Happiness Makes Workers More Productive: Evidence from Large-Scaled Experiments

Keiko Iwasaki, PhD
NLI Research Institute

What We Did

We examine the causal impact of happiness on productivity among workers using large-scaled web survey with two approaches; **Randomized Controlled Trial (RCT) & a "natural" experiment**. Results from both approaches support the causal relationship of happiness raising productivity of workers.

Introduction

There is an increasing interest among firms in investing in the happiness of their employees. However, causal evidence of happiness raising productivity is scarce.

【Exceptions】

Oswald et al. (2015) : Laboratory experiments among elite university students in UK.

Bellet et al. (2020) : Field evidence using weather as an exogenous impact to happiness among workers in a large enterprise in UK.

Further empirical studies needed to provide externality.

Data

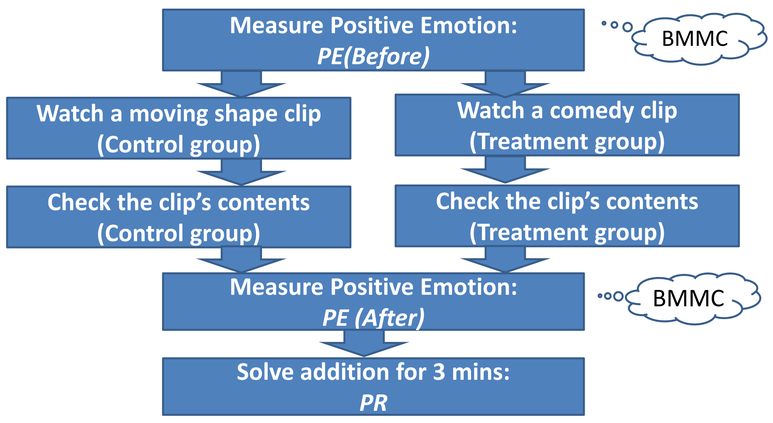
Table 1. General Information of our original web survey

Time	March 2019
Targeted respondents	Employees of firms or civil servants, age between 15 to 64. (Monitor members of Cross Marketing Inc.)
Sample volume	6,201 (Distribution following Census according to age, sex, and living area)
Survey structure	1. Questions on basic info (age, gender, occupation, income, life event etc) 2. RCT intervention: Watch a minute clip 3. Timed mathematical additions for monetary incentives.

Experiment 1 (RCT)

1. Research Design

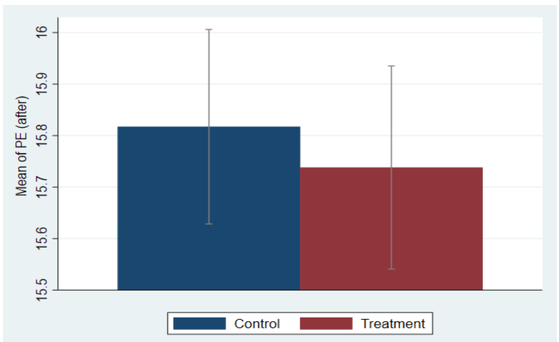
Figure1. RCT Steps



2. Analysis

(1) Overall failure of mood induction

Figure 2 . Treatment Effect on *PE* Using All Sample



Notes: n =3,932. 90 % confidence intervals presented.

Table2 . Treatment Effect on Positive Emotion (*PE*) Using All Sample

	(1)	(2)	(3)
Treatment	-0.0792	-0.0304	-0.0169
	(0.166)	(0.0920)	(0.0891)
PE (before)		0.835***	0.815***
		(0.0128)	(0.0115)
Other controls	No	No	Yes
n	3,932	3,932	3,932
adj. R-sq	-0.000	0.716	0.719

Notes: Dependent variable is *PE (after)*. Robust standard errors in parenthesis. The constant term is not presented. Other omitted variables from column (3) are Sex dummies, Age, Numeracy, Income dummies, Language grade dummies and Math grade dummies.
Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level

(2) Searching for areas where the treatment was effective

We attribute the failure of intervention from the well-known cultural difference in the sense of humor (Ura, 2018; Senuma, 2015) and further searched for the areas where the treatment was affective.

→ We found that among 47 prefectures in Japan, the treatment successfully raised positive emotion of **only those who live in Tokyo.**

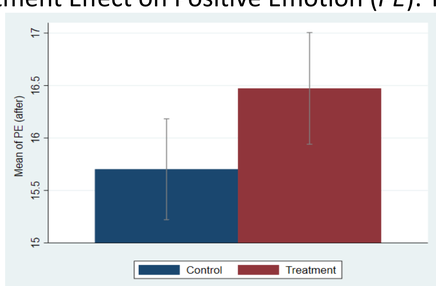
→ We further investigate the impact of the treatment of watching a comedy clip on productivity only using the information of those who live in Tokyo (n=494).

Experiment 1 (RCT) cont.

2. Analysis (cont.)

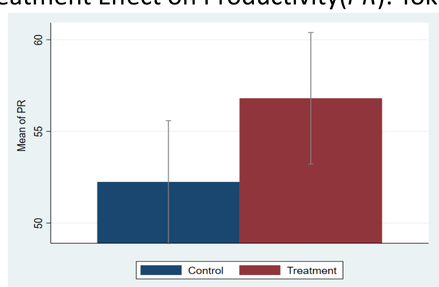
(3) Result : Treatment Effect (Tokyo)

Figure 3.
Treatment Effect on Positive Emotion (*PE*): Tokyo



Notes: n=494. 90 % confidence intervals presented.

Figure 4.
Treatment Effect on Productivity(*PR*): Tokyo



Notes: n=494. 90 % confidence intervals presented.

Table 3. Impact of Positive Emotion (PE) on Productivity (PR): Tokyo

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	PE(after)	PE(after)	PR	PR	PR
Model:	OLS	OLS	OLS	OLS	2SLS
Treatment	0.771*	0.573**	4.560+	6.043**	
	(0.435)	(0.240)	(2.977)	(2.615)	
PE (after)					10.54*
					(6.183)
PE (before)		0.822***		-0.961***	-9.624*
		(0.0376)		(0.276)	(5.287)
Other control variables	No	Yes	No	Yes	Yes
N	494	494	494	494	494
adj. R-sq	0.004	0.726	0.003	0.255	-0.408
KPW F statistic (Maximal IV size)	-	-	-	-	5.7(<25%)

Notes: Robust standard errors in parenthesis. The constant term is not presented. Other omitted variables from column (2), (4) and (5) are Sex dummies, Age, Numeracy, Income dummies, Language grade dummies and Math grade dummies. Column (2) is the first stage estimation results of column (5). +Significant at the 15% level * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level

Fig 1 and (1) & (2) of Table 3 → Treatment raised PE of respondents from Tokyo.
Fig 2 and (3) & (4) of Table 3→ Treatment raised PR of residents from Tokyo.
(5) is a 2SLS estimation result (Treatment as IV of endogenous variable of PE).
Notes) Prior to estimation, balancing test conducted and random assignment of the treatment is confirmed.
Positive emotion is measured by BMMC measure and productivity is measured by the number of correct answers from 3 mins addition.

Experiment 2 ("Natural" Experiment)

1. Research Design

Experiment 2 tests the impact of relatively long-term happiness status using real-life negative shocks (*Sad event*) as an exogenous treatment.

Sad event : dummy=1 if one experience death or serious illness of the spouse
Happiness : (11: Very happy…1: Miserable)
PR *:* Productivity (No of correct answers of 3 mins mathematical addition)

2. Impact of *Sad Event*

Figure 5.
Treatment Effect on Positive Emotion (*PE*)

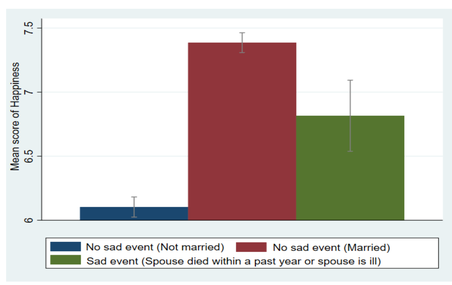


Figure 6.
Treatment Effect on Positive Emotion (*PE*)

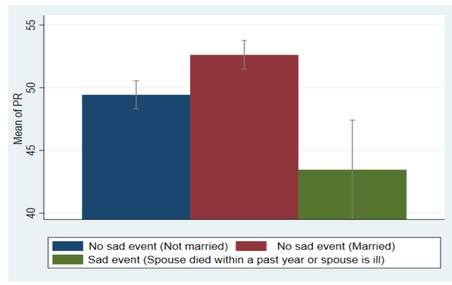


Table 4. Impact of Happiness on Productivity (PR)

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Happiness	Happiness	PR	PR	PR
Model:	OLS	OLS	OLS	OLS	2SLS
Sad event	-0.549***	-0.564***	-9.123***	-6.262***	
	(0.174)	(0.161)	(2.497)	(2.383)	
Happiness					11.10**
					(5.061)
Married	1.284***	1.124***	3.208***	1.206	-11.26**
	(0.0670)	(0.0684)	(0.973)	(0.957)	(5.599)
Other control variables	No	Yes	No	Yes	Yes
n	4,568	4,568	4,568	4,568	4,568
adj. R-sq	0.073	0.210	0.004	0.198	-0.274
KPW F statistic (Maximal IV size)	-	-	-	-	12.323 (<15%)

Notes: Robust standard errors in parenthesis. The constant term is not presented. Other omitted variables from column (2), (4) and (5) are Female dummy, Age, Numeracy, Income dummies, Language grade dummies and Math grade dummies. Column (2) is the first stage estimation results of column (5). +Significant at the 15% level * Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level

Fig 5 and (1) & (2) of Table 4 → Sad event lowers happiness level.
Fig 6 and (3) & (4) of Table 4→ Sad event lowers PR.
(5) is a 2SLS estimation result (Sad event as IV of endogenous variable of Happiness).
Notes) productivity is measured by the number of correct answers from 3 mins addition.

Remarks

1. Our RCT results show that a comedy clip raises productivity (in Tokyo) about **9 to 12 %**. Also, sad events lower productivity about **11 to 17 %**. The estimated magnitudes are consistent with the findings from Oswald et al. (2015).
2. To our knowledge, this is the first study providing a causal evidence of happiness raising productivity among workers using an RCT.

Contact

Keiko Iwasaki, NLI Research Institute
Email: kiwasaki@nli-research.co.jp

Reference

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