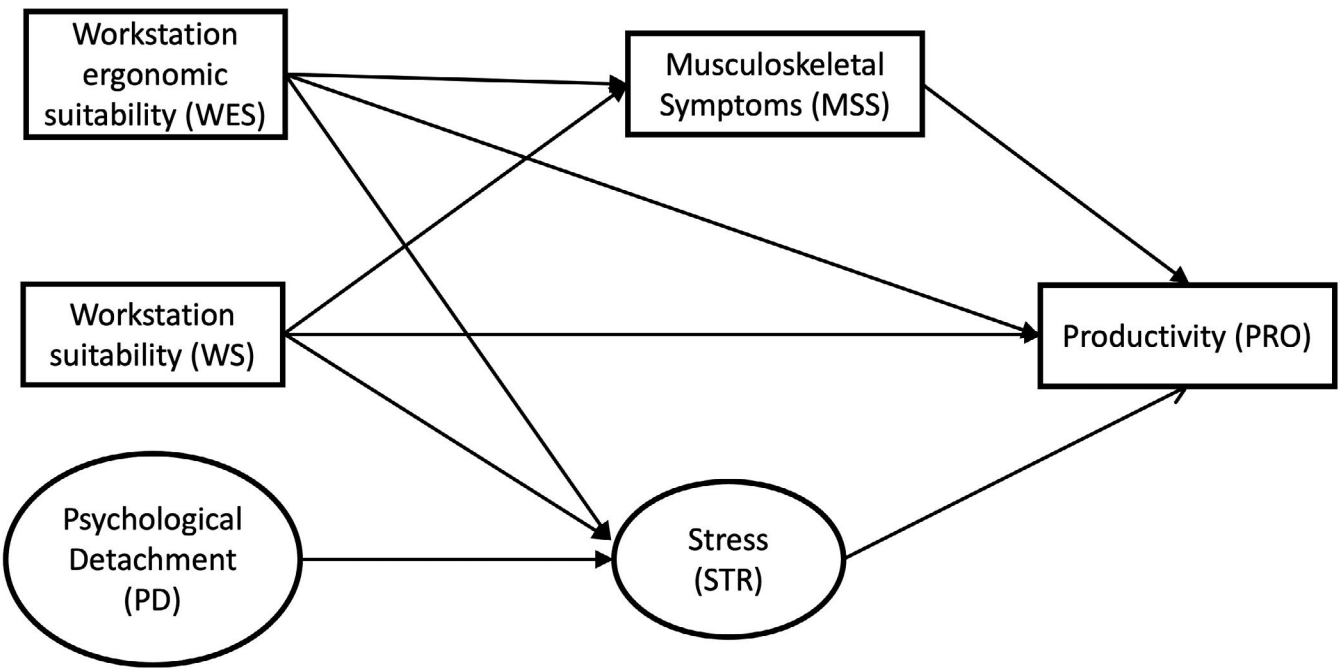

FIGURE 1 Hypothesized relationships between factors in the model

TABLE 1 Frequency distribution of responses for the computer workstation checklist

Questions	YES	%	NO	%
1. Is your chair height adjusted so your feet are flat on the floor (or on a footrest) with your back supported by the backrest?	181	51.4	171	48.6
2. With your back against the backrest, does the back of your knees extend at least 3 finger widths past the front edge of your chair seat?	167	47.4	185	52.6
3. Is your chair seat a comfortable width for you?	200	56.8	152	43.2
4. Is your armrest height approximately the same height as your keyboard height?	161	45.7	191	54.3
5. Is your keyboard comfortable to use?	306	86.9	46	13.1
6. Is your input device (eg computer mouse) positioned as close to your body as your keyboard?	281	79.8	71	20.2
7. Is the height of your input device (eg computer mouse) low enough so that your arms are relaxed at your sides?	231	65.6	121	34.4
8. Is your monitor positioned in front of you, so you do not have to turn your head or neck to view it?	304	86.4	48	13.6
9. Is your computer table large enough to accommodate work objects, and allow you to write or perform tasks other than computer use?	197	56.0	155	44.0

The psychological detachment (PD) items in the Recovery Experience Questionnaire were used to measure psychological detachment in this study[18]. The scale showed good psychometric properties[23]. Four items were used: *"I forget about work after working hours," "I don't think about work at all outside working hours," "I distance myself from work", and "I get a break from the demands of work."* The items were measured from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating higher psychological detachment.

The Nordic Musculoskeletal Questionnaire was utilized to assess the MSS experienced by the respondents. It is a validated tool that detects symptoms in the neck, back, shoulders, and extremities for a certain period of time[24]. Respondents were asked the question: "*While working at home, have you at any time had ache, pain, discomfort, numbness in*..." The following parts of the body were listed to be checked: shoulders, elbows, wrists/hands, upper back, lower back, one or both hips/thighs, one or both knees, one or both ankles/feet. MSS was measured by counting the number of affected body parts. Each "yes" answer is counted as one and two for both parts such as in elbow, wrist, and shoulders.

The four items for stress (STR) were taken from the subscale in the second version of the Copenhagen Psychosocial Questionnaire—COPSOQ II [25]. The following aspects of STR were considered: problems relaxing, irritability, tension, and stress. Items were scored on a 5-point Likert scale ranging from 1 (never) to 5 (always). Research supports the psychometric qualities of the scale [23]. Productivity (PRO) was measured using one item, "*I feel productive in doing my work*" measured from 1 (strongly disagree) to 5 (strongly agree). This question was adapted from a web-based survey determining the characteristics and outcomes of telework [3].

2.3 | Statistical analysis

Descriptive statistics was used to summarize the demographic characteristics of the respondents. Frequency and proportion were used for categorical variables. Shapiro-Wilk test was used to determine the normality distribution of continuous variables. Continuous quantitative data that met the normality assumption was summarized using mean and standard deviation (*SD*), while those that did not were described using median and range. All valid data were included in the analysis. STATA 15.0 was used for descriptive data analysis.

PD and STR were considered latent variables as they are estimated using various indicators and are not directly measurable. Structural equation modeling (SEM) was used to assess the relationships between these two variables and the relationships of other observed variables.

The path from STR to PRO was analyzed considering the age and having a spouse using multigroup analysis. Two age groups were considered following Yang et al.'s [20] classification: 21-30 (n = 135) and 31-65 (n = 217) considered as young and older employees. There are 158 participants with spouses and 194 without spouses. SEM models were assessed using a number of goodness of fit (GOF) statistics

such as root mean square error of approximation (RMSEA), Tucker-Lewis Index (TLI), and comparative fit index (CFI). Model fit was considered to be good if: RMSEA < 0.05, TLI and CFI ≥ 0.90.

Data preparation and all statistical analyses for the SEM were done with SPSS 21.0 (IBM Corp.: Armonk, NY, USA) and AMOS 21.0 (IBM Corp.: Armonk, NY, USA).

3 | RESULTS

3.1 | Descriptive statistics

The demographic profile of respondents is shown in Table 2. There are a total of 352 respondents with a median age of 33.5 years, and the ages ranged from 21 years to 64 years. More than half of the respondents are female (61.93%), and are single by marital status (59.66%).

The median number of people in the household is five people, up to a maximum of 18 people. The median number of children less than 18 years old is one child, up to a maximum of 7 children. Nearly half (44.89%) are living with a partner or spouse. There are 21.59% of respondents who have had a previously diagnosed co-morbidity or illness while 7.67% are smokers.

The most common fields of work by our respondents are in education (37.50%), government administration (11.36%), and information technology (9.09%). Most of the respondents belong to the non-managerial level (51.99%) followed by lower middle management (21.59%), semi-managerial (13.35%), upper middle (10.80%) and top management (2.27%) levels.

In assessing the actual ergonomic suitability of their workstation, the respondents answered positively or negatively to the nine questions listed in Table 1. Respondents claimed that most of them have their keyboards, monitors, and mouse in the positions indicated. The items which most of them answered negatively are on the armrest having the same height as the keyboard, back against backrest and knees extending past their seat, and chair height.

Table 3 presents the areas in the body where MSS are most experienced by the respondents while working from home. Most of them reported pain and other symptoms at the lower back (74.1%) followed by the neck (67.9%), then the shoulders (67.3%). These MSS are usually associated with prolonged awkward postures. They indicated that they least felt discomfort in their ankles and feet (22.6%) which is consistent with sitting most of the time.

The mean MSS score is 5.17 ($SD = 3.11$). Analyzing age with the MSS scores shows that a third (33.8%) of the respondents got 3-5 points for MSS comprising mostly (41.2%) of respondents aged 21-30 years. For those who got the highest scores of 9-12 points, most (45.8%) of them belong to the

TABLE 2 Demographic profile of survey respondents ($n = 352$)

Demographic characteristic		%
Age, years	Median: 33; Range: 21 – 64	
21-30	135	38.35%
31-40	97	27.56%
>40	120	34.09%
Gender		
Female	218	61.93%
Male	134	38.07%
Length of working from home, months	Median: 7; Range: 1 – 10	
Less than six (6) months	71	20.17%
At least six (6) months	281	79.83%
Marital status		
Single	210	59.66%
Married	131	37.22%
Separated/Divorced	7	1.99%
Widowed	4	1.14%
Number of people in the household	Median: 5; Range: 1 – 18	
1-5	239	67.90%
6-10	103	29.26%
>10	10	2.84%
Number of children less than 18 in the household	Median: 1; Range: 0 – 7	
0	165	46.88%
1-3	177	50.28%
4-7	10	2.84%
Living with a partner/spouse	158	44.89%
Smoker	27	7.67%
Has any diagnosed illness	76	21.59%
Works for the government	86	24.43%
Industry		
Education	132	37.50%
Government administration/ relations	40	11.36%
Information technology	32	9.09%
Human resource	29	8.24%
Banking and finance	16	4.55%
Manufacturing	16	4.55%
Health and Fitness	11	3.13%
Business process outsourcing	7	1.99%
Marketing and sales	7	1.99%
Intellectual property	7	1.99%
Research	6	1.70%
Others	49	13.92%

(Continues)

TABLE 2 (Continued)

Demographic characteristic		%
Occupational level		
Top management	8	2.27%
Upper middle management	38	10.80%
Lower middle management	76	21.59%
Semi-managerial	47	13.35%
Non-managerial	183	51.99%

TABLE 3 Frequency distribution of MSSs experienced by respondents while WFH

While working at home, have you at any time had ache, pain, discomfort, numbness in:		Frequency	%
Neck	**No**	**113**	**32.1**
	Yes	239	67.9
Shoulders	No	115	32.7
	Right or left shoulder	88	25.0
	Both sides of shoulder	149	42.3
Elbow	No	251	71.3
	Right or left elbow	62	17.6
	Both elbows	39	11.1
Wrist	No	131	37.2
	Right or left wrist	165	46.9
	Both wrists	56	15.9
Upper back	No	152	43.2
	Yes	200	56.3
Lower back	No	91	25.9
	Yes	261	74.1
Hips/Thighs (one or both)	No	213	60.5
	Yes	139	39.5
Knee (one or both)	No	251	71.3
	Yes	101	28.7
Ankles/Feet (one or both)	No	276	78.4
	Yes	76	21.6

>40 age group but there are more from the 21-30 age group (35.6%) than from the 31-40 age group (18.6%). The latter age group seemed to have adopted effective ways of reducing their experience of MSS.

Table 4 shows the means and *SD* for PD, STR, and PRO. With scores ranging from 1 to 5, almost all the items for PD were midway, except for the item "I get a break from the demands of work." As for the measures of STR, all items registered a mean of more than 3, tending toward the higher STR level. PRO had the highest mean (3.87) and lowest variability (0.81) among the three variables. The respondents claimed that they are relatively productive while working from home.

3.2 | Structural equation model

Structural equation modeling was used to analyze the relationships among the variables after multivariate normality of data was established. Internal consistency of the PD and STR scales was assessed. Cronbach's alphas computed were 0.792 for PD and 0.864 for STR indicating acceptable internal consistency.

Path coefficients calculated indicate the strength of relationship between two variables in the model. The final model with the path weights are shown in Figure 2. Ergonomic suitability of the workstation (WES) has a significant effect on MSS ($\beta = -0.31$, $SE = 0.06$; $p < .001$) while the perceived workstation suitability (WS) has almost no significant effect ($\beta = -0.10$, $SE = 0.14$; $p = .06$) on MSS. This implies that a workstation that is ergonomically adjusted to the user impacts MSS rather than a subjective assessment of workstation suitability. However, in terms of PRO, the effect of WES ($\beta = 0.06$, $SE = 0.02$; $p = .29$) is insignificant compared to WS ($\beta = 0.31$, $SE = 0.04$; $p < .01$). Both WS ($\beta = -0.24$, $SE = 0.03$; $p < .001$) and WES ($\beta = -0.18$, $SE = 0.01$; $p < .01$) inversely affect STR. Respondents with suitable workstations have lower stress levels. MSS does not have a significant effect on PROD ($\beta = -0.01$, $SE = 0.01$; $p = .92$). PD has a significant negative effect on STR ($\beta = -0.31$, $SE = 0.07$; $p < .001$) and STR has a significant negative effect on PROD ($\beta = -0.13$, $SE = 0.09$; $p = .03$). The goodness-of-fit of the structural equation model was measured using RMSEA index = 0.06, comparative fit index (CFI) = 0.96,

TABLE 4 Means and *SD* for Questions on PD, STR, and PRO

PD	MEAN	*SD*
I forget about work after working hours	2.54	1.15
I don't think about work at all outside working hours	2.35	1.08
I distance myself from work.	2.54	1.05
I get a break from the demands of work	3.39	1.06
STR		
How often have you had problems relaxing?	3.22	0.89
How often have you been irritable?	3.02	0.88
How often have you been tense?	3.13	0.96
How often have you been stressed?	3.38	1.00
PRO - *I feel productive in doing my work*	3.87	0.81

PD, psychological detachment; STR, stress; PRO, productivity.

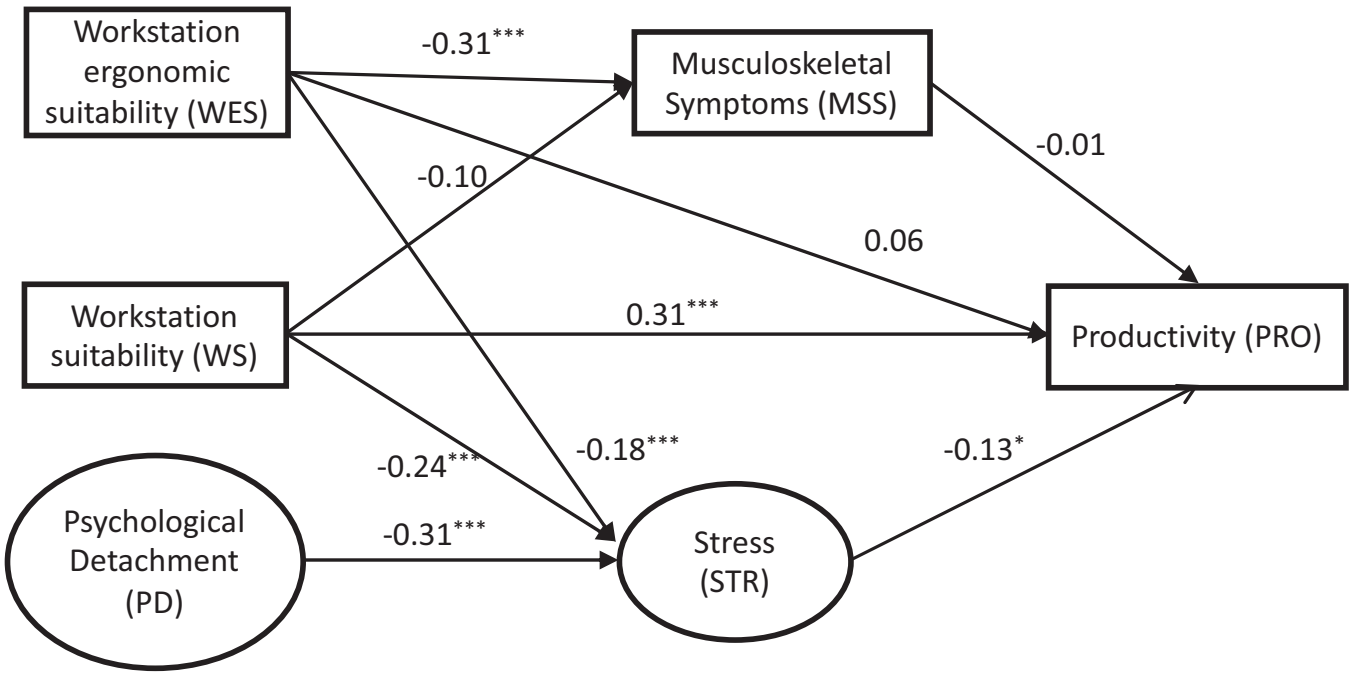

FIGURE 2 Final structural equation model with standardized path weights (***$p < .001$, *$p < .05$)

and Tucker-Lewis index = 0.95, all of which indicate good fit.

The total effect of WS to PRO is 0.34 which is much higher than WES at 0.06. The standardized total effect of PD to PRO is 0.04. All direct effects are shown in the path diagram in Figure 2.

Multigroup analyses conducted showed that STR only affects the PRO of the young ($\beta = -0.19$, $SE = 0.13$; $p < .05$) and not older participants ($\beta = -0.05$, $SE = 0.12$; $p = .48$). It also significantly affects those without spouses ($\beta = -0.14$, $SE = 0.10$; $p < .05$) and not those with spouses ($\beta = -0.1$, $SE = 0.10$; $p = .14$).

4 | DISCUSSION

Majority of the respondents reported that their workstations did not meet ergonomic requirements particularly the chairs that they used. A mismatch in the dimensions of the chair impairs the ability of the postural muscles to support the body properly and can lead to abnormal strain of the musculoskeletal system. Prolonged sitting at suboptimal workstations which is common in WFH set-up is associated with MSS[12].

The most commonly affected body parts with MSS as reported by the respondents are the lower back, neck, and the shoulders. These MSS symptoms are exacerbated by the limited physical activity during the COVID19 confinement mainly brought about by computer-related work [26]. Low back pain is specifically related to low physical activity[27].

Increased employee productivity during WFH is one of the most important arguments for organizations considering the introduction of WFH as a work arrangement [3,28]. Respondents in the study reported that they are productive while working from home. This is in contrast with a study done in Japan during the pandemic which showed that the subjective productivity of employees working from home is on average 30-40% lower than that at the workplace[29]. Significant differences exist in productivity depending on the industry, occupation, and educational background.

PRO is significantly affected by WS but not by WES. The greater the perception of workstation suitability, the higher the perceived PRO of respondents. It can be reasonably assumed that ergonomic adjustment of workstation is a component of the larger construct of workstation suitability. Workstation suitability is affected by environmental and situational variables whereas WES only considers adjustability of office furniture or the placement of computer accessories in relation to the body. Unlike WES, the variable WS is affected by ambient noise, temperature, and illumination of the area. The privacy of the area can also be a concern as isolation from the household crowd can help an employee focus on work. The kitchen and living room are constantly used as alternative workspaces by people working from home. Working in these common areas causes many work interruptions that can decrease PRO[7].

WES significantly correlates with MSS which was not the case for WS. Considering that WES specifically measured the ergonomic position of the body in relation to the furniture and work apparatus, for example, computer and its accessories, WES logically affects MSS. In contrast, WS purportedly encompasses the wider context of suitability as previously discussed.

Both WS and WES significantly contribute to employee STR levels. Respondents with ergonomically adjusted and suitable workstations experience less tension, irritability, and problems in relaxation. Employees living with school children or extended families may have limited workspaces because of the need to share space during working hours. They may have to switch desks or locations so set up time is needed. A person using a dining table for instance might have to transfer to another place during meal times. Such arrangements can cause irritation and tension especially if there is a need to meet an urgent deadline.

The need to engage in online meetings without a suitable workstation can also be a source of tension and STR. It can sometimes be difficult to find a spot at home that is quiet and free of clutter especially for those with small children.

PD implies not thinking about work or doing work-related duties at home[18]. Respondents reported that they have difficulty in taking a break while WFH. This can be due to the fact that employees can have difficulty mentally distancing themselves from work during off-job time due to increasing use of communication technologies such as e-mail, cell phone, etc. These conditions can lead to possible compromise of work-life balance due to blurred boundaries between work and private lives in a WFH set-up [30].

Relatively high levels of STR have been reported by the respondents while at WFH. This is consistent with studies indicating that working at home is associated with a higher probability of having unpleasant feelings or stress relative to working in the workplace. Working at home has negative or positive impacts, depending on various factors such as the demands of the home environment, level of organizational support, and social connections external to work[31].

PD showed significant inverse correlation with STR. This is consistent with previous studies where a greater psychological detachment results in decreased stress. Mental health improved when psychological detachment increased[32]. Furthermore, higher levels of psychological detachment reduced the negative relationship between physical job demands and depression, and between emotional resources and depression[33]. Thus, it has been shown that psychologically distancing oneself from work contributes to mental well-being of employees. In turn, less stress brings about higher productivity.

The multigroup analyses conducted showed that STR and PRO showed significant inverse relationships only among those aged 21-30. There is a healthy level of STR, eustress, that increases PRO. Young health workers in China, for instance, were able to manage their productivity despite stress because they have learned how to live with it[20]. However, high levels of STR actually reduces PRO, which was shown in the lowest age group. Young professionals may feel the need to prove themselves at work with the pressure to climb the corporate ladder, thus increasing stress levels. This may not hold true for the older age groups in this study because they are the ones occupy managerial positions. Thus, they may have learned in time to cope with high levels of STR and still be productive.

Comparing those with and without spouses, the inverse relationship between STR and PRO was significant only for those without a spouse. Higher levels of STR resulting in lower PRO holds true for the general population. This may not necessarily be applicable to those living with a spouse because the spouse may alleviate STR. People without spouses do not have anyone to share the burden of economic and family responsibilities, thus increasing their stress levels[20]. This difficulty in managing stress can affect productivity at work.

This research is subject to several limitations. First, there is only one measure of productivity and its reliability has not been validated in previous studies. The question used, however, is straightforward and less likely to be misinterpreted. Second, the convenience sampling yielded about a third of our respondents consisting of employees from educational institutions. Future study on telecommuting can consider recruiting more participants from industries that heavily use computers such as BPO and information technology.

5 | CONCLUSION

This study indicates that those working from home have ergonomic issues with their workstations. It further differentiates the construct of workstation suitability and ergonomic suitability and its effects on MSS, stress, and productivity. MSS are most commonly reported on the lower back, neck, and shoulders. Moreover, those engaged in WFH have difficulty in taking a break from their tasks and reported high levels of stress but are relatively productive.

Workstation ergonomic suitability has an insignificant effect on productivity compared to perceived workstation suitability. MSS do not have a significant effect on productivity while stress has a significant negative effect. Psychological detachment has a small total effect on productivity. Multigroup analyses showed that stress only affects the productivity of the young group and those without spouses.

These findings will serve as baseline data for policy makers, employers, and employees on the barriers and facilitators of health and productivity in a WFH setting. These will facilitate formulation of specific interventions that will address workstation suitability issues that can reduce MSS, stress, and promote productivity. Policy makers or concerned agencies should develop guidelines for employers in setting up a healthy working environment at home. Employers should provide guidelines, appropriate equipment, and training that will help employees cope with the challenges of working from home. Employees will benefit from these interventions

by preventing MSS, stress and remain productive while at home during the pandemic.

CONFLICT OF INTEREST

Authors declare no conflict of interests for this article.

DISCLOSURES

The Research Ethics Committee of De La Salle University (application number: FAF.007.2019-2020.T2.GCOE) reviewed and approved the aims and procedures of this study.

AUTHOR CONTRIBUTIONS

All authors reviewed relevant literature, conceptualized and conducted the research, and wrote the article. RS wrote the introduction and research method, VFC wrote the objectives and conclusion, LMT wrote the significance of the study. For results and discussion, VFC wrote the sociodemographic data analysis as well as on MSS and WS. LMT wrote the descriptive analysis and the discussions on STR, PD and the multigroup analyses, RS wrote the result and discussion of SEM.

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