

Effect of Havruta learning method on training satisfaction of military recruits through the mediation of inner motive, creativity, and military service value



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ABSTRACT

The purpose of this study is to analyze the effect of recruit training applied with the Havruta learning method on training satisfaction through inner motive, creativity, and military service value using a structural equation model. Havruta is a learning method in which two people ask questions and discuss in pairs, and it is an effective learning method to enhance inner motive, creativity, and military service value. For this purpose, inner motive, creativity, military service value, and training satisfaction were measured for 472 recruits who received training applying the Havruta learning method. Statistical analysis such as path analysis and multi-parameter model analysis was performed by inputting the measured values into the structural equation model (SEM). As a result of the CFA (Confirmatory Factor Analysis) of the SEM, the fitness index was found to be suitable as TLI=0.914, CFI=0.928, and RMSEA=0.080. Also, the validity index satisfied more than the criteria (AVE>0.5 and CR>0.7). As a result of the study, the Havruta effect of recruit training enhances inner motive, creativity, and military service value. As for the mediating effect of training satisfaction, inner motive and military service value had a significant effect, but creativity did not. The army needs to actively review the Havruta learning method in order to improve the satisfaction of recruit training of MZ generation soldiers. In the future, it will be a more meaningful study if you confirm the effect of training with the Havruta learning method on the training achievement of recruits.

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1. Introduction

In Korea, as the number of enlisted soldiers decreases due to the low birth rate and the military service period is shortened from 21 months to 18 months, there are concerns about the weakening of the combat power of the army (Kotwal et al., 2011). In particular, the recently enlisted soldiers are the so-called MZ generation born in the early 2000s. MZ generation is a compound word for millennial and generation Z. millennial is the generation born between the 1980s and early 2000s, and generation Z is the generation born between the late 1990s and early 2000s (Son et al., 2021). The characteristics of the MZ generation are that it shows a sense of rejection of coercive instruction, but shows high

performance when motivated. Also, as they are familiar with the digital environment, they can quickly and easily access a lot of information and present various ideas. In addition, if the culture or atmosphere of the group they belong to is good, they become interested in and immersed in their work to increase the value of work and satisfaction (Shin, 2020). Recruit training is the first training that soldiers with the characteristics of the MZ generation after enlistment. In the existing recruit training, it was difficult to cultivate the inner motive and creativity of the recruits because the training was conducted unilaterally by the instructors and assistants in a coercive atmosphere. In addition, since new military recruits regard military service as a social specification, it is difficult to cultivate true military service values. It is difficult to enhance the inner motive, creativity, military service value, and training satisfaction of new recruits with existing recruit training, so a new learning method is needed. Therefore, the learning method to solve this problem is the Havruta learning method, a traditional learning method in Israel (Hertz-Lazarowitz and Zelniker, 1995). The Havruta is a learning method in

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which two people ask questions and discuss in pairs. Israel students are applying the Havruta learning method to all classes. The Havruta learning method is an important learning method for first enlisted recruits to cultivate inner motive, creativity, and military service value by conducting research and discussion on their own rather than coercive training about unfamiliar recruit training (Hertz-Lazarowitz and Zelniker, 1995). Recruit training applying Havruta provides prior learning materials to new recruits before starting training so that they can learn on their own, then pair up to ask questions and conduct a discussion. After that, team discussion is held in squad units, and the training concludes with an evaluation by the instructor. There are many studies related to the effects of Havruta learning, but there are not many studies on soldiers. Therefore, in this study, we try to analyze the effect of training applied with the Havruta learning method on the training satisfaction of army recruits through inner motive, creativity, and military service value.

2. Literature review

2.1. Havruta learning method

Havruta is derived from the term "Haver," meaning a friend, and refers to a method of learning through the process of vigorously debating and debating in pairs (Kent, 2010). If you disagree with the partner's opinion or answer, ask them to explain why or give another idea to them. This method drives a specialized debate and deeper debate and also enhances imagination and creativity through the expansion of thinking and higher thinking.

Kent (2010, 2006) considered that Havruta is a traditional form of Jewish learning, but it has rarely been the subject of empirical research. Jang (2020) studied the effects of the Havruta-based teaching and learning method on academic self-efficacy, critical thinking disposition, learning satisfaction, and academic stress in 90 college students using a paired t-test. As a result of the study, the application of the Havruta-based teaching and learning method showed statistically significant results on academic self-efficacy, learning satisfaction, and academic stress. This method was shown that the Havruta-based teaching and learning method is effective to increase learners' academic self-efficacy and learning satisfaction and to lower academic stress (Jang, 2020). Lim (2019) applied adult nursing education using the Havruta learning method to 47 nursing college students and confirmed the effect on critical thinking disposition, learning immersion, and learning satisfaction.

It was shown that the Havruta learning method significantly increased the critical thinking disposition, learning immersion, and learning satisfaction of college students (Lim, 2019). Woodruff (2017) confirmed the effect of recruit training by applying the Havruta learning method on the enhancement of inner motive, creativity, and military service value through a pretest-posttest

design for 931 army recruits. As such, most research related to Havruta learning is targeting elementary school students to college students, and the learning effect is analyzed through pre-post design.

2.2. Inner motive, creativity, military service value, and satisfaction

Inner motive is defined as an intrinsic motivation or inclination to feel satisfaction in the process of accomplishing a task and continuously strive to achieve a goal (DeCharms and Muir, 1978). Wang et al. (2008) confirmed that the factor of inner motive to study was higher than academic achievement and self-efficacy in affecting college life adjustment for 301 students of 2-year and 4-year colleges. Ahn et al. (2012) confirmed that the application of blended learning in the physical education class for girls' high school is a useful learning method to improve students' inner motive and class satisfaction for 173 students in five classes of first-year girls' high school.

Creativity is defined as a mental process in which various new ideas/products are created or existing ideas/products are recombined in a novel way (Amabile, 1988). Hur (2016) studied how much individual and group creativity can be improved through general discussion-centered classes and Havruta classes for fourth-year college students. As a result of her research, the Havruta class was shown a greater effect on improving group creativity than the general discussion-centered class and showed a higher effect than the improvement of individual creativity. It is meaningful that the Havruta learning method fosters not only individual creativity but also group creativity (Hur, 2016). Ben-David Kolikant and Genut (2017) divided the math class into a general lecture-type class and a class applied with Havruta and studied the effect on the improvement of students' mathematical creativity. As a result of the study, the Havruta class shows a positive effect on creativity improvement than the general lecture-type class.

Meanwhile, military service value is defined as the importance, rationality, and usefulness perceived by individuals in military service (Hoge et al., 2006). Since military service value is a concept similar to work value, we will look at prior research on work value. Yeh (2014) argued that the cabin crew's work value had a positive effect on job satisfaction and team commitment for airline cabin crew. It was confirmed that the higher the cabin crew's work value, the higher the job satisfaction and team commitment.

Through this study, it can be seen that a human resource management system that emphasizes work value should be established for job satisfaction and team commitment of cabin crew (Yeh, 2014). In most previous studies, it was shown that inner motive, creativity, and service value had a positive effect on satisfaction, but the subjects of the study were mostly students and workers of companies (Prebensen et al., 2013).

3. Research method

3.1. Research model and hypotheses

This study is to analyze the effect of training using the Havruta learning method on the training satisfaction of army recruits by mediating inner motive, creativity, and military service value. The research model is such as Fig. 1 with the exogenous variable as training applying the Havruta learning method, endogenous variable as training satisfaction, and mediation factors as the inner motive, creativity, and military service value.

This study established the following six hypotheses:

- H1: Recruits training by applying Havruta has a positive effect on the inner motive of recruits
- H2: Recruits training by applying Havruta has a positive effect on creativity
- H3: Recruits training by applying Havruta has a positive effect on military service value
- H4: Inner motive of recruits has a positive effect on training satisfaction
- H5: Creativity of recruits has a positive effect on training satisfaction
- H6: Military service value of recruits has a positive effect on training satisfaction

3.2. Research subject

The subjects of this study were 472 selected by the stratified sampling method among recruits trained by the Havruta learning method for 5 weeks. The questionnaire was composed of a 5-point scale

and marked with a self-written method. The reliability of the questionnaire was applied to the internal consistency method and the reliability was judged by the coefficient of Cronbach's alpha. The validity of the questionnaire was analyzed by principal factor analysis. Both the reliability and validity of the questionnaire satisfied the criteria. The general characteristics of the survey subjects were 441 trainees aged 20 to 25, and 31 trainees aged 26 or older. As for the educational background, there are 65 trainees from a high school or less, 146 trainees from a college, and 261 trainees from a university. Table 1 shows the subjects for the questionnaire.

Table 1: Subjects for the questionnaire

Category		Numbers
Gender	Male	472 (100%)
	Female	0 (0%)
Age	20 ~ 25	441 (93.4%)
	Over 26	31 (6.6%)
Education	Less than high school	65 (13.8%)
	College	146 (30.9%)
	University	261 (55.3%)

3.3. Analysis method and process

We utilized SPSS 25.0 and AMOS 22.0 in order to solve the research problem and verify the hypothesis in this study. First, we verified the normality and multicollinearity of the data through descriptive statistics and correlation analysis. Second, to verify the research model, the goodness-of-fit index and the validity index were checked. Third, path analysis between variables in the research model was conducted. Fourth, a multiple mediation model analysis using a bootstrapping method was conducted to verify the mediated effect.

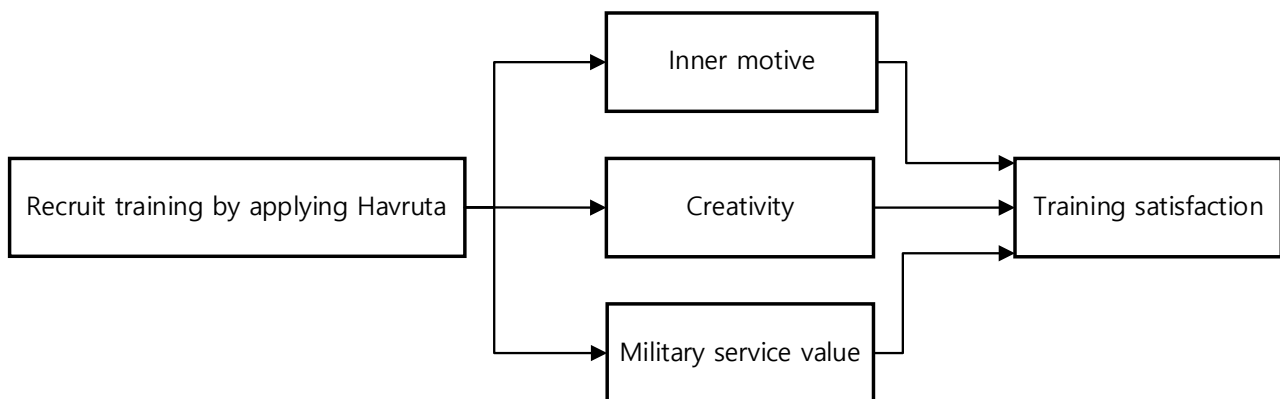


Fig. 1: Research model

4. Research results

4.1. The descriptive statistics and correlation analysis

The descriptive statistics of the latent and observed variables are shown in Table 2. Examining the mean of the observed variables, the independent variables T1, T2, and T3 items of training by applying Havruta (T) showed a mean of 3.76~3.96 out of 5 points. The dependent variable, S1, S2, and

S3 questions of satisfaction of training (S) showed a mean of 3.38~3.62 out of 5 points. The parameters I1, I2, and I3 of the inner motive (I) showed a mean of 3.95~4.24, C1, C2, and C3 of the creativity (C) showed a mean of 3.50~3.82, and M1, M2 of the military service value (M) showed a mean 3.26~3.52. The standard deviation of each observed variable is 0.883 to 0.906 for training by applying Havruta, 0.856 to 0.904 for inner motive, 0.836 to 0.995 for creativity, 1.143 to 1.225 for military service value, and 1.004 to 1.152 for training

satisfaction. There is no abnormality in multivariate normality because both skewness (-0.927~-0.025) and kurtosis (-0.823~-0.103) are within acceptable levels (skewness: Within absolute value 2, kurtosis:

Within absolute value 7) (Byrne, 2010). Therefore, it was confirmed that it is reasonable to use the structural equation model.

Table 2: Descriptive statistics of latent and observed variables

Latent Variables	Observed Variables	Mean (SD)	Skewness	Kurtosis
Training by applying Havruta (T)	Basic combat skills (T1)	3.76 (0.906)	-0.221	-0.470
	Information and Education (T2)	3.96 (0.883)	-0.419	-0.496
	Rule motion (T3)	3.82 (0.884)	-0.315	-0.396
Inner motive (I)	Passion (I1)	3.95 (0.904)	-0.679	0.332
	Adventure (I2)	4.24 (0.880)	-0.927	0.232
	Confidence (I3)	4.21 (0.856)	-0.775	-0.103
Creativity (C)	Openness (C1)	3.82 (0.995)	-0.421	-0.560
	Cooperation (C2)	3.62 (0.836)	-0.025	-0.179
	Workability (C3)	3.50 (0.962)	-0.081	-0.650
Military service value (M)	Military service (M1)	3.52 (1.143)	-0.436	-0.483
	Military pride (M2)	3.26 (1.225)	-0.239	-0.823
	Training method (S1)	3.38 (1.152)	-0.294	-0.575
Satisfaction of training (S)	Training condition (S2)	3.62 (1.004)	-0.371	-0.277
	Training content (S3)	3.62 (1.005)	-0.360	-0.243

In addition, in the structural equation model, the thing to check before executing the model is the correlation of the observed variables within the latent variable. In other words, several observed variables included in one latent variable must have a significant positive correlation to explain the latent variable. Note that the observed variable does not necessarily have a positive correlation with other latent variables. The results of the correlation

analysis of the observed variables are shown in Table 3. The three observed variables within each latent variable had a statistically significant positive correlation at the significance level of 0.01. In general, when the correlation coefficient between variables is 0.8 or more, it can be considered that there is a risk of multicollinearity, but there is no variable with suspicion of multicollinearity.

Table 3: Correlation analysis between observed variables in latent variables

Variables	T1	T2	T3	I1	I2	I3	C1	C2	C3	M1	M2	S1	S2	S3
T1	1	.557	.593	.490	.455	.459	.442	.480	.399	.399	.405	.378	.403	.492
T2		1	.496	.468	.352	.363	.339	.372	.340	.316	.307	.312	.274	.398
T3			1	.493	.457	.522	.459	.504	.425	.399	.414	.406	.349	.459
I1				1	.541	.458	.512	.508	.490	.299	.294	.304	.314	.397
I2					1	.733	.607	.416	.348	.292	.272	.296	.261	.361
I3						1	.676	.456	.335	.299	.287	.290	.322	.356
C1							1	.481	.457	.280	.300	.326	.378	.402
C2								1	.612	.344	.303	.308	.331	.398
C3									1	.252	.223	.261	.272	.338
M1										1	.714	.614	.449	.538
M2											1	.665	.516	.583
S1												1	.550	.534
S2													1	.598
S3														1

4.2. Confirmatory factor analysis

Since the collected data are suitable to be applied to the structural equation model, a measurement model for confirmatory factor analysis (CFA) was constructed as shown in Fig. 2 using AMOS 22. In the structural equation, before examining the influence between variables through the analysis of the structural model, it is necessary to evaluate whether the concepts included in the research model are properly estimated. This is to examine whether the measurement model is suitable for constructing a structural model through measurement model analysis. Therefore, the variables of training by applying Havruta (T), inner motive (I), creativity (C), military service value (M), and satisfaction of training (S) were analyzed through a measurement model. Through this analysis, it was confirmed whether one or more coefficients showed very large errors, negative values such as negative error

variance, excessively irrational estimates, or very high correlations (\pm more than 0.9) between the estimated coefficients (Fornell and Larcker, 1981). As a result, no estimates were found that violated the assumptions, and all assumptions were satisfied. The statistical values representing the fit of the measurement model were TLI=0.914, CFI=0.928, and RMSEA=0.08. TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index) have values between 0 and 1, and if it is 0.9 or higher, it is judged that the model fit is excellent (Hu and Bentler, 1999). If RMSEA (Root Mean Square Error of Approximate) has a value of 0.1 or less, it is judged a good fit (Kim and Lee, 2021). Therefore, the measurement model can be judged as suitable.

As a result of the confirmatory factor analysis, it was verified that the paths from the latent variables of training to the observed variables were all significant at the significance level of 0.05 as shown in Table 4.

Table 4: The results of the confirmatory factor analysis

Latent variables	Observed variables	Estimate		SE	CR
		B	β		
Training by applying Havruta (T)	T1	1	0.787	-	-
	T2	0.809	0.654	0.059	13.751**
	T3	0.962	0.776	0.059	16.418**
Inner motive (I)	I1	1	0.669	-	-
	I2	1.024	0.825	0.053	19.300**
	I3	0.852	0.829	0.057	15.043**
Creativity (C)	C1	1	0.780	-	-
	C2	0.967	0.699	0.079	12.232**
	C3	1.285	0.628	0.097	13.189**
Military service value (M)	M1	1	0.808	-	-
	M2	0.855	0.883	0.044	19.425**
Satisfaction of training (S)	S1	1	0.770	-	-
	S2	0.790	0.698	0.053	15.000**
	S3	0.866	0.765	0.052	16.570**

** : p<.01

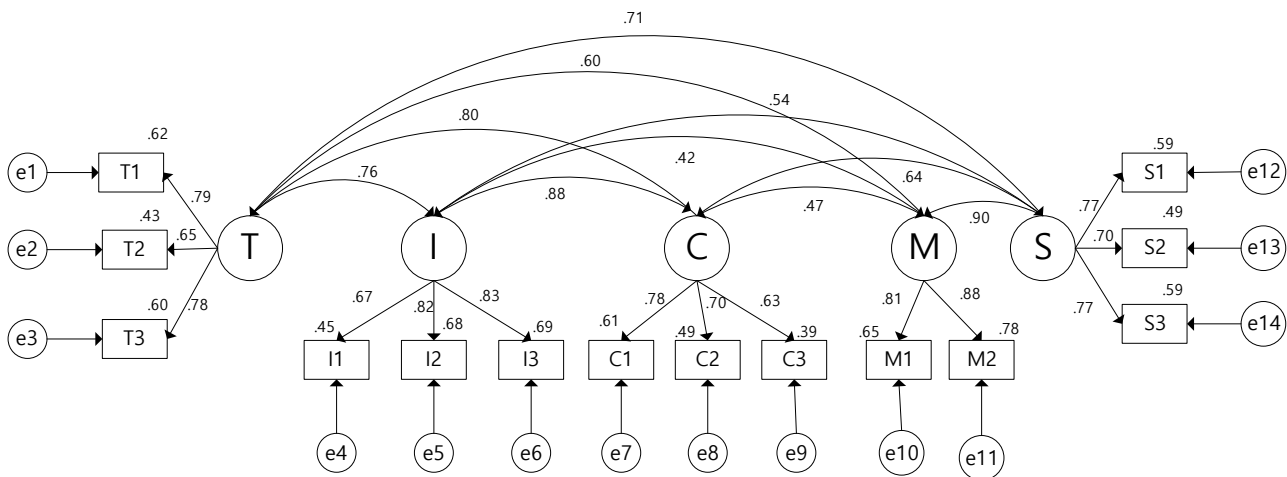


Fig. 2: Measurement model for CFA

4.3. Path analysis

The verified measurement model was modified into a structural model and the relationship between each variable was analyzed. The fitness of the structural model was the same as that of the measurement model because there was no model change such as adding a covariance or adding a variable in the final measurement model. The validity of structural model is judged to be valid if the AVE (Average Variance Extracted) is greater than 0.5 or the CR (Construct Reliability) is greater than 0.7 (Seok, 2019). Therefore, this structural model is valid as shown in Table 5.

Table 5: The results of the validity

Latent Variables	CR	AVE
Training by applying Havruta (T)	0.77	0.52
Inner motive (I)	0.82	0.61
Creativity (C)	0.76	0.52
Military service value (M)	0.83	0.72
Satisfaction of training (S)	0.79	0.56

Fig. 3 shows the final structural equation model obtained using AMOS 22. The values above the arrows represent the path coefficient (standardized regression weights) and statistical significance.

Table 6 shows the results of the path analysis. Training by applying Havruta (T) was analyzed to have a positive (+) effect on inner motive (I), creativity (C), and military service value (M). In

other words, it was verified that recruit training applying the Havruta learning method enhances the inner motive, creativity, and military service value of army recruits. Inner motive (I) and military service value (M) have a positive (+) effect on the satisfaction of training (S), while creativity (C) was not statistically significant in enhancing the training satisfaction of army recruits. It shows that the results obtained using the Havruta learning method are consistent with those of other previous studies (Hertz-Lazarowitz and Zelniker, 1995; Woodruff, 2017).

4.4. Multiple mediation model analysis

The mediating effect of inner motive, creativity, and military service value between training by applying Havruta and satisfaction of training was verified. Bootstrapping verification was conducted using phantom variables (P2, P4, and P6) to examine the multi-mediated effects, and the values of the mediating effects Estimate, S.E., and bootstrap 95% confidence interval were analyzed. Fig. 4 shows the multiple mediation model obtained using AMOS 22. The values above the arrows represent the path coefficient (indirect effects).

Table 7 shows the results of the multiple mediation model analysis. First, the mediating effect of the inner motive showed an upper and a lower limit of 0.108 ~ 1.419 at the 95% confidence

interval, indicating that 0 was not included, and was verified to be statistically significant at the significance level ($p < 0.05$). Second, the mediating effect of military service value also showed the upper and a lower limit of $0.425 \sim 0.781$ at the 95% confidence interval, indicating that 0 was not included, and was verified to be statistically

significant at the significance level ($p < 0.05$). Therefore, it was confirmed that inner motive and creativity had a mediating effect. Third, the mediating effect of creativity showed an upper and a lower limit of $-0.174 \sim 0.109$ in the 95% confidence interval and was found to include 0, which was confirmed to be not statistically significant.

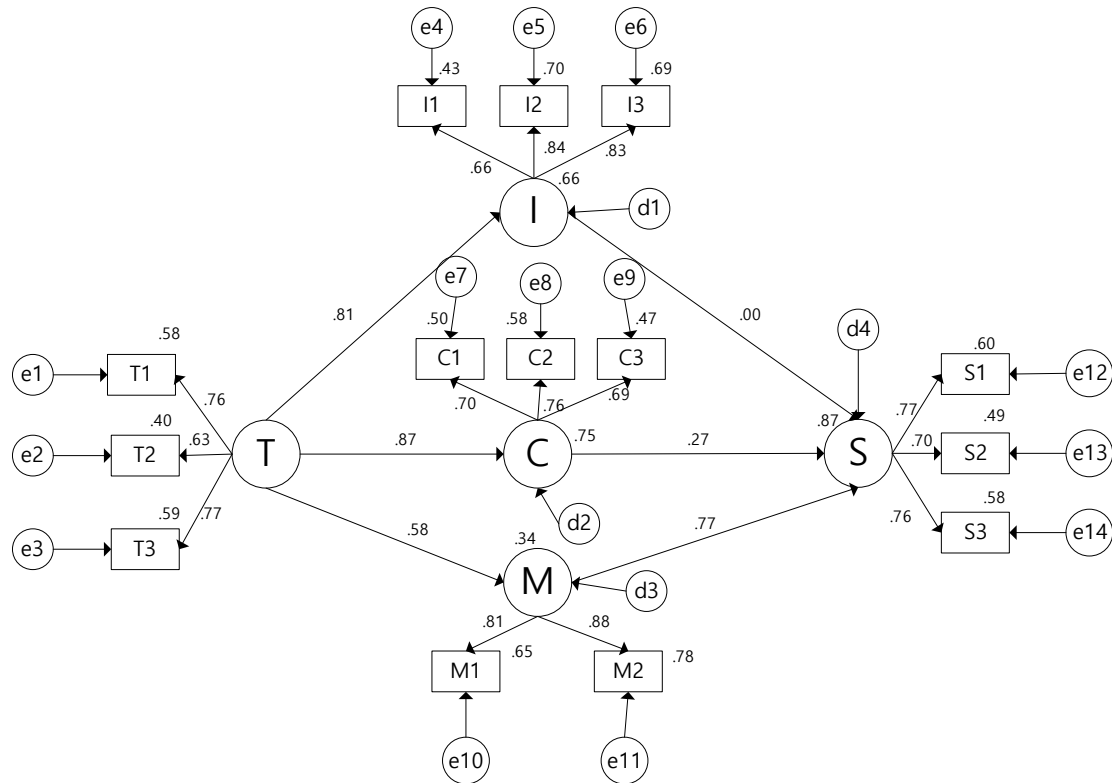


Fig. 3: The final SEM and results

Table 6: The results of path analysis

Path	Estimate		SE	CR
	B	β		
Training by applying Havruta (T) → Inner motive (I) [H1]	0.696	0.811	0.058	11.921**
Training by applying Havruta (T) → Creativity (C) [H2]	0.879	0.865	0.065	12.969**
Training by applying Havruta (T) → Military service value (M) [H3]	0.776	0.580	0.075	10.339**
Inner motive (I) → Satisfaction of training (S) [H4]	0.338	0.266	0.084	4.024**
Creativity (C) → Satisfaction of training (S) [H5]	0.004	0.003	0.090	0.047
Military service value (M) → Satisfaction of training (S) [H6]	0.743	0.770	0.056	13.263**

** $p < .01$

Table 7: The results of multiple mediation model analysis

Path	Estimate	SE	95% CI
Training by applying Havruta → Inner motive → Satisfaction of training	0.450	0.353	0.108 ~ 1.419
Training by applying Havruta → Creativity → Satisfaction of training	-0.174	0.329	-1.079 ~ 0.109
Training by applying Havruta → Military service value → Satisfaction of training	0.583	0.090	0.425 ~ 0.781

5. Conclusion

This study analyzed the effects of recruit training applying the Havruta learning method on the inner motive, creativity, and military service value of army recruits through the structural equation model, and the effect on training satisfaction through inner motive, creativity, and military service values. As a result of the study, it was verified that recruit training applying the Havruta learning method was significant in enhancing the inner motive, creativity, and military service value of army recruits. The effects of inner motive, creativity, and military

service value on training satisfaction showed that inner motive and military service value had significant effects on training satisfaction enhancement, but creativity did not significantly affect training satisfaction enhancement. In previous studies, the creativity of elementary school students to college students was studied to have an effect on enhancing learning satisfaction, but in this study, it is judged that creativity does not have a statistically significant effect on training satisfaction given the status of the soldier. Therefore, since creativity is very important in the army's recruit training, it is judged that it is necessary to supplement the training method and contents so that it can affect training

satisfaction. The army needs to actively review the Havruta learning method in order to enhance the satisfaction of training recruit training of MZ generation soldiers. In the future, it is necessary to study whether there is a difference in the effect of

recruit training applied with the Havruta learning method according to the educational background of the recruits, and also it is necessary to study whether it affects the training achievement.

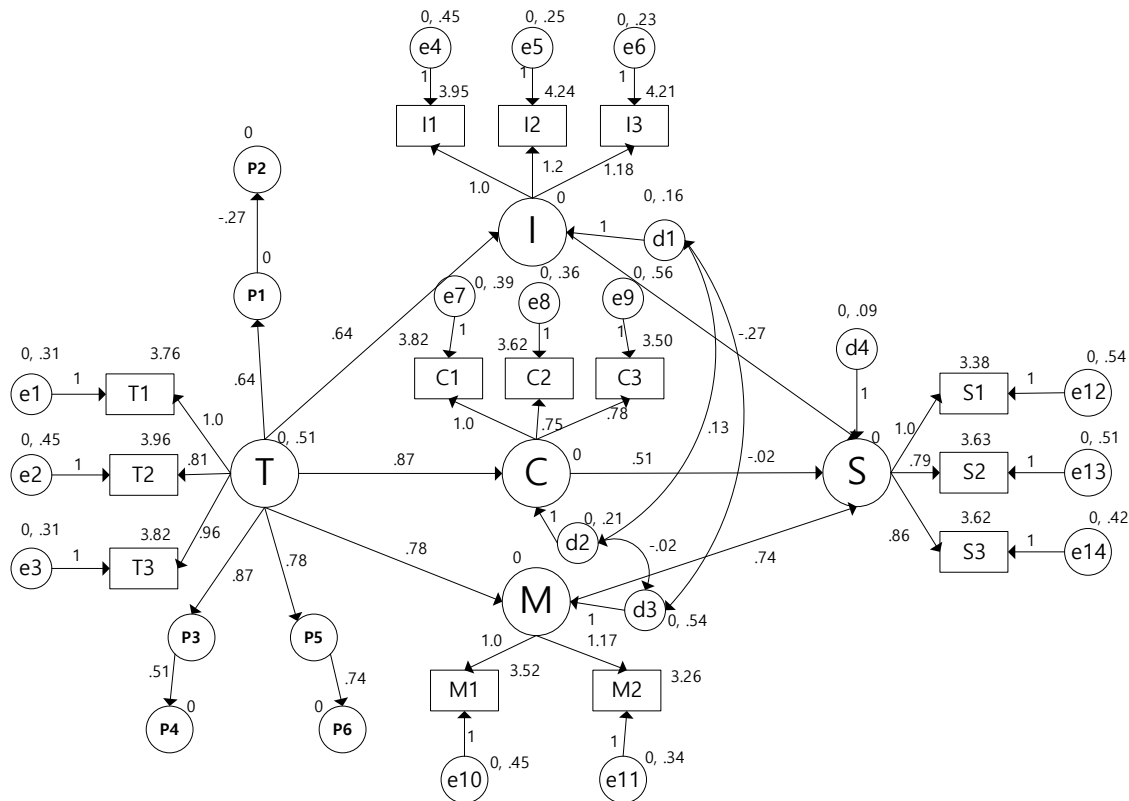


Fig. 4: The multiple mediation model

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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