

Meta-Analytic Review of the Antecedents and Consequences of Employees' Psychological Well-being in Job Demand-Control-Support Model*

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〈Abstract〉

The study on employees' psychological well-being in the field of organizational behavior began when Hawthorne Research was developed in the 1930s; however, due to the lack of consensus of definition and measures for psychological well-being, there are not many empirical analyses of psychological well-being are available. This study aims to provide theoretical analysis of empirical studies regarding psychological well-being in the field of the Job Demand-Control-Support(JDCS) Model and conduct meta-analytic review to verify its influence. The meta-analysis include total of 32 studies and analyzed 127 correlations. The results indicate the variety of definitions and measures and prove validity of the JDCS Model. The relationships among demographic variables, such as age education and income, work-related variables, such as job autonomy and job satisfaction, and relationship-related variables, such as social support are analyzed. The paper include identified limitations in the research process as well as suggestions for future research.

*Key Words: Psychological Well-being, Meta-analysis, Job Demand-Control-Support Model

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I . Introduction

The history of the study of happiness began in ancient Greece. Aristotle said that the highest good for human beings is happiness (Eudaimonia), which is something that cannot be given by luck or nature but only achieved through hard work (Aristotle 1962). In utilitarian philosopher John Stuart Mill considered the greatest happiness for the greatest number of people to be the most laudable goal. Utilitarian philosophers regarded happiness as a measurable criterion rather than something abstract or philosophical (Velasquez & Velazquez 2002). In the 20th century, Maslow (1979) criticized the negative side of existing psychology and the lack of studies on the potentiality, achievement, hope, or happiness of human beings. The reason why there has been less study on happiness than on the negative psychological status about psychological weakness, misunderstanding, disease, or feeling guilty of human owed to the foundations of psychology initiated by Freud and Jung (Seligman 2002). In addition, the initial research purpose which was to overcome this pathological phenomenon is also considered another ground factor (Seligman 2004). During the mid-20th century, Seligman insisted that the positive side of human psychology needed to be studied with scientific methodology. In other words, internal motivation, positive emotion, hope, or happiness needed to be the subject of studies focused on finding the conditions that could stimulate commitment, trust, communication, or altruism. To promote such investigations, he established positive psychology as a new field of study.

Although constructs measured by the Index of Psychological Well-being by Berkman (1971) or General Health Questionnaire (GHQ) by Goldberg (1972) were identified in many different studies including "Mental Health" (Wright & Bonett 1992), "Health Complaint" (Makowska 1995), "Happiness" (Avey et al. 2010), "Psychological Well-Being" (Wright & Cropanzano 2000), and "Psychological Distress" (Barnett & Brennan 1995; Wright 2014), there is no widely accepted definition even in the field of

organizational behavior(Wright 2014). In other words, consolidation of existing studies is required and the work to elicit the general definition and measure can be successfully conducted through an analysis of the accumulated empirical studies to date. In practice, it is also important to pinpoint the antecedents and consequences of employees' happiness. More and more organizations are setting employee happiness as the primary goal of their organization(Luthans 2002), and they want to achieve organizational goals by promoting employee happiness. Therefore, it is necessary to grasp the psychological well-being of the employees in terms of their job characteristics. For this reason, this current study will walk through prior foundational studies in the field of organizational behavior and analyze major antecedents and consequences of psychological well-being via meta-analysis.

II. Theoretical Framework and Hypothesis Development

1. Perspectives on Well-being

The study of well-being in the field of organizational behavior began when Hawthorne research was developed by Elton in the 1930s, and work-related well-being became defined in terms of job satisfaction, while aspiration or autonomy competence became associated with psychological well-being. In particular, Wright(2014) compiled previous studies on well-being and divided the conceptual space of happiness into four perspectives: The first perspective is objective life condition. After the principle of utilitarianism was established, social philosophers saw happiness as a social setting or condition, such as wealth, health, or clean environment, instead of the emotions of an individual or an aggregation of perception(Powdthavee 2010). The second is Eudaimonic well-being. This perspective originated from the concept of eudaimonia articulated by Aristotle(Ryan & Deci 2001) and shares common ground

with Seligman(2002). He categorized living into “pleasant life,” “good life,” and “meaningful life,” The third perspective is satisfaction, which is to measure one’s own happiness through self-evaluation. Job satisfaction can be used to show organizational well-being(Kornhauser & Sharp 1932; Wright 2006). Diener(2006) mentioned “life satisfaction represents a report of how a respondent evaluates or appraises his or her life taken as a whole”. The fourth perspective is emotion-based well-being. Happy people have more positive feelings and are more outgoing and extraverted(Quick et al. 1997). Happiness can be measured by positive affectivity and negative affectivity(Watson et al. 1984; 1988) or by emotional exhaustion (Judge et al. 2001). The final viewpoint is psychological resource perspective. Some scholars identify well-beings as psychological resources for recovery from depression or burnout(Fava et al. 2017; Youssef Morgan & Luthans 2015). Psychological well-being is utilized as a resource to resist external stress, and employees with high psychological well-being easily recover from stress.

2. Definition of Psychological Well-being

There are many different definitions of psychological well-being, but the following three definitions are generally accepted. First, psychological well-being is a subjective experience and therefore cannot be measured by others but rather by degrees of one’s own happiness. Second, psychological well-being depends on emotions; that is, it is created by presence of positive emotions with absence of negative emotions(Houben et al. 2015). Third, psychological well-being is an overall evaluation of one’s own life(Nurius et al. 2015). It shows overall status rather than emotional fluctuation at certain point(Wright & Cropanzano 2004). Subjective well-being developed by Diener(1984) can be defined as “a broad category of phenomena that includes people’s emotional responses, domain satisfactions, and global judgments of life satisfaction” which can be divided into an affective component with positive and negative moods/affects and

a cognitive component, which can be measured by the difference between actual life and ideal life. In addition, psychological well-being considers actualization of growth potential of the individual at the same time. In this respect, according to self-determination theory (Ryan & Deci 2000), psychological well-being values psychological growth, integrity, and pursuing extrinsic and intrinsic goals (Gray et al. 2017).

With regard to The Job demand-control-support (JDCS) model focusing on this paper, psychological well-being has been mainly studied with the following three definitions. First, Ryff (1989) categorized psychological well-being into 6 dimensions: autonomy, environmental mastery, personal growth, life (work) relations, purpose in life (work), and self-acceptance. He grasped the psychological well-being with eudaimonic perspective. From this point of view, employees pursue self-realization through job conditions such as job demand-control-support. Second, Warr (1990) identified the psychological well-being as depression and anxiety. From this perspective, psychological well-being is state affect. Emotional changes occur according to job conditions, and when this emotion is stuck over a long period of time, the psychological well-being changes. Third, Goldberg (1972) defined psychological well-being in terms of employee mental health. Psychological well-being was considered high if there was no stress and a state of mental stability. In total, job condition such as demand, control and support greatly affect employees' self-realization, emotion and mental health. These constitute psychological well-being. Therefore, it is important to study the effect of job condition in the way of the JDCS model, thus that is the rationale for conditioning this study.

3. Measure of Psychological well-being

Table 1 shows measurement tools by included research paper. The most widely used measurement tool in the JDCS model is General Health Questionnaire (GHQ) of Goldberg (1972). This measurement method, which is for mental health, was mainly studied with job demand, autonomy,

performance, and job support. Second, Riff(1989)'s measurement tools were also widely used. This measuring tool, which divides psychological well-beings into six sub-dimension, was mainly studied with authenticity, autonomy and psychological capital. Third, Derogatis and Spencer(1982)'s survey questionnaire was also frequently used. A low stress condition was identified as high psychological well-being. It was studied with key variables of JDCS model such as job demand and control. In addition, Quality of Life Survey from Quinn and Shepard(1974) or Questionnaire from Welsman and Werman(1997) are also used for measuring psychological capital. Frequently used measurement tools such as GHQ and Ryff's measure have smaller measurement items than other tools and have a higher relationship with other study variables. There is also a clear distinction between each sub-dimension.

4 The Job Demand-Control(JDC) Model and Job Demand-Control-Support(JDCS) Model

Most research on psychological well-being in the field of organizational behavior was established based on the Job Demand-Control Model(Karasek 1979) or the Job Demand-Control-Support Model(Johnson & Hall 1988). The JDC model divided the factors that influence the cognition and perception of employees into the following two components: job demand and control. Job demand refers to the evaluation on workload that can be improved by time pressure or role conflict. Job control refers to the influence of employees on job activity so it is composed by skill discretion and decision authority and can be measured by decision latitude. According to the JDC model, the stress of employees decreases as job control increases while job demand decreases(Dicke et al. 2018). Having discretion authority can provide a buffer against stress created by demand. Karasek(1979) also mentioned the interaction effect between job control and demand. With social support, the negative effect of stress can also be decreased. In other words, psychological well-being

largely depends on job demand, control, and support(Mudrak et al. 2018). On the other hand, studies on health or well-being mainly focused on the influences of stress(Steptoe et al. 2000). Business-related as well as non-business-related behaviors deplete the cognitive resources of members(Hockey 1997). It is essential to have a restoration process in place to provide positive influences on individuals' well-being, and the long-term absence of a restoration process can result in psychological burnout, which is fatal to well-being(Maslach et al. 2001). When an employee reaches the state of psychological burnout, highly negative influences can be created such as weakening of diligence, decrease in job satisfaction, increase in turnover rate, or worsening of physical health. Therefore, such burnout needs to be prevented(Maslach & Jackson 1981). Burnout, especially, emotional exhaustion, is widely being used to measure psychological well-being(Holman et al. 2002).

III. Methods

1. Samples

Psychological well-being is widely referred to as a concept of handling the happiness of organization members. However, there are different ideas in terms of its definition and dimensions, rather than just general construct. Considering the happiness research studies in the field of psychology that are experimental and broad, and were in some cases performed nationwide, such studies in the field of organizational behavior are insufficient in terms of quality and quantity. Table 1, 2, and 3 list these studies and suggest future research by studying the current field through meta-analysis. Regarding the burnout often used as measurement of psychological well-being in the field of organizational behavior, antecedent and consequence have already been analyzed in an existing review paper(e.g. Cordes & Dougherty 1993) or meta-analysis(e.g. Alarcon

et al. 2009), therefore, this research did not include burnout in its meta-analysis of psychological well-being.

(Table 1) List of Included Studies, Measures and Variables(1)

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
1	Adelmann (1987)	Happiness(Bryant and Veroff 1984) / Self Confidence(Bryant & Veroff 1984)	Age / Education	Control / Income / Job Complexity	
2	Aryee & Stone(1996)	Quality of life (Quinn & Shepard 1974)		Coworker Support / Role Ambiguity / Role Conflict / Role Discretion / Role Novelty / Supervisor Support / Work Adjustment	
3	Ashleigh, Higgs, & Dulewicz (2012)	Presence of Meaning (Steiger et al. 2006)		Psychological Capital / Reliability and Integrity / Risk Aversion	
4	Avey, Luthans, Smith, & Palmer(2010)	PWB(Berkman 1971) / GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Age / Gender / Education	Psychological Capital	
5	Babajide & Akintayo (2011)	PWB(Welsman and Werman 1997)			Job commitment / Job satisfaction / Occupational Stress
6	Barnett & Brennan (1995)	Psychological distress (Derogatis & Spencer 1982)		Decision authority / Job Demand / Job security / Pay adequacy / Relations with supervisor / Role Discretion / Schedule control	
7	Brunetto, Teo, Shacklock, & Farr-Wharton (2012)	PWB(Brunetto, Farr-Wharton, & Shacklock 2012)		Emotional intelligence	Affective commitment / Employee engagement / Turnover intention / Job satisfaction

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
8	Chay(1993)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Age / Gende / Education	Control / Efficacy / Extraversion / Job Demand / Job satisfaction / Neuroticism / Role Discretion / Social Support	
9	Chung-Yan (2010)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Job satisfaction / Turnover intention		Job Autonomy / Job Complexity

〈Table 2〉 List of Included Studies, Measures and Variables(2)

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
10	Culbertson, Fullagar, & Mills(2010)	Ryff's Psychological Well-being		Efficacy / Hope / Resiliency / Optimism	
11	Daniels & Guppy(1994)	GHQ(Goldberg 1972; Goldberg & Hillier 1979) / Anxiety / Depression(Warr 1990)		Job Autonomy / Participation / Social Support / Social Support	
12	Fillion, Tremblay, Truchon, Cote, Struthers, & Dupuis(2007)	Emotional distress (Fillion et al. 2007)		Job Control / Job Demand	Job satisfaction
13	Fritz & Sonnentag (2006)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Age / Gender		Task performance
14	Gelsema, Van der Doef, Maes, & Verhoeven (2006)	Psychological distress (Derogatis & Spencer 1982)		Job Demand / Role Discretion / Job satisfaction / Social Support / Decision authority	
15	Garg & Rastogi(2009)	Ryff's Psychological Well-being		Overall Commitment	

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
16	Gilbreath & Benson(2004)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Age / Gender	Coworker Support / Home support / Supervisor Support	
17	Imamoglu & Beydogan (2011)	PWB((Ryff's PWB Scale 1989)		Job Autonomy	
18	Ippolito, Adler, Thomas, Litz, & Hölzl (2005)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)		Job control / Job Demand / Social support	
19	Kelloway, Turner, Barling, & Loughlin (2012)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)		Transformational leadership / Trust in leadership	
20	Lim & Tai(2014)	Psychological distress (Derogatis & Spencer 1982)		Core self-evaluation / Family incivility	Job Performance
23	McClenahan, Giles, & Mallett(2007)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)		Job control / Job Demand / Social support	Job satisfaction

<Table 3> List of Included Studies, Measures and Variables(3)

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
24	Nielsen, Randall, Yarker, & Brenner (2008)	Wellbeing (Nielsen et al. 2008)		Meaningful work / Opportunities for development / Role clarity / Transformational leadership	
25	Noblet, Rodwell, & McWilliams (2006)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)		Job control / Job Demand / Social support	Job satisfaction
26	Rathi(2009)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)		Total Quality of Work Life	
27	Tetrick & LaRocco (1987)	Anxiety(Warr 1990) Depression(Warr 1990)	Age	Control / Job satisfaction / Role Ambiguity / Role Conflict / Understanding	

No.	Author(Year)	Type of PWB(Measure)	Control	Antecedent	Consequences
28	Toor & Ofori(2009)	Ryff's Psychological Well-being		Authenticity / Awareness / Unbiased processing Behavior	
29	Vanhala,& Tuomi(2003)	GHQ(Goldberg 1972; Goldberg & Hillier 1979)	Age / Gender		Emotional Exhaustion / Job satisfaction
30	Wood, Braeken, & Niven(2013)	Anxiety(Warr 1990) Depression(Warr 1990)			Job satisfaction
31	Wright & Walton(2003)	PWB(Berkman 1971)	Age	Creativity	
32	Wright, Cropanzano & Bonett(2007)	PWB(Berkman 1971)	Gender / Tenure	Job satisfaction	Job performance

2. Identification and Selection of Studies

To organize prior empirical studies on psychological well-being, a literature search was performed using PsycINFO, ABI/Inform(ProQuest), PsycArticles(EBScost), JSTOR, Academic Search Complete, Business Source Complete, and ProQuest Dissertations and Theses. The search period was set up between 1800 and 2018, and search terms were Psychological well-being(well being, wellbeing), happiness(happy), and wellness. Searched articles were reviewed by the following criteria.

First, studies performed in organizational situations were used; thus, other happiness studies performed at the national level, as well as experimental studies or observation studies, were excluded. Second, only empirical studies showing the correlation and sample size required for meta-analysis were included. Therefore, review articles, theory articles, and research methodology articles were excluded. Third, only articles that focused on psychological well-being from an individual perspective were included, so studies conducted at the group or organization level were excluded. Lastly, studies on burnout or emotional exhaustion were excluded.

Based on the above selection criteria, 32 empirical articles were selected as our final meta-analysis database, and the total number of participants was 57,269.

3. Data Coding

Measurement used to measure psychological well-being was studied for each study. If a study showed full measure, the measure was coded. If a study showed partial measure or merely provided references, and the researcher claimed that he did not make any modifications, the measure was coded. When the researcher reported that he only used partial measure, individual contact was made to ask for full measure. Correlation between the independent variable and dependent variable was coded in this way. When there was a correlation table, coding was performed based on the table, while methods established by Lipsey and Wilson(2001) were used when no information was available. Also, a reliability check was performed to verify the reliability of the coding. Two researchers from the research team performed individual coding to check consensus, which resulted in a 98% match.

4. Meta-Analysis Approach

We performed meta-analysis following the procedures developed by Hunter and Schmidt(2004) and Hedges and colleagues(Borenstein et al. 2009). First, Fisher's z Transformation was performed on each effect size. Second, inverse variance weight(w) was calculated for each effect size. As inverse variance weight(w) is in inverse proportion to sample size of each effect size, thesis with large sample sizes were weighted less, while theses with small sample sizes were weighted more. Sampling error caused by sample size can be corrected through the weighting approach. Average effect size was calculated afterward, using SPSS Macro and Syntax developed by Lipsey and Wilson(2001). P value of Homogeneity

Test Score(Q) for each average effect size was calculated. In case of having $p < 0.05$, Null hypothesis that claims True dispersion is 0 was rejected, and random effect model result was presented by acknowledging each thesis is Heterogeneous.

IV. Results

1. Summary

Psychological well-being could be measured by happiness, psychological distress, anxiety depression, quality of life, self-confidence, the Index of Psychological Well-Being by Berkman(1971), or the General Health Questionnaire(Goldberg 1972; Goldberg & Hillier 1979).

〈Table 4〉 Meta-analytic Correlations with demographic variables

Psychological Well-Being	k	N	\bar{r}	95% CI	Q	p
Age						
Overall	8	2988	0.016**	(-0.076, 0.108)	41.001	0.000
GHQ	3	663	0.093	(0.017, 0.169)	0.281	0.869
Happiness	2	1142	-0.136**	(-0.316, 0.053)	10.707	0.001
Self Confidence	2	1142	0.035	(-0.023, 0.093)	0.712	0.399
PWB	1	41	0.200	-	-	-
Decision authority						
Psychological distress	3	1266	-0.228**	(-0.377, -0.067)	17.657	0.000
Education						
Overall	4	2284	0.212**	(0.107, 0.312)	20.549	0.000
Happiness	2	1142	0.125	(0.067, 0.182)	0.733	0.392
Self Confidence	2	1142	0.295	(0.241, 0.348)	1.672	0.196
Income						
Overall	4	2248	0.213**	(0.137, 0.288)	11.818	0.008
Happiness	2	1142	0.155	(0.098, 0.211)	2.419	0.120
Self Confidence	2	1142	0.270	(0.215, 0.323)	0.529	0.467
Psychological Capital						
Overall	4	1120	0.124**	(-0.302, 0.509)	164.755	0.000
GHQ	2	560	-0.255	(-0.331, -0.176)	0.143	0.705
PWB	2	560	0.473	(-0.405, 0.535)	0.006	0.938

Psychological Well-Being	k	N	\bar{r}	95% CI	Q	p
Social Support						
Overall	26	7133	-0.131**	(-0.204, -0.058)	249.32	0.000
Anxiety	4	976	-0.226	(-0.285, -0.166)	6.074	0.108
Depression	4	976	-0.321	(-0.376, -0.263)	3.396	0.335
GHQ	13	3547	-0.104**	(-0.198, -0.008)	96.084	0.000
Psychological distress	3	1266	-0.144*	(-0.241, -0.045)	6.558	0.038
Quality of life	2	368	0.315	(0.220, 0.405)	0.279	0.597

Note. k = number of studies; N = number of participants; \bar{r} = average effect size; CI = confidence interval; Q = homogeneity test score; p = p - value of the Q test result; GHQ = General Health Questionnaire; PWB = Berkman(1971)'s Psychological Well-Being

Table 4, 5, and 6 show the average effect between identity-related variables, such as age, education, income, and psychological capital; work-related variables, such as decision authority, job autonomy, job complexity, job control, job demands, job performance, job satisfaction, participation, and role discretion, and relationship-related variables, such as social support.

(Table 5) Meta-analytic Correlations with job-related variables

Psychological Well Being	k	N	\bar{r}	95% CI	Q	p
Job Autonomy						
Overall	8	2104	0.126**	(-0.037, 0.282)	70.944	0.000
Anxiety	2	488	0.205	(0.118, 0.289)	0.013	0.909
Depression	2	488	0.245	(0.160, 0.327)	0.669	0.413
GHQ	3	745	-0.010**	(-0.346, 0.328)	47.068	0.000
Job Complexity						
Overall	5	2541	0.107**	(0.020, 0.192)	19.361	0.001
Happiness	2	1142	0.090*	(-0.048, 0.225)	5.677	0.017
Self Confidence	2	1142	0.146**	(-0.034, 0.326)	10.769	0.001
Job Control						
Overall	17	5773	-0.049**	(-0.164, 0.068)	298.681	0.000
GHQ	7	2168	0.122**	(0.080, 0.163)	134.542	0.000
Happiness	2	1142	0.090	(0.032, 0.147)	1.849	0.174
Psychological distress	2	713	-0.213	(-0.282, -0.142)	3.147	0.076
Anxiety	2	304	-0.199	(-0.305, -0.088)	1.168	0.280
Depression	2	304	-0.283	(-0.383, -0.175)	0.381	0.537
Self Confidence	2	1142	0.255	(0.200, 0.309)	0.292	0.589

Psychological Well Being	k	N	\bar{r}	95% CI	Q	p
				Job Demands		
Overall	16	4133	0.162**	(0.024, 0.294)	292.463	0.000
Anxiety	2	196	0.231	(0.093, 0.360)	0.765	0.382
Depression	2	196	0.270	(0.134, 0.396)	0.199	0.656
GHQ	8	2266	0.110**	(-0.115, 0.324)	188.189	0.000
Psychological distress	4	1475	0.184**	(0.006, 0.351)	35.926	0.000
				Job Performance		
Overall	5	1125	-0.145*	(-0.202, -0.087)	12.113	0.017
GHQ	3	663	-0.113	(-0.118, -0.037)	0.553	0.758
				Job satisfaction		
Overall	16	8026	-0.272**	(-0.408, -0.124)	667.325	0.000
Anxiety	2	1939	-0.414	(-0.451, -0.377)	0.007	0.933
Depression	2	1939	-0.519	(-0.551, -0.486)	3.687	0.055
GHQ	6	2440	-0.466**	(-0.529, -0.398)	15.638	0.008
Psychological distress	3	971	-0.270*	(-0.388, -0.143)	8.472	0.014
PWB	3	737	0.445**	(0.183, 0.647)	26.95	0.000

Note. k = number of studies; N = number of participants; \bar{r} = average effect size; CI = confidence interval; Q = homogeneity test score; p = p-value of the Q test result; GHQ = General Health Questionnaire; PWB = Berkman(1971)'s Psychological Well-Being

2. Demographic and Self-related Variables

Regarding age, four different measures were heterogeneous. Psychological well-being measured by the General Health Questionnaire showed increase while other measures showed insignificant difference in terms of average effect size. Regarding education, happiness and self-confidence developed by Bryant and Veroff(1984) were homogeneous. Psychological well-being increases as education level increases having 0.212 with $E_{Sr,Overall}$.

Among 2 measures, self-confidence showed a stronger relationship having 0.295 with $E_{Sr,Self-confidence}$ while $E_{Sr,Happiness}$ was 0.125. Concerning income, psychological well-being increases as education level increases having 0.213 with $E_{Sr,Overall}$.

Among 2 measures, self-confidence showed a stronger relationship as it showed 0.270 with $E_{Sr,Self-confidence}$, while $E_{Sr,Happiness}$ was 0.155. Regarding psychological capital, research was performed in connection with General Health Questionnaire and the Index of Psychological Well-Being by

Berkman(1971), and it showed that health complaint decreased(general health questionnaire increased) when psychological capital was large as it showed -0.255 with $E_{Sr,GHQ}$, $E_{Sr,PWB}$ was large having 0.473, which indicates that psychological capital is closely related to psychological well-being.

(Table 6) Meta-analytic Correlations with role-related variables

Psychological Well Being	k	N	\bar{r}	95% CI	Q	p
Participation						
Overall	6	1464	0.069	(-0.017, 0.120)	9.258	0.099
Anxiety	2	488	0.075	(-0.014, 0.163)	0.11	0.740
Depression	2	488	0.151	(-0.062, 0.263)	1.821	0.177
GHQ	2	488	0.020	(-0.109, 0.069)	0.193	0.660
Role Discretion						
Overall	5	1567	-0.028**	(-0.263, 0.211)	88.812	0.000
Psychological distress	3	1266	-0.141**	(-0.279, 0.003)	13.653	0.001

Note. k = number of studies; N = number of participants; \bar{r} = average effect size; CI = confidence interval; Q = homogeneity test score; p = p - value of the Q test result; GHQ = General Health Questionnaire; PWB = Berkman(1971)'s Psychological Well-Being

3. Relationship-related Variables

Regarding social support, negative relationship was shown with negative side of psychological well-being. It showed -0.144 with E_{Sr} , Psychological Distress, -0.226 with $E_{Sr,Anxiety}$, -0.321 with $E_{Sr,Depression}$ and -0.104 with $E_{Sr,GHQ}$. 0.315 was shown with E_{Sr} , Quality of life.

4. Work-related Variables

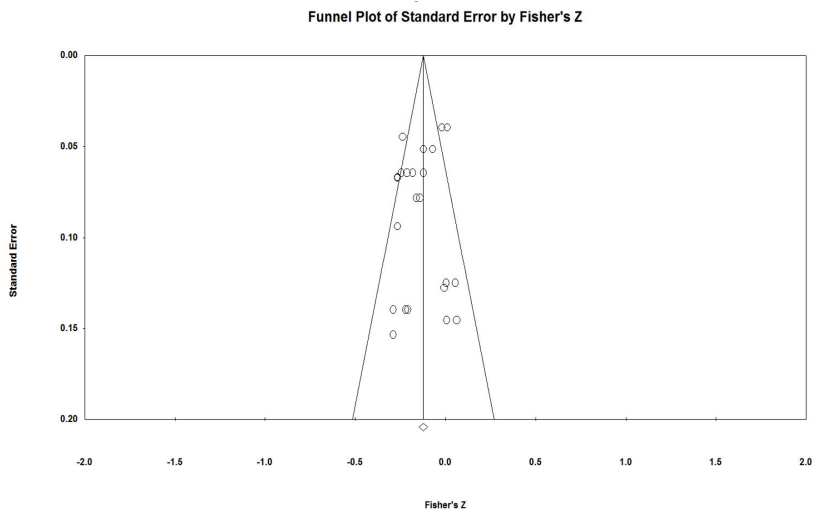
Decision authority was studied in 3 different theses in connection to psychological distress. It showed jobs get more stressful as decision authority decreases, as it showed -0.228 with $E_{Sr,Psychological Distress}$. This is the same for job autonomy. The overall effect was insignificant, but it showed that psychological well-being increases when control increases, as it showed 0.122 with $E_{Sr,GHQ}$, 0.090 with $E_{Sr,Happiness}$ and 0.255 with

$E_{Sr,Self-confidence}$. In addition, the negative side of Psychological well-being decreases when control increases, as it showed -0.213 with $E_{Sr,Psychological Distress}$, -0.199 with $E_{Sr,Anxiety}$, and -0.283 with $E_{Sr,Depression}$.

In terms of job demands, the negative side of psychological well-being increases when time pressure worsens or depletion of cognitive resource worsens, as it showed 0.184 with $E_{Sr,Psychological Distress}$, 0.231 with $E_{Sr,Anxiety}$, and 0.270 with $E_{Sr,Depression}$. Based on the above results, the subject related to psychological well-being presented in the JDC model is empirically supported.

Job satisfaction is often used to measure psychological well-being. Analyzed results showed a strong negative relationship, as it showed -0.466 with $E_{Sr,Psychological Distress}$, -0.414 with $E_{Sr,Anxiety}$, -0.519 with $E_{Sr,Depression}$, and -0.466 with $E_{Sr,GHQ}$, while $E_{Sr,PWB}$ showed a strong positive relationship of 0.445. Relationship between General Health Questionnaire and job performance was negative as it showed -0.113 with $E_{Sr,GHQ}$. Relationship between role discretion and participation was insignificant.

〈Figure 1〉 Funnel Plot of the relationship between Psychological Well Being and Social Support



5. Publication Bias Analysis

Publication bias occurs when the sample of an article for meta-analysis does not fully cover the research field and an insignificant relationship is often not reported (Higgins & Green 2011). All the researches included for meta-analysis are considered biased samples, since average effect sizes can be understood as biased and are generally overestimated (Borenstein et al. 2009). There are three ways to check for publication bias. The first method is to use visual inspection of funnel plot asymmetry (Egger, Smith, Schneider, & Minder 1997). If there is no publication bias, the funnel plot will be shown as symmetry, which portrays the wider at the end, and narrower at the upper part, which is shown in figure 1. The majority of studies show that each effect size with 95% confidence interval are shown within the guideline and shown symmetry, which proves that the publication bias is marginal.

The second method is to use Egger's regression test (Egger et al. 1997). Egger's regression test explains that if p-value of intercept and Egger's regression equation are significant, potential publication bias can occur. The analysis indicates significance with the result of intercept = -2.164, standard error = 2.976, t-value = 0.727, and p-value = 0.237.

The third method is Rosenthal's (1979) file drawer analysis, which continues to calculate additional number of studies to ensure average effect size is insignificant (Number of missing studies that would bring p-value to > alpha). And this number is fail-safe number (FSN). The analysis indicates this study's FSN is 732, which is much bigger than the sample, 26.

By reviewing the publication bias, it has been concluded that this study does not have significant publication bias.

V. Discussion

Although happiness and psychological well-being are considered important constructs in the field of organizational behavior, there are few empirical studies available. Also, there is a lack of comprehensive review of definition, measure, and relationship between antecedents and consequences. Thus, this study aims to fulfill the needs.

1. Theoretical and Practical Implications

This study suggests several theoretical implications. First, it organizes definitions from various fields of studies. Since each research tradition from different disciplines (psychology, sociology, philosophy) may cause confusion, this study organizes definitions, which can function as independent constructs with mutual meaning of the construct that this study suggests the definition of psychological well-being in the fields of organizational behavior. Second, this study organizes measures that are currently used for psychological well-being. The most widely used measure is the General Health Questionnaire (Goldberg 1972; Goldberg & Hillier 1979). It is analyzed as an overall construct (e.g., Daniel & Guppy 1994; Gilbreath & Benson 2004) or analyzed as a sub-dimension of anxiety or depression (e.g., Makowska 1995). Thus, this study portrays various measures and dimensions, so that it can be used in the future studies. Third, it provides an overall understanding of empirical studies of the JDC and JDCS models, which are fundamental theories of psychological well-being. The analysis indicates that the results show the similarities of the models directly. Job control and social support increase psychological well-being and decrease the negative aspect of job demand. Lastly, this paper contributed to the field of job design research by presenting the possibility of promoting psychological well-being through changing job conditions. Recent studies are focused on finding antecedents that can enhance the well-being of employees (e.g. Weiss et al.

2016). The results of this study show that job conditions play a key role in determining employees' psychological well-being. Specifically, the psychological well-being is proportional to the decision efficiency, job support and education. and inversely proportional to demand. Therefore, job authority, autonomy, and human resource development are key to employee happiness.

There are also some practical implications. First, ever since the Hawthorn experiment was introduced, there has been interest in employees' happiness, well-being, and wellness in the fields of organizational behavior. This study organizes both theoretical and empirical theories/cases that can advise managers to manage employees' psychological state. Second, it provides information for job design. If it only considers the effectiveness aspect of the job, it loses the balance between demand and control or lacks the understanding of support, which decreases psychological well-being. This is similar to Begley, Lee, Fang, and Li(2002)'s study that if power distance in organization is large, it increases negative influence for inequality. To increase in role and extra role performance, this balance needs to be reached. Third, it provides information of concept of selection. If other factors are equal, an employee who is older with a higher education background has a higher possibility of being a happy employee. Also, if an employee has high self-confidence and psychological capital, this employee will likely have higher well-being. Therefore, if this concept is used in the employee selection process, an organization can benefit from the outcomes that result from employee happiness. Fourth, this paper showed that various aspects of psychological well-being are directly linked to job conditions. If managers do not satisfy various aspects of employee happiness and emphasize only some aspects of them, the ultimate happiness of employees cannot be enhanced(Bakker & Demerouti 2018). In this aspect, this study suggests the possibility of ultimate enhancement of employee happiness by empirically grasping the interchange relationship between various aspects of job condition and various aspects of psychological well-being.

2. Limitations and Future Research

Like other studies, this study also has limitations. First, it has low stability in average effect size since there will be studies that are not included in the meta-analysis. If even one empirical paper were added, the average effect size could change. Therefore, after publishing a sufficient number of studies, additional meta-analysis is needed. If consensus for measure was available, entire collected studies can be analyzed; however, measure for psychological well-being is not unified at all. Some homogeneity test scores(Q) were significant, while some were not applicable. Homogenous average effect size shows a stable outcome, while a statistically heterogeneous outcome is unable to analyze the overall effect. Second, due to the lack of empirical studies for psychological well-being and various factors of organizational behavior, it was not included for meta-analysis. Studies that are included for meta-analysis include demographic variables, such as age, income, and education, or JDC/JDCS's model's variables and job performance. Third, Psychological Well-Being was measured in health compliance, anxiety, and depression, which were difficult to understand in terms of positive effects.

To overcome these limitations, further research is needed. First, empirical analysis regarding creativity, justice perception, commitment, organizational citizenship behavior, and leadership needs to be added to the meta-analysis. Though the history of psychological well-being is long, it is still lacking in empirical analyses, especially in the field of organizational behavior. Thus, such studies need to be further developed. Second, a new measure for psychological well-being is needed. The currently used measure emphasizes the negative aspects such as negative emotion or affect. Only a few(e.g., quality of life, Quinn & Shepard 1978; or Psychological Well-Being scale, Ryff 1991) measure positive psychological state. However, those measures were developed 25 years ago; thus, a factor and credibility check is needed and must be updated.

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국문요약

직무요구-통제-지원 모형을 통한 직원들의 심리적 웰빙에 대한 메타분석 연구

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조직행동론 분야에서 직원들의 심리적 웰빙에 대한 연구는 1930년대 호손 연구에 의해 시작되었으나, 지금까지도 심리적 웰빙에 대한 개념과 측정에 대한 통일된 합의의 부재로 실증 연구는 상대적으로 많이 이루어지지 않아왔다. 이에 본 연구에서는 심리적 웰빙 연구에 있어 가장 활발히 사용되는 직무요구-통제-지원 모형을 기반으로 그간 이루어진 실증 연구들을 분석하여 이론적 분석을 제공하는 한편, 영향력 분석을 위해 메타 분석을 실시한다. 본 메타분석에서는 그간 이루어진 실증 연구 32편의 127건의 상관관계를 포함하였다. 분석 결과, 직무요구-통제-지원 모형에서 활용되는 개념 및 측정의 타당성이 입증되었으며, 특히 본 연구에서는 나이와 교육수준, 임금과 같은 인구통계학 관련 변수들과 직무 자율성 및 직무만족과 같은 업무 관련 변수들, 그리고 사회적 지지와 같은 관계 관련 변수들을 보다 집중하여 살펴보았다. 본 연구의 결론에서는 분석 결과의 요약과 본 연구가 가진 함의, 그리고 향후 연구를 위한 한계 및 방향성에 대해 기술하였다.

주제어: 심리적 웰빙, 메타분석, 직무요구-통제-지원 모형

