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ORIGINAL PAPER

Relationship of early-life stress and resilience to military adjustment in a young adulthood population

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Abstract
Purpose Early-life stress (ELS) may mediate adjustment problems while resilience may protect individuals against adjustment problems during military service. We investigated the relationship of ELS and resilience with adjustment problem factor scores in the Korea Military Personality Test (KMPT) in candidates for the military service.
Methods Four hundred and sixty-one candidates participated in this study. Vulnerability traits for military adjustment, ELS, and resilience were assessed using the KMPT, the Korean Early-Life Abuse Experience Questionnaire, and the Resilience Quotient Test, respectively. Data were analyzed using multiple linear regression analyses.
Results The final model of the multiple linear regression analyses explained 30.2 % of the total variances of the sum of the adjustment problem factor scores of the KMPT. Neglect and exposure to domestic violence had a positive association with the total adjustment problem factor scores of the KMPT, but emotion control, impulse control, and optimism factor scores as well as education and occupational status were inversely associated with the total military adjustment problem score.
Conclusions ELS and resilience are important modulating factors in adjusting to military service. We suggest that neglect and exposure to domestic violence during early life may increase problem with adjustment, but capacity to control emotion and impulse as well as optimistic attitude may play protective roles in adjustment to military life. The screening procedures for ELS and the development of psychological interventions may be helpful for young adults to adjust to military service.

Keywords Neglect · Domestic violence · Resilience · Optimism · Military adjustment

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Introduction

Early-life stress (ELS) can be defined as adverse physical and psychological experiences during childhood and adolescence including physical and/or emotional, sexual abuse, neglect, and exposure to domestic violence [1]. A recent review summarized that ELS may have an enduring negative effect on cognitive and affective functioning in adulthood [2], which may be associated with problems

adjusting to military life. Previous studies revealed that a history of childhood adversity was one of the factors associated with post-traumatic stress symptoms in deployed troops [3–5] and the adult population [6, 7]. Also, relationship problems in their families predicted poor health outcomes among military personnel [8]. In Asian cultures, soldiers diagnosed with adjustment disorder reported higher neuroticism, lower extraversion, and maternal overprotection when compared to the control group [9]. Other researchers have suggested that an empathetic and receptive family background can be protective for good adaptation to military life [10].

Resilience means an ability to maintain equilibrium in the face of adversity [11, 12]. Using children and teenagers who do not show emotional and psychological problems regardless of their environmental adversities during development [13, 14], longitudinal studies have reported that one-third of the children in a high-risk group grew into competent adults without serious behavioral or learning problems [14].

There are two main factors that determine a new soldier's adjustment to the military system: the environmental factor and the personal factor [15]. With the mandatory conscription system in Korea, Korean men must complete military duties. Having special purposes and duties, the military has a strict regimentation system that controls individual soldiers and keeps a hierarchical relationship between the commander and the soldiers. During an obligatory military service period, most new soldiers adjust to the military system but some individuals develop serious adjustment problems that deteriorate their physical and mental health, which prevents them from continuing the service [16]. In addition, maladjusted soldiers are likely to cause various military accidents including suicide or desertion from the military service [17]. In this study, we focused on ELS and resilience as important individual factors for military adjustment. A previous study on ELS and adaptation to military life revealed that emotional neglect was associated with lower unit cohesion and lower confidence in leaders, preventing soldiers from access to social support within the military system [18]. The military has paid growing attention to the problems caused by the maladjusted soldiers because the accidents can have negative impact on the morale of soldiers and weaken fighting power in the troops.

Currently, enlisted conscripts receive psychiatric evaluation at the training camps in Korea. In this evaluation, the soldiers who show difficulties in adapting to the military are sent back home or ordered to take a further conscription examination again by the Military Manpower Administration. The rate of the soldiers who were invalided home due to the psychiatric problems has been increased from 10.5 % in 2002 (745 in 7,116 invalided soldiers) to 26.5 % in 2008 (1,397 in 5,272 invalided soldiers) [19, 20].

Until now, most studies have been investigating the hospitalized soldiers or soldiers who showed difficulties in adapting to military life after enlistment [16, 21–23]. However, the Korean soldiers who are invalided home at the recruitment examination or from training camp could not have had sufficient military experience because they were exempted from most disciplines and were sent back home within 3–5 days after their enlistment. Thus, further research on the internal reasons causing soldiers to show maladaptive responses at the recruitment step is warranted.

In the present study, we assessed the ELS and resilience of enlisted soldiers as well as demographic factors to find individual vulnerability and strength factors associated with the maladjustment in the Korean military system.

Methods

Subjects

Among the recruits who visited the Northern Gyeonggi Military Manpower Administration in 2009 from April 27th to 30th, data were collected from the examinees that provided written informed consent to participate after receiving a complete description of the study. All examinees during this period were enrolled and the percentage of the subjects in the present study was about 0.7 % (487/70,126) of the total examinees who visited the Northern Gyeonggi Military Manpower Administration in 2009. Individual characteristics including age, educational status, occupation, average family incomes, parental status were assessed and the ELS survey and resilience were measured for this study during the recruitment examination period. All examinees were administered using the Korea Military Personality Test (KMPT), a personality test that is included at the conscription examination. In the final analyses, 461 of 487 examinees were included excluding 26 examinees whose standardized scores of the faking-bad and rare-response index in the KMPT exceeded 70 [24]. All subjects were male. The age range of the subjects was between 18 and 20 years and the mean age of subjects was 18.4 $\pm$ 0.5 years old. Most of the subjects were students (76.1 %) and living with both parents (86.8 %). The Institutional Review Board of the ethical committee of the Hallym University Sacred Heart Hospital approved this study.

Assessment

The Korea Military Personality Test

The Korean Psychological Association developed the KMPT in 1998 through research funded by the Korea Ministry of National Defense to identify soldiers who have

high potential for maladjustment problems in the military or who may need to be subject to further diagnostic screening [24]. Additional objectives of the development of the KMPT were to exclude the enlisted soldiers who could not adjust to military life and to provide commanders with psychological data about latent maladjusted soldiers [24]. The KMPT has been adopted by the Korea National Military Manpower Administration and the Armed Forces Medical Command.

The KMPT is comprised of 365 items which require 'yes' or 'no' answers. Each subsection consists of three validity scales (faking-good response, FG; faking-bad response, FB; rare response, INF), six content factors (preparedness problem for military life, MPE; group conformity problems, GR; self-avoidance, SA; hostility expression, HE; somatic symptoms, SMS; resistance to discipline or conformity problem, CON), and ten clinical factors (anxiety, depression, somatization, schizophrenia, personality disorder, behavior retardation, criminality, aggressiveness–hostility, desertion of duty, paranoia).

In the original study for the development of the KMPT, factors were specified as follows: the military preparedness factor (MPE), negative attitudes toward the military service originated from difficulties in grasping situations and coping appropriately in a communal setting; the group conformity problems factor (GR), problems in getting along with other people due to lack of sense and patience and a tendency to exhibit passive behavior; the self-avoidance factor (SA), lack of autonomy, feeling of worthlessness, reduced interest in normal daily activities, and decreased responsibility due to low vigilance for other's evaluation; the hostility expression factor (HE), a tendency to take aggressive and hostile acts; the somatic symptom factor (SMS), multiple somatic complaints and excessive anxiety about one's health and also a tendency to excuse oneself from difficult situations by complaining of physical symptoms; the conformity problem factor (CON), individuals who get high score in this factor may not conform to social norm, abandon one's duty, oppose the seniors or resist against authority, and show prominent splitting behavior regarding likes and dislikes [24]. Test–retest reliability of each content factor was 0.64 for MPE, 0.66 for GR, 0.71 for SA, 0.79 for HE, 0.74 for SMS, and 0.72 for CON. Internal consistency (Cronbach's alpha) of each factor was 0.57 for MPE, 0.61 for GR, 0.75 for SA, 0.87 for HE, 0.84 for CON, respectively, in the original study [24]. Validity scales are used to find simulation/malingering soldiers, dissimulation soldiers, and unfaithful soldiers in the KMPT, and six content scales offer the information about psychological characters and life styles to predict problems in adaptation to the military system. Standardized scores were used for the evaluation. A feasibility study demonstrated discriminant validity that all subscale scores in maladjusted and psychiatric patient groups showed significant differences from the normal control group [25]. However, this study also suggested that this test could not provide definite cut-off points to predict adjustment problem and psychiatric illness during military service because of low specificity for a further diagnostic workup and poor concordance rate with specialists' opinion. Among 369 subjects who were categorized into the further examination group in the KMPT, only 15 subjects (4.1 %) were finally recommended for further examination or excluded from military service by screening psychiatrists [25].

The higher the sum of the standardized score of six content scales, the higher the probability for military adjustment problems. To find the relationship between ELS, resilience, and military adaptation, we used the total sum of the six content scales as the primary outcome variable in this study.

The Korean Early-Life Abuse Experience Questionnaire

To measure ELS of the subjects, the Korean Early-Life Abuse Experience Questionnaire was used. This questionnaire was organized by Oh and the colleagues [26] to inquire about the frequency of abuse (physical, emotional, and sexual), neglect, and exposure to domestic violence during their childhood and adolescence. To assess ELS in Korea, they collected and modified 34 questions about emotional abuse (i.e., "I have experienced verbal threats" and "I have been insulted with violent language"), physical abuse (i.e., "I have been slapped across the face" and "I have been choked"), neglect (i.e., "Nobody took me to the hospital when I was sick" and "Nobody prepared regular meals for me"), and exposure to domestic violence (i.e., "I noticed fights between my parents" and "I noticed that one of my parent punched or kicked the other parent") from the Parent–Child Conflict Tactics Scale [27]. Ten items for sexual abuse (i.e., "Someone forcibly kissed me or touched my body" and "I have watched that someone masturbating in front of me") were adopted from the child abuse assessment scale which was developed by another group of Korean researchers and included ten items about sexual abuse [28]. The internal consistency (Cronbach's Alpha) for each ELS factor was 0.787 (emotional abuse), 0.812 (physical abuse), 0.875 (neglect), 0.802 (sexual abuse), and 0.951 (exposure to domestic violence).

The Resilience Quotient test

To measure the resilience of the subjects, the Resilience Quotient test developed by Reivich and Shatte [12] was used in this research. It is composed of 56 questions with 7 factors regarding emotion control (EC, the ability to

manage our internal emotional state), impulse control (IC, the ability to manage impulsive behavioral expression), optimism (OP, the ability to maintain positive attitude about the future), causal analysis (CA, the ability to identify the causes of adversity), empathy (EM, the ability to understand other's emotional state), self-efficacy (SE, the beliefs that we can solve our problems and that we have the ability to succeed), and reaching out (RO, the ability to enhance the positive aspects of life). One of the authors translated the survey from English to Korean. To ensure consistency between the English and the Korean versions, the translated items were back translated into English by a bilingual graduate student. Then, two independent judges checked the equivalence of the original and the back-translated versions of the items. After discussing any instance of nonequivalence, the authors did the final editing of the translated versions.

One of the authors of this paper, Joohan Kim, standardized and tested the validity of the Korean version of the resilience scale with a sample from Korean general population and demonstrated stability of the scale across the culture [29]. In the original data of the standardization study, the internal consistency (Cronbach's Alpha) of each factor with the general population was as follows: EC (0.729), IC (0.705), OP (0.662), CA (0.702), EM (0.733), SE (0.755), and RO (0.774) [29].

Statistical method

To investigate the relationship between ELS and resilience factors to military adjustment, multiple regression analyses were conducted using SPSS version 18 (http://www-01.ibm.com/software/analytics/spss/, New York). Analyses of variance and the Scheffe-post hoc tests were performed to compare the total sum of the content scale in KMPT depending on the demographic characteristics such as education, occupation, economic level, and parental status. Results were considered statistically significant when the two-sided probability was <0.05.

Results

When comparing their expected military adjustment problem scores based on the demographic characteristics, there were significant differences in the sum of the six content factor score of the KMPT depending on their education level and occupational status but not the economic level and the parental status. The mean military adjustment problem score in the subjects with high school education or less was significantly higher than that of the university students. Jobless subjects showed higher military adjustment problem scores compared to the other two groups (students and those who have job). These results are summarized in Table 1. In the comparison with the scores in the KMPT content factor, ELS factor, and resilience factors (Table 2), those with high school education or less showed higher scores in GR, SA, and CON factors and reported higher neglect experiences than the university student group. For occupation status (Table 3), jobless subjects showed higher GR factor scores than the other two groups and reported more neglect experiences than the student group.

To consider the relationship of ELS and resilience with military adjustment problem factors, multiple regression analyses of each content scale of the KMPT were conducted. As summarized in Table 4, all regression models were significant, explaining 15.2–32.8 % of the variations in each content factor of the KMPT. Exposure to domestic violence showed a positive association, however, educational level, EC, OP, EM, SE, and RO factors of the Resilience Quotient test showed negative association with the MPE factor ($R^2 = 0.275$, $F = 11.902$, $p < 0.001$). Exposure to domestic violence showed a positive association but educational level and EC factor were negatively associated with the GR factor ($R^2 = 0.310$, $F = 14.074$, $p < 0.001$). Neglect was positively associated but educational level, EC, IC, OP, and SE factors were negatively associated with the SA factor ($R^2 = 0.328$, $F = 15.326$, $p < 0.001$). Exposure to domestic violence and RO factors were positively associated but EC and IC factors were

Table 1 Comparison of the total sum of content factors in the KMPT depending on demographic data

Demographic variable	*N*	Total KMPT	*F*	Sig.
Education level				
≤High school[a]	129	297.1 ± 37.6	6.369	0.002
College[a, b]	190	291.1 ± 37.5		
University[b]	136	283.3 ± 38.3		
Occupation				
None[a]	64	316.6 ± 34.8	10.074	<0.001
Student[b]	351	288.3 ± 39.0		
Having a job[b]	46	291.5 ± 32.6		
Economic level				
Low	213	294.4 ± 48.4	1.072	0.343
Middle	214	289.8 ± 37.5		
High	30	301.7 ± 86.4		
Parents				
Both parents	400	292.5 ± 48.0	0.337	0.714
Father only	27	298.4 ± 44.8		
Mother only	34	288.4 ± 40.5		

Data are presented with mean ± standard deviation. The Scheffe's post hoc tests were used. Equal alphabet means homogenous subgroup

KMPT The Korea Military Personality Test

Table 2 Comparison of scores in the KMPT content factor and ELS and resilience factor depending on the education level

	≤High school ($n = 129$)	College ($n = 190$)	University ($n = 136$)	F	Sig.
MPE	49.5 ± 8.7	47.8 ± 8.9	47.3 ± 9.1	2.181	0.114
GR	**50.7 ± 9.0**[a]	**48.8 ± 9.3**[a,b]	**47.2 ± 9.2**[b]	4.601	0.011
SA	**50.5 ± 7.2**[a]	**49.1 ± 7.0**[a,b]	**48.2 ± 6.9**[b]	3.474	0.032
HE	48.6 ± 9.4	47.8 ± 8.9	46.3 ± 9.1	2.132	0.120
SMS	47.1 ± 7.3	45.8 ± 6.9	45.9 ± 7.4	1.345	0.262
CON	**50.9 ± 10.2**[a]	**51.6 ± 9.1**[a]	**46.2 ± 7.2**[b]	5.450	0.005
EA	3.22 ± 12.50	1.38 ± 2.62	1.87 ± 3.37	2.640	0.072
PA	3.73 ± 5.24	2.63 ± 4.03	2.93 ± 4.33	2.318	0.100
SxA	0.06 ± 0.27	0.01 ± 0.13	0.11 ± 0.68	2.241	0.107
NG	**1.06 ± 2.57**[a]	**0.31 ± 1.07**[b]	**0.37 ± 0.99**[b]	9.100	<0.001
DV	0.20 ± 0.43	0.12 ± 0.40	0.17 ± 0.37	1.599	0.203
EC	3.9 ± 3.9	4.0 ± 4.5	4.2 ± 4.0	0.214	0.807
IC	3.3 ± 3.9	3.0 ± 3.7	3.5 ± 3.7	0.544	0.581
OP	3.3 ± 3.7	3.6 ± 3.7	3.4 ± 3.7	0.248	0.780
CA	3.5 ± 3.4	3.2 ± 4.0	3.6 ± 3.5	0.473	0.623
EM	5.9 ± 4.3	6.2 ± 3.5	5.9 ± 3.5	0.415	0.660
SE	2.9 ± 3.9	2.9 ± 4.0	2.5 ± 4.2	0.439	0.645
AC	4.2 ± 3.8	4.5 ± 3.6	3.5 ± 3.8	3.227	0.041

Data are presented with mean ± standard deviation. The Scheffe's post hoc tests were used. Equal alphabet means homogenous subgroup

KMPT The Korea Military Personality Test, *MPE* preparedness problem for military life, *GR* group conformity problem, *SA* self-avoidance, *HE* hostility expression, *SMS* somatic symptoms, *CON* resistance to discipline or conformity problem, *EA* emotional abuse, *PA* physical abuse, *SxA* sexual abuse, *NG* neglect, *DV* exposure to domestic violence, *EC* emotion control, *IC* impulse control, *OP* optimism, *CA* causal analysis, *EM* empathy, *SE* self efficacy, *RO* reaching out

The statistical values of significant variables are shown in bold

negatively associated with the HE factor ($R^2 = 0.217$, $F = 8.716$, $p < 0.001$). Neglect and exposure to domestic violence were positively associated but EC and OP factors were negatively associated with the SMS factor ($R^2 = 0.152$, $F = 5.608$, $p < 0.001$). Physical abuse, SE, and RO factors were positively associated but EC and IC factors were negatively associated with the CON factor ($R^2 = 0.231$, $F = 9.426$, $p < 0.001$).

Finally, multiple linear regression analyses were conducted using the total content scales of the KMPT as a dependent variable and significant demographic variables (education and occupation), ELS profile scores, and resilience factor scores as independent variables. The relative influence of each factor on the total content scales of the KMPT is shown in Table 5.

Model 1 was the stage that only the demographic variables were put in the regression model. The explanatory power of model 1, explaining the variance of the total content scales of the KMPT, was just 4.4 % but was significant ($F = 10.307$, $p < 0.001$). Educational level and occupation status were significantly associated with the total score of the content scale of the KMPT. In model 2, the ELS profiles were added to the demographic variables and its explanatory power was raised to 11.5 % ($F = 8.310$, $p < 0.001$). In this model, physical abuse, neglect, and exposure to domestic violence were added as significant variables. In model 3, which combined resilience variables with model 2, the explanatory power was raised to 30.2 % ($F = 13.597$, $p < 0.001$). The final model revealed that the resilience variables were the most influential variables in predicting the military maladjustment. Inputting the resilience factors, the physical abuse variable was set off and the EC, IC, and OP factors appeared to be significant in the final model.

Discussion

To find the individual characteristics of the enlisted soldiers related to adjustment problems, we investigated the relationship of the ELS and resilience factors with the content factor scores of the KMPT.

The six content factors of the KMPT have significant associations with the ELS and resilience factors. The MPE factor is associated with exposure to domestic violence among the ELS factors, but the resilience factors including EC, OP, SE, and RO showed negative association with the MPE factor. A previous research reported that the

Table 3 Comparison of the scores in the KMPT content factor, ELS, and resilience factor depending on the occupational status

	None ($n = 129$)	Student ($n = 190$)	Having a job ($n = 136$)	F	Sig.
MPE	49.6 ± 8.6	47.8 ± 9.1	48.4 ± 8.0	1.154	0.316
GR	**52.3 ± 8.2**[a]	**48.3 ± 9.4**[b]	**48.4 ± 8.4**[b]	5.145	0.006
SA	51.6 ± 6.9	48.8 ± 7.2	49.9 ± 6.1	4.479	0.012
HE	49.4 ± 9.7	47.3 ± 9.1	47.3 ± 9.1	1.360	0.258
SMS	48.5 ± 6.6	45.8 ± 7.3	45.8 ± 7.3	3.997	0.019
CON	52.4 ± 9.7	50.1 ± 9.9	50.1 ± 9.9	1.615	0.200
EA	4.00 ± 16.9	1.69 ± 3.35	2.11 ± 4.15	2.880	0.057
PA	3.50 ± 5.19	2.90 ± 4.27	3.28 ± 5.12	0.567	0.567
SxA	0.17 ± 0.92	0.05 ± 0.29	0.05 ± 0.21	2.463	0.086
NG	**1.13 ± 2.06**[a]	**0.41 ± 1.46**[b]	**0.67 ± 2.14**[a,b]	5.478	0.004
DV	0.15 ± 0.35	0.16 ± 0.41	0.14 ± 0.40	0.068	0.934
EC	3.1 ± 4.0	4.1 ± 4.3	4.6 ± 3.7	1.794	0.168
IC	2.7 ± 3.7	3.3 ± 3.7	3.5 ± 4.3	0.733	0.481
OP	2.7 ± 3.7	3.6 ± 3.8	3.5 ± 3.0	1.342	0.262
CA	2.8 ± 3.6	3.5 ± 3.7	3.5 ± 3.5	0.830	0.437
EM	5.0 ± 4.2	6.2 ± 3.6	5.6 ± 4.1	3.354	0.036
SE	1.7 ± 3.6	2.9 ± 4.1	3.2 ± 3.9	2.711	0.068
AC	3.6 ± 3.5	4.2 ± 3.8	4.2 ± 3.6	0.650	0.822

Data are presented with mean ± standard deviation. The Scheffe's post hoc tests were used. Equal alphabet means homogenous subgroup

KMPT The Korea Military Personality Test, *MPE* preparedness problem for military life, *GR* group conformity problem, *SA* self-avoidance, *HE* hostility expression, *SMS* somatic symptoms, *CON* resistance to discipline or conformity problem, *EA* emotional abuse, *PA* physical abuse, *SxA* sexual abuse, *NG* neglect, *DV* exposure to domestic violence, *EC* emotion control, *IC* impulse control, *OP* optimism, *CA* causal analysis, *EM* empathy, *SE* self efficacy, *RO* reaching out

The statistical values of significant variables are shown in bold

volunteers with high internal motives that may arouse interest, pleasure, a sense of accomplishment, and self-determination during military service could keep their quality of military life affirmative and satisfactory [30]. Another research suggested that 72.5 % of maladjusted soldiers had negative attitudes about joining the military service while 78 % of adaptive soldiers had affirmative attitudes toward joining the military [31].

The GR factor showed a significant association with exposure to domestic violence among the ELS factors as well as EC among the resilience factors. This result is consistent with the previous studies reporting that children who are exposed to domestic violence have lower levels of social competencies [32, 33] and poor performance in social functioning [34] as compared to the non-exposed children. Other researchers also suggested that emotional neglect was associated with lower unit cohesion and lower confidence in leaders [18].

The SA factor showed a significant positive association with neglect among the ELS and a negative association with EC, IC, OP, and SE among the resilience factors. Previous studies have shown that the neglected children have more severe social withdrawal with limited peer relationship and internalizing behavior compared to physically abused children [35]. Also, neglected children have low impulse control capacity since they have insufficient communication and social skills, and impatience in delayed gratification. They tend to become depressed easily and their self-esteem is also lowered by repeated emotional damages. These psychosocial factors could delay the development of the resilience factors such as EC, IC, OP, and SE.

The HE factor showed a significant positive association with exposure to domestic violence and RO factor and negative association with EC and IC factors. It is in line with the studies reporting that the children exposed to domestic violence have a tendency to lose their temper easily by their aggressive parents and have a high probability to create problems such as oppositional defiant behaviors, running away from home, and substance abuse [36]. Other researchers have also reported that the subjects who were exposed to domestic violence in childhood are more likely to express hostility to their intimate partner in adulthood [37].

Resilience may play a bidirectional role against a conformity problem (CON). As the EC and IC factors were increased, the CON factor scores were significantly decreased. Thus, individuals who have high capacity to control emotions and impulses can efficiently follow military rules under stressful situations and can obey military rules. Meanwhile, the SE and RO factors among the resilience factors were associated with increased CON factor score. Resilient individuals with a sense of self-efficacy and the capacity to reach out appear to be adaptable but tend to show assertive responses to stressful situations in the military while keeping affirmative and active attitudes [12, 29].

When we consider the relationship of military adjustment with all the assessed variables together in the final multiple linear regression model, we were able to find education, occupation among demographic factors, neglect and exposure to domestic violence among the ELS factors, and EC, IC, and OP among the resilience factors as significant independent variables for the total content factor score of the KMPT. Education and occupational status also showed a negative association with the total content factor scores of the KMPT in the final regression model. In a large prospective study, education level was associated with a decreased risk of mental illness [38].

Neglect is one of the most important ELS factor associated with military maladjustment in the present study.

Table 4 Association of early-life stress and resilience with each content factor in the KMPT ($n = 461$)

Variable	MPE		GR		SA		HE		SMS		CON	
	B	*T*	*B*	*T*	*B*	*t*	*B*	*t*	*B*	*t*	*B*	*t*
Education	**−1.040**	**−2.119**[a]	**−1.464**	**−2.942**[b]	**−0.850**	**−2.256**[a]	−0.571	−1.090	−0.187	−0.433	−0.598	−1.085
Occupation	0.449	0.589	−0.954	−1.234	0.029	0.049	0.010	0.012	−0.678	−1.010	−0.765	−0.893
EA	−0.014	−0.271	−0.079	−1.443	0.028	0.692	0.106	1.837	0.051	1.078	0.098	1.614
PA	0.013	0.146	0.014	0.151	0.043	0.620	0.130	1.321	0.072	0.897	**0.207**	**2.004**[a]
SxA	0.040	0.044	1.307	1.418	−0.004	−0.005	0.921	0.949	−0.102	−0.127	1.098	1.075
NG	0.279	1.217	0.270	1.164	**0.672**	**3.823**[c]	0.365	1.494	**0.425**	**2.112**[a]	0.412	1.600
DV	**3.115**	**3.269**[b]	**3.994**	**4.136**[c]	1.364	1.8	**2.770**	**2.723**[b]	**1.943**	**2.319**[a]	1.337	1.248
EC	−0.473	−3.964	**−0**.584	−4.828[c]	−0.261	−2.857[b]	−0.758	−5.948[c]	−0.411	−3.914[c]	−0.684	−5.103[c]
IC	−0.125	−1.035	−0.194	−1.579	**−0.236**	**−2.541**[a]	**−0.280**	**−2.163**[a]	−0.068	−0.637	**−0.447**	**−3.282**[b]
OP	**−0.334**	**−2.638**[b]	−0.172	−1.338	**−0.208**	**−2.140**[a]	−0.250	−1.846	**−0.281**	**−2.521**[a]	−0.175	−1.233
CA	−0.002	−0.018	−0.187	−1.371	−0.087	−0.847	0.067	0.468	0.012	0.104	−0.051	−0.339
EM	**0.257**	**2.093**[a]	0.014	0.115	−0.064	−0.678	0.076	0.583	0.084	0.780	0.092	0.666
SE	**−0.325**	**−2.516**[a]	−0.225	−1.719	**−0.260**	**−2.619**[b]	0.200	1.454	0.062	0.548	**0.394**	**2.715**[b]
RO	**−0.301**	**−2.544**[a]	−0.025	−0.209	−0.077	−0.854	**0.263**	**2.085**[a]	0.017	0.170	**0.650**	**4.894**[c]
R^2	0.275		0.310		0.328		0.217		0.152		0.231	
F	**11.902**[c]		**14.074**[c]		**15.326**[c]		**8.716**[c]		**5.608**[c]		**9.426**[c]	

KMPT The Korea Military Personality Test, *MPE* preparedness problem for military life, *GR* group conformity problem, *SA* self-avoidance, *HE* hostility expression, *SMS* somatic symptoms, *CON* resistance to discipline or conformity problem, *EA* emotional abuse, *PA* physical abuse, *SxA* sexual abuse, *NG* neglect, *DV* exposure to domestic violence, *EC* emotion control, *IC* impulse control, *OP* optimism, *CA* causal analysis, *EM* empathy, *SE* self efficacy, *RO* reaching out

The statistical values of significant variables are shown in bold

[a] $p < 0.05$

[b] $p < 0.01$

[c] $p < 0.001$

Child neglect has been increasing from about 30 % in 2001 to 40 % in 2008 among all the child abuse reported in Korea [39]. Neglect occurring early in life can have a serious detrimental effect during a subsequent developmental period. Hildyard and Wolfe [35] suggested that neglected children have more severe intellectual deficits, limited social skills, and internalizing problems. Previous studies reported that ELS may be associated with increasing the risk of post-deployment PTSD, and neglect was the most strongly associated factor for development of post-deployment PTSD among the ELS factors [40]. Conscripts, who were neglected during their early life, may experience adjustment problems more frequently because they may have a deficit in accessing social support in military environment [18]. Exposure to domestic violence is also an important ELS factor in military adjustment. Exposure to domestic violence was associated with several military adjustment problem factors such as MPE, GR, HE, and SMS. Domestic conflict is a relatively common ELS experience among general population compared to other severe childhood adversity such as physical and sexual abuse and neglect [41]. In a meta-analytic review, if children witnessed some domestic violence, they showed a significant association with poor psychosocial outcomes [42].

Resilience was found to be a more important modulating factor than ELS for military adjustment in the present study. This finding suggests that the resilience factors have to be considered with more weight than the ELS factors on predicting military adjustment of enlisted soldiers. Studies investigating the relationship between resilience and stress in the military service have consistently reported that resilience may play a protective role against psychiatric problems during military service [43, 44].

Emotion, impulse control and optimism were significantly associated with military adjustment in the final regression model. In Korea, researchers have found that the soldiers, hospitalized by adjustment disorders in the military, showing high impulsiveness, could cause many problems because their senior soldiers or commanders criticize them frequently and they had difficulties in controlling their negative emotions under growing stress [45]. Previous studies have emphasized that emotion and impulse controls are crucial factors in building a successful life [46]. Other researches investigating the relationship between personality characteristics and resilience found that emotion and

Table 5 ELS and resilience factors associated with the total score of the content scales in the KMPT ($n = 461$)

Variable	Univariate		Model 1		Model 2		Model 3	
	B	*t*	*B*	*t*	*B*	*t*	*B*	*t*
Education	**−10.149**	**−3.531**[c]	**−8.884**	**−3.077**[b]	**−6.797**	**−2.394**[a]	**−6.608**	**−2.587**[a]
Occupation	**−14.557**	**−3.249**[b]	**−12.743**	**−2.821**[b]	**−11.542**	**−2.618**[b]	**−8.482**	**−2.137**[a]
EA	0.585	1.887			−0.085	−0.272	0.054	0.191
PA	**2.017**	**4.178**[c]			**1.266**	**2.385**[a]	0.817	1.703
SxA	**10.690**	**2.113**[a]			2.780	0.530	0.955	0.201
NG	**6.551**	**5.033**[c]			**4.815**	**3.647**[c]	**3.459**	**2.899**[b]
DV	**19.411**	**3.596**[c]			**12.833**	**2.337**[a]	**12.272**	**2.475**[a]
EC	**−5.021**	**−10.746**[c]					**−3.096**	**−4.984**[c]
IC	**−4.095**	**−7.389**[c]					**−1.295**	**−2.053**[a]
OP	**−4.437**	**−8.069**[c]					**−1.816**	**−2.751**[b]
CA	**−4.324**	**−7.683**[c]					−0.518	−0.738
EM	**−3.753**	**−6.718**[c]					−0.409	−0.639
SE	**−2.994**	**−5.766**[c]					0.599	0.889
RO	**−1.817**	**−3.153**[b]					0.354	0.576
R^2			0.044		0.115		0.302	
F			**10.307**[c]		**8.310**[c]		**13.597**[c]	

The statistical values of significant variables in the final regression model are shown in bold

ELS early-life stress, *KMPT* The Korea Military Personality Test, *EA* emotional abuse, *PA* physical abuse, *SxA* sexual abuse, *NG* neglect, *DV* exposure to domestic violence, *EC* emotion control, *IC* impulse control, *OP* optimism, *CA* causal analysis, *EM* empathy, *SE* self efficacy, *RO* reaching out

[a] $p < 0.05$

[b] $p < 0.01$

[c] $p < 0.001$

impulse controls were negatively associated with neuroticism while positively associated with conscientiousness and agreeableness [47]. In a research regarding the individuals who suffered from post-traumatic stress symptoms following the 9–11 attack, the ability to manage highly stressful situations was associated with the capacity of controlling of emotions and impulses [48]. Optimism is also important to military adjustment. In many studies, optimistic individuals believe that their present situation will be improved in the future and such optimism is related to a satisfactory life [49], enhancing psychological stability, and promoting physical and mental health [50, 51]. Consequently, optimistic individuals can improve their strategies against stress including positive reappraisals and goal-directed problem solving by taking affirmative emotions. Even in the stressful military environment, adaptive soldiers use mature defense mechanisms such as humor and sublimation unlike the non-adaptive soldiers [52].

One's capacity for resilience can be changed. In one longitudinal study conducted from 1975 to 1993, resilient children are difficult to sort out at one time point [13]. In short, the research emphasized that resilience properties should be measured repeatedly because they can change with changes in the environment, which is consistent with other studies [53]. Some researchers suggested programs to enhance resilience. In the Pennsylvania Resiliency Program (PRP) using the dynamic characteristics of resilience, the teenagers who received the PRP showed less depressive symptoms compared to the control group [54]. To help individuals, groups, and organizations prepare for the challenges caused by fluctuating environmental changes, Active Learning System (ALS), a joint-venture company founded based on the PRP, characterized the scientific training programs to enhance resilience. These programs have been used by military areas such as the United States Navy, West Point, and the UN Peace Keeping Force as well as private companies [55]. Under the current conscript system, there is no other option except invalidation for the soldiers who are predicted or possess the potential to create problems in the military. However, the invalided soldiers can be reduced and it is possible to increase the capacity of soldiers to cope with their stress through a suitable intervention program to increase resilience of the soldiers.

In the present study, sexual abuse and emotional abuse did not show significant association with adjustment problem in the military. Low positive response rate of sexual abuse and gender effect may contribute to the lack of association because only male subjects were included in this study and

the positive response rate for sexual abuse was 6.5 % (30/461). Sexual abuse in children consists of only 5.5 % in all the childhood abuse reported, and majorities of the cases (91.0 %) include girls [39]. In the previous study, women showed increased susceptibility to the detrimental effect of sexual abuse compared to men [56].

This research has some limitations. First, this research was conducted based on the soldiers' retrospective memories, therefore distorted memories can influence on the results. Considering the traits of the conscription system, the soldiers who participate in this research can answer unfaithfully and the exaggerated answers about ELS or resilience can be included. To prevent such confounding effects, we excluded the soldiers who had high scores on faking-bad scale or rare-response scale in the present study. Previous studies recommended to ensure confidentiality and to communicate the relevance of ELS to mental health for successful employment of the ELS questionnaires in military screening [57]. Second, this research has a limitation as a cross-sectional research. Finally, the result of this study cannot be generalized to the national population because these data were gathered from a regional military manpower office in Korea at one time point and the number of subjects was small. Even though the discriminant validity of the KMPT was demonstrated in the validation studies of the KMPT [25], prospective cohort study following up with the changes of the KMPT content factors and the resilience profiles from the enlistment to the discharge of the soldiers and its relationship with ELS factors need to be conducted.

Conclusion

This is the first study simultaneously investigating two important psychosocial characteristics including ELS and resilience for military adjustment in a Korean military population. To identify individual characteristics associated with military maladjustment before starting the military service, we assessed the candidates' ELS and resilience profiles with the multiphasic personality inventory and questionnaires from a local Military Manpower Administration. The individuals who had experienced neglect and witnessed domestic violence during their early-life period had increased probability of adjustment problems in military life. Meanwhile, the resilience factors such as emotion control, impulse control, and optimism can serve as protective factors for the soldiers to help them adjust to military life.

The present study shows that resilience may have greater modulating effects than ELS in soldiers' military adjustment. The evaluation of ELS and resilience in addition to the KMPT may be helpful in predicting the adaptability to military life in candidate groups. The selective training program for the potential maladaptive soldiers with ELS and low resilience should be considered in the training camps to enhance their resilience capacity. In addition, the commanders and the leaders should pay attention to the family background and personality characteristics of the soldiers regarding ELS and resilience.

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