
The Three Dimensions of Social Effort: Cognitive, Emotional, and Physical

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To cite this article:

Daniel Sohn, Sangho Lee, Yang Lee. The Three Dimensions of Social Effort: Cognitive, Emotional, and Physical. *Psychology and Behavioral Sciences*. Special Issue: Dimensions of Human Effort. Vol. 7, No. 6-1, 2018, pp. 1-5. doi: 10.11648/j.pbs.s.2018070601.11

Received: March 19, 2018; **Accepted:** March 22, 2018; **Published:** April 13, 2018

Abstract: It could be said that there are two dimensions of effort as emotional and physical in social relations recognized by academic society. This study attempted to elaborate on a third dimension of cognitive effort in support of experimental data. The research design was to introduce episodes of effort in social relations within hypothetical family circumstances. Three types of effort as cognitive, emotional, and physical, crossed into two levels of typicality as high and low. Totalling six episodes in all, these were presented to subjects. Subjects assessed the scale to which each dimension was utilized in each episode. Regarding the outcome of this experiment, effort in social relations consisted of three dimensions as cognitive, emotional, and physical, which were extracted by Factor Analysis. Since each dimension was fit on three coordinates, the distances between all three pairs of work roles were measured.

Keywords: Dimensions of Effort, Cognitive Effort, Emotional Effort, Physical Effort

1. Introduction

Regarding some background information of regular everyday working life, labor has been and still is viewed by way of physical and emotional dimensions. Considering aspects of economic frameworks, the conceptualization of labor has centered on physical aspects. Also, with the emergence of postmodernism, the movements of the era have become multi-polarized [1]. This results in the recognition that individual people are to be understood within varying social frames of reference. For this reason, in addition to its respective economic criteria, the labor of people in their day to day living also ought to be analyzed by their psychological mechanisms.

With the continuous diversifying polarities of human relations and the progression of technological systems, the roles humans characterize in developing societies have been reconsidered. This has resulted in substantial changes within industries of the service sector. Along these lines, elements which industrial structures identify with, in the identities of individual employees, in addition to these individuals'

assessments of their emotional values, have been noted by academics as major issues at hand. As follows, numerous amounts of investigations to gauge the significance of effort in regards to emotional aspects have taken place.

A. Hochschild [2], developed the concept of emotional labor as the commercialization of human feeling. From this point on, dialogues upon dialogues have developed in attempts to perfect the conceptualization of emotional labor as well as the way it is measured. Not surprisingly, various meanings have since been presented [3, 4]. Synthesizing the points about emotional labor that have been made thus far, in comparison to physical labor, which makes up only a singular aspect along the gamut of labor, aspects of emotional labor could well go beyond singularity. In other words, labor of the mind could be made of an emotional aspect as well as much more.

What processes of the mind are comprised of are issued in cognitive psychology. This includes the study of the internal processes of attention, language, memory, perception, and thinking as discussed in U. Neisser's book, *Cognitive Psychology* [5]. In perspective of the cognitive approach, mental mechanisms cover various stages such as behavior,

emotions, and cognition serially and hierarchically [6]. So, the uniqueness and independence of the prerequisites for emotional labor is compromised and doubted. Despite the prompting to measure the psychological costs of emotional labor through analyses, this renders a concern. Do the measurements of emotional labor solely make up the gamut of labors of the mind when the workings of psychological mechanisms are considered? Psychological mechanisms ought to be considered on a deeper scale for the case that it does not conclude as to whether or not the emotional scale covers the entire gamut of mental processes. With this in mind, Y. Lee [6] commented that the proposition of emotional labor has not sparked mainly due to the fact that there is no paradigm of a cognitive approach. Thus, he criticizing that emotional labor was misunderstood by comprising the whole spectrum of mental labor, differentiated cognitive labor with experimental data to elect three dimensions of labor as cognitive, emotional, and physical.

From the perspectives allotted by social psychology, the elements which are made up of social attitude are cognition and emotion. Each of these entities can be considered as separate from one another [7]. With this taxonomy, emotion is an influential factor in shaping social attitudes arguing that emotion is only a cause of behavior. On the contrary, there are some paradigms which postulate cognition as the cause of behavior, and emotion, in effect, follows the cognitive processes [6] [8]. Taxonomies regarding social attitude can be of a physical aspect, emotional aspect, and a cognitive aspect. Along with social perspective, this study tried to elaborate human efforts in social relations, which, following Lee's paradigm of labor [6], are supposed to consist of three dimensions as cognitive, emotional, and physical..

The purpose of this experimental analysis

This experimental paradigm modeled Lee, Jeong, and Lee's design [6], but was different in contents. This study conceptualized dimensions of social effort rather than aspects of labor. Respectively, this experiment contends a hypothesis that efforts in social relations are made up of three dimensions, namely as cognitive, emotional, and physical. Given this hypothesis, this experiment attempted to test a distribution of these three dimensions for various work roles. These work roles were manipulated to emphasize as well as de-emphasize one dimension over the other remaining two dimensions by way of a high and low work role typicality for the chosen dimension. Each role is depicted by six episodes about a person fulfilling a work role within the context of their family's restaurant business and daily life. For each episode, subjects estimated how much of each of the three dimensions of effort in social relations are required for the worker. The predicted outcome of this experiment is that with respect to the two levels of the three work role pairs, distinguishable are the amounts that each dimension is utilized for each episode in regards to the dynamics of the social relations within the family depicted. For the cognitive pair, the high typicality work role is made up of a higher proportion of cognitive effort and the low typicality work

role is made up of a lower proportion of cognitive effort. For the emotional pair and physical pair, the same trends as that of the cognitive pair are predicted.

2. Method

2.1. Subject

Students who took a general course of Psychology participated in this experiment as a requirement for the class for thirty minutes at Gyeongsang University on October 21, 2015 at 11 a.m. The subjects are covered by Human Subject Protect Act.

2.2. Procedure

The subjects answered a questionnaire that was given to them. The questionnaire was made up of six episodes about a person fulfilling a work role within the social context of their family's restaurant business and daily life. For each categorical (cognitive, emotional, physical) pair of episodes, there were two separate work roles with one role having a high level of typicality and the other having a low level of typicality, altogether totaling six work roles for the three pairs of episodes in the experiment. Each work role depicted a hypothetical lifestyle of a character working at a restaurant owned by their parents and also fulfilling family duties at home with the main character looking after their younger siblings. The work roles corresponded to levels of typicality for the emphasized or de-emphasized dimension in the work role depicted in each episode. One pair of episodes were biased towards high and low typicality levels of cognitive effort, another to high and low typicality levels of emotional effort, and a third to high and low typicality levels of physical effort. So, each pair of episodes was divided into two leveled positions, high and low, according to their level of typicality, and was presented to the subject as such.

As stated above, the two work roles for each pair of episodes were described in the context of a character's daily life, both sharing similarities of a working family. However they differed in their level of typicality in respect to the amount of work each character was obligated to do. For example, an episode of a cognitive role high in typicality was described like, "She also helps her parents with cognitively demanding work such as public relations, advertisement, saving expenses from the facilities, and preparing and paying taxes for their business." On the other hand, an episode of a cognitive role low in typicality was described like, "Business is so good she thinks she does not need to worry about monetary issues very much. She thinks about getting a job at a big restaurant with her parents' encouragement to do so." These descriptions shared the component of "after graduating from a culinary school with a degree in nutrition, she helps her parents at the restaurant". However, in terms of typicality levels for cognitive effort in these social relations, these descriptions are differentiated by "She also helps her parents with cognitively demanding work", and, "She thinks about getting a job at a big restaurant."

Survey questions were positioned to gather data relevant to how much effort the main character puts in, in regards to the dimensions of effort as cognitive, emotional, and physical. The questionnaire for each episode consisted of four questions. Accordingly, answers on the questionnaire resulted to a total of 4 units of content for each episode. Since there were two episodes devoted to each type of work role it can be inferred that each categorical pair of episodes consisted of eight questions (4 x 2). The general contents of the four questions were repeated twice but the questions themselves were worded differently for each episode of the three pairs. For example, concerning cognitive effort, the contents of two questions were the same but the questions themselves were worded differently as follows, "how cognitively tired is he from his family relationships", and "how much does he focus on paying attention to family members?" The questionnaire began with questions about the age, gender, and occupation of the subject.

Instructions were given for subjects to follow the guidelines of first reading an episode then rating it by a scale of 5 Likert Scale. The ratings were for levels of typicality regarding each dimension of effort, cognitive, emotional and physical. The results totaled out to 8 units of data for each pair of episodes of high and low typicality. The sample of the

subjects who participated in this research consisted of students who did not belong to any of the work roles described in the episodes. All episodes are hypothetical.

3. Results

3.1. Difference Between Typicality of Each Dimension in Each Episode

Table 1 showed that the differences between high and low typicality levels in each of the three episodes for the three effort dimensions. All of the pairs were significant. It showed that the typicality pairs of episodes were different in each dimension of effort. Furthermore, cognitive, emotional, and physical effort were differentiated between typicality levels; the difference between the high and low typicality of the cognitive episode was shown at the cognitive effort, that of the emotional episode at the emotional effort, and that of the physical episode at the physical effort. For an attended point, it is shown that the physical effort is used in common for all episodes. For more information, the distances between pairs of episodes crossed with dimensions needed to be calculated, after the factor analysis between episodes and dimensions were processed.

Table 1. Differences between high and low typicality for the three effort dimensions in the three episodes.

		Physical Effort				Cognitive Effort				Emotional Effort			
		M	SD	T	P	M	SD	t	P	M	SD	T	P
Physical Episodes	High	3.80	0.97	8.61	.000	2.63	1.03	2.59	.012	3.45	1.19	3.11	.003
	Low	2.55	0.92			2.25	1.02			2.87	1.00		
Cognitive Episodes	High	3.55	1.01	8.85	.000	3.52	1.01	5.75	.000	3.79	1.22	2.78	.007
	Low	2.41	0.80			2.58	1.00			3.20	1.09		
Emotional Episodes	High	2.99	1.20	3.48	.001	3.18	0.95	5.53	.000	4.37	0.99	10.47	.000
	Low	2.46	0.98			2.37	0.91			2.51	0.98		

3.2. Differentiation of the Three Effort Dimension.

The hypothesized dimensions were verified by factor analysis in the responses to the questionnaire for typicality crossed by dimensions. Table 2 shows the summary of the factor analysis (KMO, Barlett test-Varimax rotation) where three factors were extracted. The analysis explained a high 55.563 percent of the whole variance as the cumulative sum

of squares of the first variance amounted to 21. 638, the second is to 38.658, and the third is to 55.563. The other variances except the main three ones were excluded. Interpreting the matrix between factors and questionnaire responses, the first column was labeled to the emotional factor of effort, the second to the physical one, and the third to the cognitive one.

Table 2. Factor analysis between episodes and dimensions.

Rotated Component Matrix a	Component		
	1 Emotional Effort	2 Physical Effort	3 Cognitive Effort
	Physical Effort High (Physical Episode)	.139	.684
Physical Effort High (Emotional Episode)	-.112	.793	.124
Physical Effort High (Cognitive Episode)	-.298	.360	.302
Cognitive Effort High (Cognitive Episode)	-.022	-.060	.8046
Cognitive Effort High (Emotional Episode)	.088	.143	.782
Cognitive Effort High (Physical Episode)	-.223	.461	.362
Emotional Effort High (Cognitive Episode)	.791	.093	-.049
Emotional Effort High (Physical Episode)	.691	-.247	-.032
Emotional Effort High (Emotional Episode)	.816	-.004	.074

3.3. Distances Between Pairs of Episodes Crossed with Dimensions

Table 3 shows which pairs were far or near. All of the distances between high and low typicality within each of the episodes were long. It suggested that the typicality effect was observed. Inspecting the distances across episodes, the distances between the physical high episode and the cognitive high episode, the physical low episode and the cognitive low episode, were short below the 1.0 point. It

suggested that the cognitive and physical efforts were correlated. The distances between the emotional high episode and the cognitive high episode, the emotional low episode and the cognitive low episode are all short. It suggested that the cognitive and emotional efforts were correlated. This correlation was also implied in that the distance between the emotional low episode and the cognitive high episode was long above 2.00.

Table 3. Distances between pairs of episodes crossed with dimensions.

	Physical Episode High	Physical Episode Low	Cognitive Episode High	Cognitive Episode Low	Emotional Episode High	Emotional Episode Low
Physical Episode High	0.00	1.43	0.99	1.41	1.35	1.66
Physical Episode Low	1.43	0.00	1.86	0.49	1.82	0.39
Cognitive Episode High	0.98	1.86	0.00	1.60	0.88	2.04
Cognitive Episode Low	1.41	0.49	1.60	0.00	1.44	0.72
Emotional Episode High	1.35	1.82	0.88	1.44	0.00	2.10
Emotional Episode Low	1.66	0.39	2.04	0.72	2.10	0.00

4. Discussion

The goal of this study was to introduce a scheme of three dimensions of effort in social relations, as cognitive, emotional, and physical. The research method was designed to present subjects with six episodes, where the three dimensions of effort were combined with two types of episodes, one of high typicality and the other of low typicality for each role. These six conditional episodes were differentiated by hypothesis. Evaluators estimated the degree to which each of the three kinds of effort was dedicated to each model taking a role in the six episodes.

The differentiation of cognitive, emotional, and physical dimensions of effort in social relation, proposed by this study, was supported by the outcomes of this experiment, analyzed by way of Factor Analysis and other statistical methods. The two typicality levels of the physical episodes, of the emotional episode, and of the cognitive episode had a positive difference for all three dimensions of effort, physical, emotional, and cognitive. With these results, it was concluded that the three dimensions of effort were differentiated. Branching off from this, the coordinates of where the six episodes landed in the three dimensions of effort, were determined. In addition, the distances paired with the six episodes were estimated.

Our exploration of the possibility of a cognitive dimension of social effort was presented in our results, entailing its implications. With the past paradigms, conceptualizations of labor had been restricted first to a physical one, then after more exploration, to psychological effort in regards to the refinement of emotional effort. Earlier inquiries into the concept of emotional labor have focused on measurements of fatigue without the considerations of the amount of physical labor performed [9], or, the measurements of the levels of psychological consumption in cases where rewards for labor weren't granted as expected [10]. When considering the

gamut of psychological labor, don't you think that the previously held concept of emotional labor should be expanded upon? The differentiation of the cognitive factor was conceptualized and tested in the same experimental design of Lee, Jeong, and Lee [6]

Accordingly, this study has made the case for the need to conceptualize a cognitive dimension. As this study made clear, the concept of emotional effort alone cannot cover the gamut of psychological effort which is why the conceptualization of cognitive effort is necessary.

5. Suggestion

This research has concluded that cognitive effort in social relations is differentiated in the psychological dimension, thought to be overwhelmed by the emotional aspect, and contrasted from the physical aspect. The differentiation refines the three dimensions of social efforts—as cognitive, emotional and physical, paralleled with the dimensions of labor which were found by Lee Jeong, and Lee [6].

The data of this study was collected in quasi-experiment, where the various episodes described the dimensions of social effort. This method is recommended for a rigorous test of theories, but limited in generalization to real situations. Thus, in addition to this experimental data, more surveys of the social situation are required to apply the three-dimensional theory of social effort.

A theoretical problem is unresolved. Are the three dimensions as cognitive, emotional and physical, are linear or hierarchical? The main discussion of this research was the differentiation of the cognitive dimension from the emotional and physical ones. This experiment has not proceeded to test and discuss the hierarchical relationship of the three dimensions. A more sophisticated design is required to draw the multivariate regression and the structural analysis

The theoretical expansion requires the dimensions of human effort to be compared across human and social

problems, and research paradigms. The dimensions proposed by Cho and Lee [11] are elaborated for religious belief; they are categorized as religion oriented on god-human, approach to god by faith-reason, and god's benediction-self purpose. Even if the dimensions between this study and Cho and Lee are different in contents, the paradigm of the dimensional analysis for human and social problems is common. Therefore, more research cases are required in amassment to evaluate dimensional approaches.

Acknowledgements

This article was based on the first author (Daniel Sohn)'s master thesis granted by Gyeongsang Univerty (South Korea). He proposed the research problem, processed data, and wrote this article submitted to "Psychology and Behavioral Sciences". The second author (Sangho Lee) reviewed this article in the serious discussion and contributed to theoretical revision, acting as a referee of D. Sohn's master thesis. The correspondent author (Yang Lee), as the adviser of D. Sohn's master program, designed the experimental processes, elaborated the theoretical problems, and revised this article for publication.

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