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SEM Brief 8: Physical and Mental Health

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Main conclusion: Better Work improves physical and mental health. The main treatment channels are through reduction in work stress (*Dizzy Ache Injured Worry Fatigue Frustrated*), communication and problem solving (*comfort seeking help from supervisor, HR, factory committee, union, suggestion box*), reduction in verbal abuse and reduction in discrimination in promotions.

The analysis to this point has focused on how Better Work impacts personality traits of workers and working conditions. We now turn to understand how working conditions, in turn, affect workers in terms of mental and physical health.

We consider first how Better Work affects physical health. Participants are asked to rate their overall health on a six-point scale. We then ask workers how often they feel sad or depressed rated on a five-point scale. This item had been shown to be a good summary measure of mental health.

1. Reduced Form

Consider first, the impact of Better Work on the variables in the theoretical model. Reduced form treatment effects are reported in Table 8.1. Note first that workers in Better Work factories report better health ($b=0.0057$) and less sadness and depression ($b=-0.12$).

As we have seen elsewhere, Better Work reduces work stress ($b=-0.16$), strengthens formal representation channels ($b=0.086$), improves communication and problem solving ($b=0.093$), reduces hunger ($b=-0.068$), increases the probability that promotions are based on job performance ($b=0.055$), reduces verbal abuse ($b=0.16$), reduces the occurrence of uncomfortable temperatures ($b=-0.12$), and reduces the length of the workweek ($b=-1.4$).

2. Theory

Our next question is which of these Better Work treatment channels in turn improves health and reduces sadness. Test of the theory is presented in Table 8.2. For each outcome variable, we test two versions of the theoretical model. Generally, the statistical significance of the Better Work treatment variable disappears once we control possible mediators, indicating that our theory has identified the main treatment channels for Better Work in terms of its impact on mental and physical health.

Note first, that work stress worsens health and contributes to depression in both versions of the theoretical model. The impact on sadness is particularly pronounced. Each one unit increase in work stress is associated with a 0.57 unit increase in sadness. The extent to which workers feel comfortable seeking help from supervisors, HR, the worker committee or the union is also strongly correlated with better health and less depression. Each one unit increase in comfort seeking help improves health by about 0.18 and reduces sadness by 0.10.

Discrimination in employment is also strongly predictive of physical and mental health. Workers who perceive unfair obstacles to promotion also report more sadness. Concomitantly, workers who believe that performance is based on work performance report better health.

Verbal abuse is also an important determinant of mental and physical health. For each one unit increase in the frequency with which supervisors yelled at workers, physical health declined by 0.067 and mental health deteriorated by 0.092.

Finally, pay, the length of the work week and uncomfortably hot or cold temperatures play a role in sadness and depression. The higher pay, the shorter the work week and the less frequently the factory is too hot or too cold the less frequently workers report sadness and depression.

3. Simultaneous Equation Modeling (SEM)

We now turn to estimate the theoretical model as a set of simultaneous equations. Using SEM analysis allows us to determine specifically whether the variation in the mediating variables driven by Better Work has a downstream effect on mental and physical health.

Results from the physical health SEM are reported in Table 8.3. Note first, that the Better Work treatment variable is no longer significant in explaining worker health. Such an outcome indicates that we have captured the treatment effect with the mediating variables.

Cells that are highlighted in green are those for which the Better Work induced variation in a mediating variable was strong enough to induce a change in health. Cells that are highlighted in yellow identify statistically significant relationships that do not follow all from the Better Work intervention and Health as an outcome.

The principle treatment channels for Better Work to health are through reduction in work stress, improving communication and problem-solving and reduction in verbal abuse. Being in a Better Work factory reduces stress ($b=-0.16$), increases comfort seeking help ($b=0.094$) and reduces verbal abuse ($b=-0.16$). Work stress in turn worsens health ($b=-0.078$), comfort seeking help improves health ($b=0.19$) and verbal abuse worsens health ($b=0.067$).

There appears to be another possible channel through the promotion process. In the SEM, Better Work reduces unfair obstacles to promotion ($b=-0.13$). Workers who believe that promotions are based on work performance, in turn, have better health ($b=0.080$).

Better Work also reduces the work week. However, workhours are not important in determining health.

We observe a similar pattern with mental health. Better Work reduces work stress ($b=-0.16$), improves communication and problem solving ($b=0.094$), reduces unfair obstacles to promotion ($b=-0.13$) and reduces verbal abuse ($b=-0.16$). All of these mediators in turn reduce sadness and depression. Sadness is increased by work stress ($b=0.57$), reduced by communication and

problem solving ($b=-0.092$), increased by unfair obstacles to promotion ($b=0.088$) and increased by verbal abuse ($b=0.092$). Sadness and depression are also reduced by increases in hourly pay, but Better Work does not act on that channel.

Data Construction

Thirsty

You are thirsty at work.

Hungry

You are hungry at work.

Obstacle Promotion

You faced an unfair obstacle getting promoted

Hot_Cold

Your factory is uncomfortably hot or cold

Promotion Performance

Promotions in my work unit are based on performance.

Injured

In the last three months, how often have you been injured because of your work?

Supervisor_Yell

A supervisor yells at a worker to work faster or for making a mistake.

Acceptable_Yell

In this factory, it's seen as acceptable for supervisors or managers to yell at workers who make mistakes or need to work faster.

Change_Behavior

I can change my life by changing my behavior.

Sad

How often do you feel sad or depressed?

Health

How is your overall health?

Female_Sup

Is your direct supervisor female or male? Your direct supervisor is the supervisor you interact with the most.

Work_Week

What days of the week do you usually work?

What time do you begin and end each day you usually work?

monthlywageUSD

How often are you paid?

How much did you receive the last time you were paid?

Bonus_Pay_USD

Did you receive a production bonus the last time you were paid?

If yes on production bonus: How much was your bonus the last time you were paid?

USD_Hour

monthlywageUSD/ Work_Week

Training

OT_After

Do you get paid for overtime work? Yes, after 8 or 9 hours of work.

Piece_Rate, Time_Rate

Do you get paid by the piece or by time?

Day_Off

How many weeks per month do you work on your day off/Sunday?

Training (a= 0.6779) 5-point agree scale

Applicable_Training Overall, the on-the-job training I receive is applicable to my job.

Training_Needs Overall, the training I receive on the job meets my needs.

Representation (a= 0.6703) Binary

Union Are you a member of union?

Factory_Union Which of the following do you have in your factory? Union

Factory_Bargaining Which of the following do you have in your factory? A collective bargaining agreement

Factory_Committee Which of the following do you have in your factory? Worker-manager committee

Help (a= 0.8239) 5-point comfort scale

Supervisor_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from Your supervisor

Coworker_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from A co-worker

HR_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from HR

Trade_Union_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from The trade union

Committee_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from A worker-manager committee

ComplaintBox_Help If you have a complaint or concern about work, how comfortable would you feel seeking help from Suggestion/Complaint box

Work Stress ($\alpha = 0.6676$) 5-point common scale

Dizzy In the last three months, how often have you felt dizzy or fainted at work?

Ache In the last three months, how often are you bothered by headache; backache or suffered from muscle stiffness?

Injured In the last three months, how often have you been injured because of your work?

Worry I often worry about finishing everything I have to do.

Fatigue I feel fatigued when I get up in the morning and have to face another day on the job.

Frustrated I feel frustrated by my job.

Demographic Controls

Age

Factory_Experience

i.Position

i.Education

Female

i.Married

Work_Experience

changed_jobs

Factory Characteristics

Factories_Nearby Are there other factories nearby where you could get another job?

Vietnam

bw_factory

Time Control

endline

Table 8.1 Reduced Form Treatment Effect

VARIABLES	(1) Health	(2) Sad	(3) Work Stress	(4) Represent	(5) Help	(6) Thirsty	(7) Hungry	(8) Obstacle Promotion	(9) Promotion Performance	(10) Supervisor Yell	(11) Hot Cold	(12) USD Hour	(13) Work Week
bw_factory	0.0571** (0.0230)	-0.122*** (0.0304)	-0.159*** (0.0244)	0.0859*** (0.0124)	0.0931*** (0.0286)	-0.0144 (0.0398)	-0.0678* (0.0365)	-0.132*** (0.0299)	0.0545** (0.0248)	-0.157*** (0.0369)	-0.115*** (0.0397)	0.0695 (0.247)	-1.392*** (0.357)
Constant	4.658*** (0.217)	1.871*** (0.285)	2.127*** (0.224)	0.669*** (0.113)	3.276*** (0.263)	2.822*** (0.349)	2.646*** (0.329)	1.716*** (0.273)	3.882*** (0.230)	2.520*** (0.341)	3.229*** (0.364)	-0.489 (2.317)	61.77*** (3.354)
Observations	6,065	6,043	5,939	4,478	4,441	6,059	6,058	5,782	5,847	5,975	6,035	5,906	6,037
Number of uniqueID	3,575	3,567	3,515	2,790	2,918	3,573	3,576	3,435	3,463	3,532	3,559	3,495	3,577

Random Effects Panel Estimator

Demographic, Country, Time Controls

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8.2 Theoretical Model

VARIABLES	(1) Health	(2) Health	(3) Sad	(4) Sad
bw_factory	0.0583** (0.0288)	0.0342 (0.0270)	0.000198 (0.0330)	0.0237 (0.0296)
Work_Stress	-0.0382** (0.0191)	-0.0528*** (0.0172)	0.568*** (0.0216)	0.565*** (0.0190)
Training	0.0713*** (0.0236)		-0.0252 (0.0267)	
Representation	-0.0525 (0.0420)		0.0348 (0.0477)	
Help	0.166*** (0.0176)	0.181*** (0.0151)	-0.0925*** (0.0199)	-0.0917*** (0.0167)
Thirsty	0.0277** (0.0139)	0.0311** (0.0125)	-0.0203 (0.0158)	-0.0245* (0.0138)
Hungry	-0.000867 (0.0155)	0.00551 (0.0140)	-0.0344** (0.0175)	-0.0310** (0.0155)
Obstacle_Promotion	-0.0232 (0.0157)	-0.0151 (0.0140)	0.0965*** (0.0177)	0.0877*** (0.0155)
Promotion_Performance	0.0661*** (0.0166)	0.0749*** (0.0149)	-0.0100 (0.0187)	-0.00939 (0.0165)
Supervisor_Yell	-0.0456*** (0.0127)	-0.0667*** (0.0114)	0.0826*** (0.0143)	0.0915*** (0.0126)
Hot_Cold	0.0109 (0.0117)	0.0245** (0.0106)	0.0290** (0.0132)	0.0256** (0.0118)
USD_Hour	0.00119 (0.00215)	0.00111 (0.00199)	-0.00965*** (0.00243)	-0.00809*** (0.00220)
Work_Week	0.000592 (0.00156)	0.00128 (0.00140)	-0.00359** (0.00177)	-0.00139 (0.00155)
Constant	3.734*** (0.330)	3.768*** (0.280)	0.769** (0.374)	0.352 (0.310)
Observations	3,412	4,253	3,410	4,250
Number of uniqueID	2,370	2,845	2,369	2,844

Random Effects Panel Estimator

Demographic, Country, Time Controls

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8.3 Physical Health SEM

VARIABLES	(1) Health	(2) Work Stress	(3) Help	(4) Thirsty	(5) Obstacle Promotion	(6) Promotion Performance	(7) Hungry	(8) Supervisor Yell	(9) Hot Cold	(10) USD Hour	(11) Work Week
bw_factory	0.0290 (0.0374)	-0.162*** (0.0622)	0.0939** (0.0476)	-0.00174 (0.0923)	-0.134*** (0.0489)	0.0531 (0.0381)	-0.0617 (0.0893)	-0.155* (0.0862)	-0.116 (0.105)	0.0695 (0.518)	-1.392** (0.616)
Work Stress	-0.0549* (0.0329)										
Help	0.183*** (0.0248)										
Thirsty	0.0320** (0.0143)										
Obstacle Promotion	-0.0147 (0.0196)										
Promotion Performance	0.0756*** (0.0133)										
Hungry	0.00578 (0.0223)										
Supervisor_Yell	-0.0671* (0.0373)										
Hot_Cold	0.0247 (0.0234)										
USD_Hour	0.000925 (0.00181)										
Work_Week	0.00143 (0.00122)										
Constant	3.746*** (0.337)	2.203*** (0.275)	3.247*** (0.181)	2.800*** (0.414)	1.733*** (0.349)	3.880*** (0.183)	2.708** *	2.551*** (0.407)	3.263** *	-0.489 (1.371)	61.77*** (4.477)
Observations	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068

Demographic, Country, Time Controls

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 8.3 Physical Health SEM

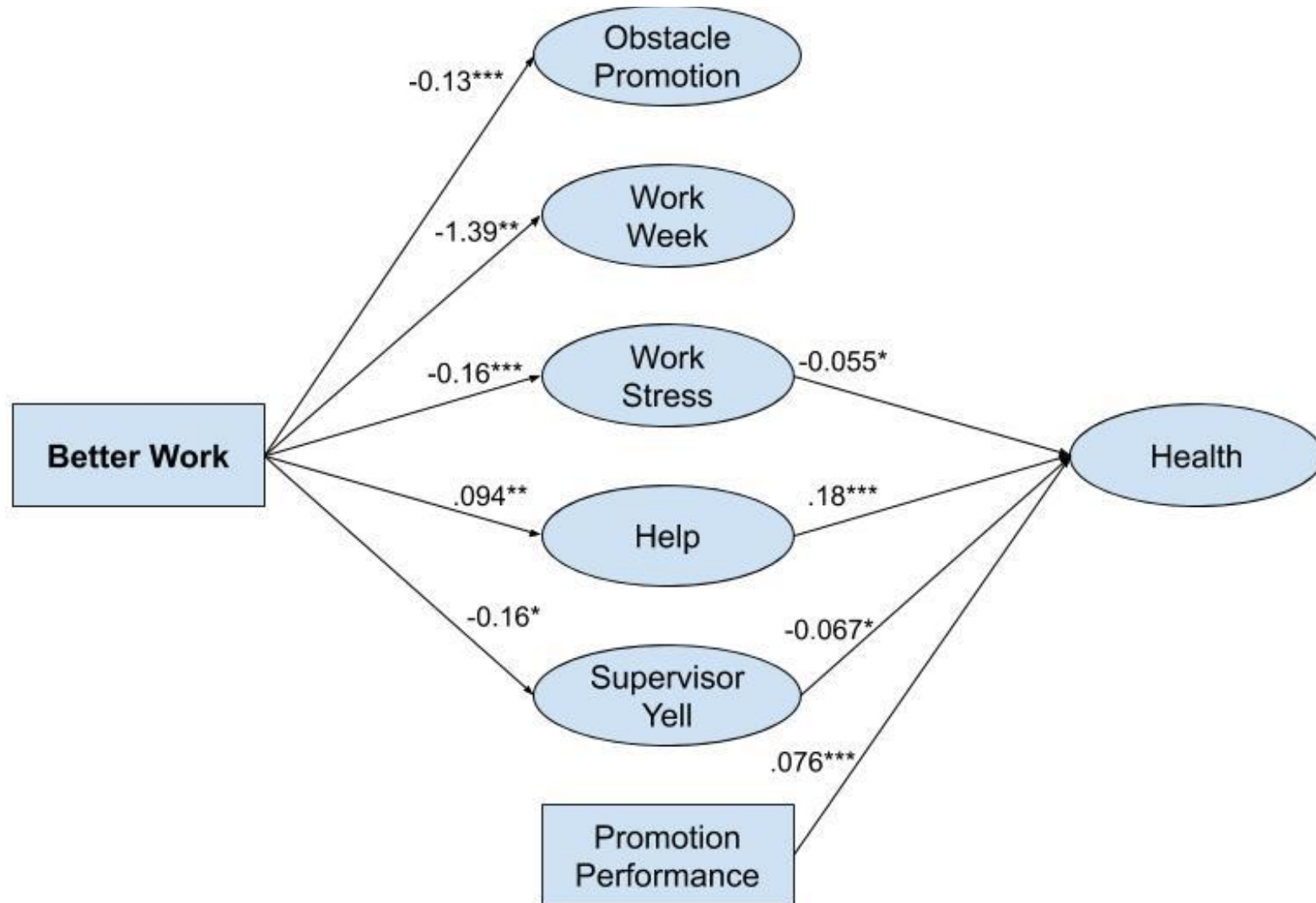


Table 8.4 Depression SEM

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
VARIABLES	Sad	Work Stress	Help	Thirsty	Obstacle Promotion	Promotion Performance	Hungry	Supervisor Yell	Hot Cold	USD Hour	Work Week
bw_factory	0.0237 (0.0385)	-0.162*** (0.0622)	0.0939** (0.0476)	-0.00174 (0.0923)	-0.134*** (0.0489)	0.0531 (0.0381)	-0.0617 (0.0893)	-0.155* (0.0862)	-0.116 (0.105)	0.0695 (0.518)	-1.392** (0.616)
Work Stress	0.565*** (0.0358)										
Help	-0.0916*** (0.0160)										
Thirsty	-0.0248* (0.0135)										
Obstacle Promotion	0.0875*** (0.0147)										
Promotion Performance	-0.00933 (0.0151)										
Hungry	-0.0308** (0.0147)										
Supervisor Yell	0.0916*** (0.0134)										
Hot Cold	0.0258 (0.0259)										
USD Hour	-0.00813*** (0.00275)										
Work Week	-0.00139 (0.00171)										
Constant	0.346 (0.264)	2.203*** (0.275)	3.247*** (0.181)	2.800*** (0.414)	1.733*** (0.349)	3.880*** (0.183)	2.708*** (0.256)	2.551*** (0.407)	3.263*** (0.440)	-0.489 (1.371)	61.77*** (4.477)
Observations	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068	6,068

Demographic, Country, Time Controls

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 8.4 Depression SEM

