Workplace Experiences Predict Employee Productivity

TA

Claremont Graduate University

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Understanding what factors predict high levels of productivity toward employee goals has been of increased interest in previous decades. Greater emphasis has been placed on incorporating employee perception of the workplace environment, well-being, and the structuring of autonomy-supportive environments. Autonomy-supportive interventions have included allowing the employee to determine their personal break length during working hours. The present study sought to extend the literature through the investigation of how self-reported employee levels of enjoyment of break periods, desire to come to work, and self-chosen break length predict the percentage of time employees meet weekly productivity targets.

**Method**

**Participants**

Participants included 175 employees from a medium-sized business in Southern California.

**Measures**

**Desire.** Desire to come to work was measured using a multi-item self-report scale. Items were responded to using a 10-point scale (1-10), with higher scores indicating greater desire to come to work.

**Enjoy.** Enjoyment of break time periods was measured using a multi-item self-report scale. Items were responded to using a 10-point scale (1-10), with higher scores indicating greater enjoyment of their break.

**Length.** Length of break was measured using a reported average via the time clock system. Break periods could last up to one hour, measured in 1-minute increments (1-60).

**Productivity.** Productivity was measured using a percentage completion metric of weekly goals met, represented as a whole number on 100-point scale (0-100).

**Data Analysis**

Data was proposed to be assessed using multiple regression analyses. No hypotheses were specified, as such all analyses are exploratory, and all variables will be tested as predictors of productivity.

**Results**

Descriptive statistics can be found in Table 1. There were no missing data in the dataset, thus analysis proceeded with tests of assumptions. Descriptive statistics and inspection of histograms reveal that the data do not violate the assumption of univariate normality. Data appear to be normally distributed across all variables in the model. Further supporting this, the skew for all variables were less extreme than  3.00 (Enjoy = -0.29, Desire = -0.33, Length = -0.07, Productivity = -0.15) and kurtosis for all variables was less than  10.00 (Enjoy = 0.88, Desire = 0.60, Length = -0.43, Productivity = -0.38).

Scatterplots were run to assess the assumption of homoscedasticity. This assumption does not appear to be violated for the variables of enjoyment of the food, excitement about the opening, and happiness, as the residuals across each variable appears to be stable and normally distributed. Finally, the assumption of linearity appears to be met for only variables Enjoy (*r* = .34, *p* < .001) and Desire (*r* = .32, *p* <.001). Length was not significantly related to productivity and thus was not considered for analyses (*r* = .03, *p* = .659). Correlations may be found in Table 2.

Given that the analyses are exploratory in nature, multiple regression models were built utilizing strength of relationship for order. Enjoyment significantly predicted productivity, *F*(1 173) = 21.90, *p* < .001, *R2* = .11 (Model 1). Enjoyment explained 11% of the variance in productivity. A second model was tested, including desire as a second predictor (Model 2). Model 2 significantly predicted productivity, *F*(1, 172) = 17.40, *p* < .001, *R2* = .17. Enjoyment (β = 0.26, *p* <.001) and desire (β = 0.25, *p* <.001) were both significant predictors in the model and the model explained 17% of the variance in productivity. A model comparison of the models indicated that Model 2 explained significantly more variance than Model 1, *F*(1, 172) = 13.10, *p* < .001, *ΔR2* = .06. While length of break was not significantly correlated with productivity, Model 2 was compared to the saturated model with all predictors (Model 3). Model 3 significantly predicted productivity, *F*(3, 171) = 11.70, *p* < .001, *R2* = .17. However, a model comparison indicated that Model 3 did not explain significantly more variance than Model 2, *F*(1, 171) = 0.27, *p* = .602, *ΔR2* = .001. Thus, Model 2 was chosen as the best model given its parsimonious nature (Table 3).

**Discussion**

The present study sought to investigate predictors of employee productivity given the introduction of a self-chosen break intervention in a local business. While the length of employee breaks was not a significant predictor of meeting weekly goals, the enjoyment of that break period and desire to come to work were predictive. As employee enjoyment of their break and desire to come to work increased, this was related to an increase in productivity.

Future research is suggested to incorporate these variables as more comprehensive models of autonomy-supportive break inventions in the workplace are investigated. Length of break was not a significant predictor of productivity, which may be a limitation of the current study. The intervention was rooted in establishing the standard of an employee being able to choose their break period length, but this may be unrelated to productivity. Intervening variables may include, but are not limited to, frequency of break periods, effects of employee choice over time, and level of employment (e.g., entry level, management, etc.). Overall, the current study suggested that employee perceptions of work conditions and desire to come to work are positive indicators of productivity in the workplace.

Table 1

*Descriptive Statistics of Measures*

Variable Mean SD Median Skew Kurtosis

Enjoy 7.97 0.53 8.00 -0.29 0.88

Desire 7.58 0.73 7.60 -0.33 0.60

Length 38.70 5.49 38.50 -0.07 -0.43

Productivity 78.70 4.60 79.00 -0.15 -0.38

Table 2

*Correlation Matrix for Measures Related to Productivity*

Variable 1 2 3 4

1. Length - -.02 .02 .03

2. Enjoy - .29\*\*\* .34\*\*\*

3. Desire - .32\*\*\*

4. Productivity -

*Note.* \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

Table 3

*Hierarchical Regression Models Predicting Productivity*

Model Variables *B* β SE *R2*

Model 1 Enjoy 2.91 0.34\*\*\* 0.62 .11

Model 2 Enjoy 2.28 0.26\*\*\* 0.63 .17

Desire 1.57 0.25\*\*\* 0.46

Model 3 Enjoy 2.28 0.26\*\*\* 0.63 .17

Desire 1.56 0.10\*\*\* 0.46

Length 0.03 -0.10 0.05

*Note.*\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

Appendix

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title: "Untitled"

author: "MEK"

date: "2/4/2019"

output: html\_document

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```{r, echo=FALSE, results=FALSE, message=FALSE, cache=FALSE, warning=FALSE}

library(knitr); opts\_chunk$set(error=TRUE, cache=FALSE)

```

\*\*Prompt\*\*

A local business has implemented a new program to encourage employees to take more control over their workday. According to the program, employees are allowed to take their break at any point during the day for as long as they want between 1 and 60 minutes. As businesses do, they were wondering how this program may relate to productivity on a 1-100 scale. At the end of the first month, the business conducted a short survey which had all 175 employees report the average length of their break, enjoyment had during the break, and desire to come to work. The business employed you to investigate these factors and how they may relate to productivity.

\*\*Variables:\*\*

Length - numeric; length of break in minutes (range 1-60).

Enjoy - numeric; self-reported level of enjoyment of break period (scale average; range 1-10).

Desire - numeric; self-reported level of desire to come to work (scale average; range 1-10).

Product (Productivity) - numeric; percentage of time meeting weekly goals (range 1-100; represented as whole number).

```{r}

dat <- read.csv('https://www.dropbox.com/s/b7vnpku0c1sezb6/PSY.308c.DA1.csv?dl=1')

```

```{r}

# Descriptives

desc <- descriptives(data = dat,

vars = c('Enjoy', 'Desire', 'Length', 'Product'),

hist = TRUE,

sd = TRUE,

range = TRUE,

skew = TRUE,

kurt = TRUE)

desc

```

```{r}

# Scatterplots

plot(dat$Enjoy, dat$Product, abline(lm(dat$Product ~ dat$Enjoy)))

plot(dat$Desire, dat$Product, abline(lm(dat$Product ~ dat$Desire)))

plot(dat$Length, dat$Product, abline(lm(dat$Product ~ dat$Length)))

```

```{r}

# Correlation

cortable <- corrMatrix(data = dat,

vars = c('Enjoy', 'Desire', 'Length', 'Product'),

flag = TRUE)

cortable

```

```{r}

# Simple regression

model1 <- linReg(data = dat,

dep = 'Product',

covs = c('Enjoy'),

blocks = list('Enjoy'),

modelTest = TRUE,

stdEst = TRUE,

ci = TRUE,

ciWidth = 95)

model1

```

```{r}

# Multiple regression with comparison

model2 <- linReg(data = dat,

dep = 'Product',

covs = c('Enjoy', 'Desire'),

blocks = list(

list('Enjoy'),

list('Desire')),

modelTest = TRUE,

r2Adj = TRUE,

stdEst = TRUE,

ciStdEst = TRUE,

ciWidth = 95)

model2

```

```{r}

# Multiple regression with comparison

model3 <- linReg(data = dat,

dep = 'Product',

covs = c('Enjoy', 'Desire', 'Length'),

blocks = list(

list('Enjoy', 'Desire'),

list('Length')),

modelTest = TRUE,

r2Adj = TRUE,

stdEst = TRUE,

ciStdEst = TRUE,

ciWidth = 95)

model3

```