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Title: A latent profile analysis of trait emotional intelligence to identify beneficial and risk profiles in well-being and job performance : a study among Japanese eldercare nurses

Year: 2016

Version:

Please cite the original version:

Toyama, H., & Mauno, S. (2016). A latent profile analysis of trait emotional intelligence to identify beneficial and risk profiles in well-being and job performance : a study among Japanese eldercare nurses. International Journal of Work Organisation and Emotion, 7(4), 336-353. https://doi.org/10.1504/IJWOE.2016.081841

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A Latent Profile Analysis of Trait Emotional Intelligence to Identify Beneficial and Risk Profiles in Well-being and Job Performance: A Study among Japanese Eldercare Nurses

Abstract: Trait emotional intelligence (EI) is a noteworthy psychological resource in nursing. However, its effects on well-being and job performance are inconsistent. Thus, we explored the latent beneficial and risk profiles of trait EI among 461 Japanese eldercare nurses. Latent profile analysis revealed six latent profiles. In addition, multivariate analysis of covariance (MANCOVA) showed that the profile with the highest overall scores on the trait EI dimensions was associated with the most beneficial outcomes (better well-being, higher job performance). In contrast, the profiles with lower overall scores on the trait EI dimensions showed negative outcomes. Moreover, a disproportional profile, characterized by higher interpersonal EI and lower situational EI, also showed poorer outcomes. The findings indicate that trait EI is associated with subjective well-being and job performance, depending both on the overall levels of trait EI and on the dimensionality of the sub-factors within the different trait EI profiles.

1 Introduction

Japan is one of the countries experiencing a dramatic increase in its aging population (Arai et al., 2015). In consequence, the provision of care for the elderly has increased in importance and its quality is largely contingent on the competence of nursing care staff (Furumura, 2011). In recent years, the structure of nursing care in Japanese special nursing homes has undergone sweeping reforms and is nowadays referred to as a unit care system (Harada and Miyawaki, 2013). However, a recent study reported that Japanese nurses showed significantly higher psychological symptoms, such as exhaustion and depression, than other occupational groups such as office workers, cooks and administrative workers (Harada and Miyawaki, 2013). It is not surprising that excessive nursing stress impairs well-being, e.g., work engagement (Zacher and Winter, 2011) and job performance (Zacher et al., 2012).

Trait emotional intelligence (trait EI) is a relatively new psychological resource which has received considerable attention as a significant facilitator of well-being and job performance (Martins et al., 2010; O'Boyle et al., 2011). Nevertheless, the effects of trait EI on such variables remain unclear, and research has not yet clearly demonstrated the characteristics of beneficial vs. risk profiles of trait EI. Therefore, the purpose of this study is to explore the beneficial and risk profiles of trait EI in terms of subjective

occupational well-being (burnout, depression and work engagement) and job performance among Japanese eldercare nurses.

1.1 Theoretical background of EI

The research model of EI can be classified into two main categories (Petrides et al., 2007). The first is the trait EI model, which defines EI as a constellation of emotional self-perceptions located at the lower levels of personality hierarchies (Petrides et al., 2007). In other words, trait EI indicates personality traits that reflect subjective emotional dispositions and experiences related to emotion perception, expression evaluation and management (Petrides, 2011; Petrides and Furnham, 2004). This can be assessed with self-report questionnaires such as the Trait Emotional Intelligence Questionnaire (TEQue; Petrides and Furnham, 2004), the Bar-On Emotion Quotient Inventory (EQ-i; Bar-On, 1997) and the Schutte Self Report Emotional Intelligence Test (SSEIT; Schutte et al., 1998).

The second category is the ability EI model that defines EI as 'the abilities to perceive, appraise and express emotion; to access and/or generate feelings when they facilitate thought; to understand emotion and emotional knowledge and to regulate emotions to promote emotional and intellectual growth' [Mayer and Salovey, (1997), p. 10]. In contrast to trait EI, ability EI is more closely associated with cognitive ability

regarding effective and adaptive emotion processing, which can be captured with cognitive performance tests requiring emotionally dynamic actions and processes (Petrides, 2007, 2011) such as the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2002). Due to clear differences in measurement methods, the constructs of ability and trait EI are heterogeneous (Petrides, 2007, 2011). Empirical studies have reported weak or orthogonal relationships between them (Davis and Humphrey, 2012; Di Fabio and Saklofske, 2014), which, in turn, lead to different outcomes in the association between well-being and job performance (Martins et al., 2010; O'Boyle et al., 2011). In this study, we focus on trait EI, which is typically measured by self-report questionnaires.

Although contemporary EI research has made considerable efforts to establish the universal applicability of EI, the abilities underlying trait EI may nevertheless be dependent on the cultural context, e.g., whether the target culture is collectivist or individualist (Gökçen et al., 2014; Matsumoto et al., 2008). In collectivist cultures, including Japan, interpersonal harmony and ingroup goals are more likely to be valued than personal independence and individuality (Matsumoto et al., 2008). For the cross-cultural validity of the measures of trait EI, Fukuda et al. (2011) showed that the measure, which was designed in an individualist culture, was not directly applicable to

Japanese samples. Thus, it seems to be sensible to choose a scale suited to the norms and values of the target culture.

The Emotional Intelligence Scale (EQS; Otake et al., 2001) has since been developed and well-validated among Japanese employees across a wide range of occupations (see Otake et al., 2001; Uchiyama et al., 2001). Moreover, the EQS has the advantage of enabling a comprehensive assessment of EI from the two important perspectives of functionality (emotional abilities of perception, expression, utilization and regulation) and subjectivity (the three dimensions) of EI (Otake et al., 2001; Uchiyama et al., 2001). In light of these benefits, we regarded the EQS as the best option for assessing trait EI among Japanese eldercare nurses. The EQS identifies three major dimensions of trait EI (henceforth EI): intrapersonal, interpersonal and situational (Otake et al., 2001; Uchiyama et al., 2001). Intrapersonal EI refers to the ability to perceive and understand one's own emotions and to properly express and control one’s own feelings and thoughts. Interpersonal EI indicates the ability to perceive and understand others’ feelings and emotions to create desirable social relationships. Situational EI, which was later added to measure broader social interactions, refers to the ability to adjust the functions of the other EI dimensions in order to achieve effective emotion management and flexible adaptation to various situational changes.

In the following sections, we describe subjective well-being and job performance and review the effect of EI on these factors in the nursing context.

1.2 Subjective well-being and job performance in nursing

In health care work, nurses are often confronted with stressful situations, such as serious diseases and the death of patients (Augusto-Landa et al., 2008), which, in turn, can accelerate psychological pathologies (Görgens-Ekermans and Brand, 2012; Trépanier et al., 2014). A typical mental illness in eldercare nurses is burnout (Augusto-Landa and López-Zafra; 2010; Moroi, 1999); it is referred to as a syndrome characterized by emotional exhaustion, depersonalization and attenuated personal accomplishment (Leiter and Maslach, 1988). Burnout shares many similarities with depression in its etiological pathways and common symptoms, such as significant fatigue, depressive mood and anxiety (Bianchi et al., 2015).

In contrast, abundant job-related resources can enhance nurses' positivity and motivation (e.g., Mauno et al., 2007), that is, work engagement which indicates 'a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption' [Schaufeli et al., (2002), p. 74]. Hence, individuals with higher work engagement tend to achieve higher care performance (Salanova et al., 2011).

1.3 The role of emotional intelligence in nursing

Several studies have indicated the positive role of EI in psychosomatic health. For instance, in the face of the emotional labour of nursing work, higher EI was found to predict lower burnout and somatic complaints (Mikolajczak et al., 2007; Santos et al., 2015). Another study reported that EI has a significant moderating effect on the relationship between occupational stress and burnout among nurses; it also demonstrated that higher EI was associated with decreased risk for burnout among individuals with chronic occupational stress (Görgens-Ekermans and Brand, 2012). Consistent with these empirical findings, a meta-analysis revealed that EI is positively associated with psychosomatic health (Martins et al., 2010).

In addition, EI was also found to have a significantly positive effect on work engagement in nurses (Nel et al., 2013; Zhu et al., 2015). Some studies also have reported a positive relationship between EI and work engagement in other professions (Brunetto et al., 2012; Schutte and Loi, 2014). In particular, EI was the most significant positive predictor of work engagement when compared with the 'Big Five' personality dimensions (Akhtar et al., 2015). Moreover, a meta-analysis indicated the importance of EI in predicting higher job performance (O'Boyle et al., 2011). In support of this analysis, higher EI (as a dimension of situational EI) was subsequently found to be crucial for higher job performance among Japanese nurses (Fujino et al., 2015).

However, such studies have seldom been conducted in an Asian context (for exceptions, see Fujino et al., 2015). Accordingly, in this study, we examine whether these relationships are also present in the Japanese nursing context.

1.4 The negative outcomes in different EI profiles

In contrast to such positive findings, some previous studies have indicated that EI can have adverse effects on well-being or health. For example, individuals with a higher EI sub-factor of emotional perception reported adverse psychological health symptoms such as depression, hopelessness and suicidal ideation more often than those with lower EI (Ciarrochi et al., 2002). In addition, individuals with a higher EI sub-factor of emotional attention reported greater symptoms of ill health (Goldman et al., 1996). In accordance with this finding, Aradilla-Herrero et al. (2014) documented that nursing students with higher emotional attention displayed heightened emotional susceptibility and increased risk of suicide.

Furthermore, a combination of high emotional attention with low emotional clarity and repair has been associated with negative health outcomes (Gohm and Clore, 2002). In an experimental study, individuals with high emotional clarity and low emotional repair showed higher emotional reactivity to the experimental stimulus and a lower rate of recovery afterwards (Fernández-Berrocal and Extremera, 2006). Moreover, a mood

induction study by Gohm (2003) revealed four profiles of EI. The participants with a profile of high attention, clarity and high emotional intensity reacted more strongly to emotional situations and also maintained their negative mood longer. Another study, which utilized the EQ-i (Bar-On, 1997), identified six to seven EI profiles for each gender and found that high scores for intrapersonal EI and moderate levels of interpersonal EI buffered against burnout in nurses (Gerits et al., 2005). However, the EI profile with the highest scores on these dimensions was not associated with any reduction in burnout. Finally, the authors argued that lower interpersonal EI can be an effective coping mechanism as it prevents nurses from developing excessive empathy with patients.

1.5 The present study

These findings, considered together, indicate two important issues: first, higher EI is not always a beneficial psychological quality for an employee's well-being and second, the role of EI in the workplace is likely to be dependent on its specific profile. In support of these notions, Petrides (2011) argued that higher EI does not necessarily lead to positive outcomes, but rather that the functions of EI largely depend on contextual and behavioural factors. That is, it raises the possibility that potential profiles of EI that are related to beneficial and risk outcomes may exist not only in the levels of the

dimensions of EI (high vs. low) but also in relation to the combination of different dimensions. However, in Japan, research on EI profiles is still in its early stages, and hence empirical evidence on nurses' EI profiles is limited. Therefore, what characterizes beneficial and risk profiles of EI, respectively, remains unanswered. Thus, the purpose of this study is to reveal the latent profiles of EI and to identify which are beneficial and which put the individual at risk by comparing subjective well-being (burnout, depression and work engagement) and job performance among Japanese eldercare nurses. Taking the findings reported above into account, we formulated five hypotheses as follows:

Hypothesis 1 (H1): Latent profile analysis will reveal different EI profiles (Fernández-Berrocal and Extremera, 2006; Gerits et al., 2005; Gohm, 2003).

Hypothesis 2 (H2): EI profiles with higher overall EI dimension will be associated with better subjective well-being and higher job performance (Görgens-Ekermans and Brand, 2012; Mikolajczak et al., 2007).

Hypothesis 3 (H3): EI profiles with lower interpersonal EI compared with other EI dimensions within the profile will also be associated with better outcomes. (Fujino et al., 2015; Grits et al., 2005).

Hypothesis 4 (H4): EI profiles with lower overall EI dimension scores will be

associated with poorer well-being and lower job performance (Görgens-Ekermans and Brand, 2012; Mikolajczak et al., 2007).

Hypothesis 5 (H5): EI profiles with higher interpersonal EI compared with other EI dimensions within the profile will also be associated with poorer outcomes (Fujino et al., 2015; Gerits et al., 2005).

2 Method

2.1 Participants and procedure

This study utilized a cross-sectional design. We recruited 500 eldercare nurses from special nursing homes in Japan. First, we presented an overview of our study to the potential participants and undertook to strictly protect their personal information and privacy. Participants then voluntarily provided their informed consent.

Next, we distributed a set of questionnaires to the participants along with the instruction to answer them carefully. On completion, the participants returned the questionnaires to their managers. Completed questionnaires were collected after one month from 494 nurses; the response rate was thus 98%. After excluding incomplete questionnaires, data from 461 participants (female = 377 [81.8%]; male = 84 [18.2%]) were eligible for the analyses. The mean age of the participants was 38.9 years (*SD* =

11.0).

2.2 Measures

EI was assessed by the Emotional Intelligence Scale (EQS; Otake et al., 2001), which has been validated in Japan (Otake et al., 2001; Uchiyama et al., 2001). The scale comprises 65 items, 21 for each of the three EI dimensions, i.e., Intrapersonal, Interpersonal and Situational and two lie items. Further, each dimension comprises three sub-factors, making nine in total. Intrapersonal EI comprises self-awareness (SA) (e.g., "I am aware of changes in my feelings"); self-motivation (SM) (e.g., "I like to find significant value in any task that I do"); and self-control (SC) (e.g., "I am able to keep calm and not raise my voice even when I am offended"). Interpersonal EI comprises empathy (EM) (e.g., "when I see someone in distress, I cannot help talking to them"); altruism (AL) (e.g., "I feel compelled to help those stricken by disaster"); and interpersonal relationships (IR) (e.g., "I can get along with anyone without attempting to please everyone"). Situational EI comprises situational awareness (SIA) (e.g., "I always see the positive side of an issue or challenge"); leadership (LS) (e.g., "I am capable of being a leader in a group situation"); and flexibility (FX) (e.g., "when necessity dictates, I can suggest new ways of solving a problem"). The items were scored on a 4-point Likert scale from 0 (*totally disagree*) to 4 (*totally agree*). In the present study, we

applied the 9-sub-factor structure of the scale. The Cronbach's alpha for the total scale was .97 (intrapersonal EI = .91 [SA = .75, SM = .85, SC = .81]; interpersonal EI = .92 [EM = .81, AL = .86, IR = .84]; situational EI = .93 [SIA = .81, LS = .89, FX = .85]).

Burnout was assessed by the 17-item Japanese Burnout Scale (JBS; Tao and Kubo, 1996). The items form three sub-factors which assess occupational well-being during the past six months: emotional exhaustion (e.g., “I feel I am stressed out mentally and physically”); depersonalization (e.g., “I feel I don’t want to see my colleagues’ and patient’s faces”); and personal accomplishment (e.g., “I feel pleasure from the bottom of my heart after completing my tasks”). The items were scored on a 5-point Likert scale from 1 (*never*) to 5 (*always*). In this study, the total score was used. The Cronbach's alpha for the scale was .88.

Depression was assessed with the Zang Self-rating Depression Scale (SDS; Zung, 1965), which consists of 20 items (e.g., “I feel down-hearted and blue”). The items were scored on a 4-point Likert scale from 1 (*rarely*) to 4 (*most of the time*). In this study, the total score was used. The Cronbach's alpha for the scale was .82.

Work engagement was assessed by the Japanese version of the Utrecht Work Engagement Scale (UWES-J; Shimazu et al., 2008), which consists of 17 items corresponding to the underlying three dimensions of work engagement: vigor (e.g., “at

my job, I feel strong and vigorous”); dedication (e.g., “I am enthusiastic about my job”); and absorption (e.g., “when I am working, I forget everything else around me”). The items were scored on a 6-point Likert scale from 0 (*never*) to 6 (*always*). In this study, the total score was used. The Cronbach's alpha for the scale was .93.

Self-rated job performance was assessed by the subscale of the New Brief Job Stress Questionnaire (New BJSQ; Inoue et al., 2014). The total score of three items assessing performance of a duty was used (e.g., “I did my work better than others”). The items were scored on a 4-point Likert scale from 1 (*disagree*) to 4 (*agree*). The Cronbach's alpha for the scale was .81.

2.3 Statistical analysis

2.3.1 Latent profile analysis

We performed latent profile analysis (LPA) with the nine sub-factors of the EQS to identify latent profiles of EI by using Mplus version 6 (Muthén and Muthén, 2010). LPA is a more accurate statistical method than traditional cluster analysis for identifying latent taxonomies (Cleland et al., 2000) and has been used earlier, for example in coping (Mauno et al., 2014) and EI research (Keefer et al., 2012).

The upper limit of the potential number of latent profiles was determined by the changes in the *p*-value of the parametric bootstrap likelihood ratio test (BLRT) and by

practical sample size. The *p*-value ($p < .01$) of the BLRT indicates the level of statistical significance of the difference in log-likelihood in comparison with the next lower latent profile. For the model determination criteria, the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the Adjusted Bayesian Information Criterion (adj. BIC), entropy, BLRT and practical sample size were all applied. In general, the lower the value of the model information indices (AIC, BIC and adj. BIC), the better the model fit (Nylund et al., 2007). Nevertheless, a recent simulation study found that the BIC was superior to the other model information indices in the identification of the best-fitting model (Nylund et al., 2007). Therefore, the value of BIC was emphasized in the present analysis. For the criterion of classification accuracy, we used an entropy value of above 0.80, which indicates a well-classified solution, with higher scores indicating increasing classification accuracy (Ramaswamy et al., 1993). Finally, we determined the best model by comprehensively taking account of the model information properties, classification accuracy, substantive meaning of each solution, parsimony and the research purpose (see Bauer and Curran, 2003; Lubke and Muthén, 2005).

2.3.2 Comparison of subjective well-being and job performance across the latent profiles

We performed multivariate analysis of covariance (MANCOVA) to examine the group

differences between the EI profiles in subjective well-being (burnout, depression and work engagement) and job performance, controlling for the potential confounding effects of gender, age, educational background, employment type (permanent, contract and temporary or full- vs. part-time employee) and shift type. All the examined variables were approximately normally distributed. In addition, we confirmed that our data satisfied the statistical assumptions of the homogeneity of variance-covariance matrices and error variances with Box's and Levene's test, respectively. Effect sizes were reported as partial eta-squared (η_p^2) values. The MANCOVA was performed using SPSS version 21.0.

3 Results

3.1 Identifying latent profiles of EI

Table 1 shows the changes in the indices across the nine models.

---------- Table 1 is here. ----------

Although the BLRT remained significant for the 9-profile solution, there was an upturn in the BIC value for this solution. Moreover, it yielded the largest number of small sample sizes, accounting for 10% of the total sample size. Therefore, the 8-profile solution was determined as the upper limit of the potential number of latent profiles. All

the model information indices decreased as the number of latent profiles increased, reaching their lowest values at the 8-profile solution. However, the 7- and 8-profile solutions were relatively less parsimonious, as they included more than two small profiles accounting for 10% of the sample size. Simultaneously, the entropies were relatively lower for these solutions than for the 6-profile solution. In addition, a significantly unique EI profile (labelled the disproportional profile in the next section) first emerged in the 6-latent profile solution. Thereafter, unique profiles were no longer detected; instead, along with the increase in the number of latent profiles, each profile was simply further subdivided. This continuing subdivision of the sample sizes in the 7- and 8-profile solutions was considered to be inappropriate in light of the purpose of the study. Thus, we concluded that the 6-profile solution, which showed the lowest (among the 1- to 6-profile solutions) model information indices, a sufficient level of classification accuracy and a balanced sample size across the profiles, was the most optimal classification. The sample size of each latent profile in the 6-profile solution was 16 (3.4%), 70 (15.2%), 154 (33.4%), 53 (11.5%), 109 (23.6%) and 59 (12.8%).

3.2 Descriptions of the latent EI profiles

The first profile was characterized by the highest levels of overall EI compared with the other profiles. Within the profile, interpersonal EI (in particular, empathy and altruism)

was at a significantly lower level than the other (two) dimensions of EI. Accordingly, this profile was labelled the extremely high profile (E-High; *n* = 16). The second profile showed relatively higher levels of overall EI, and all the dimensions were at approximately the same level within the profile. Thus, this profile was labelled the high profile (High; *n* = 70). The third profile showed moderate levels of EI, with no significant differences between the dimensions within the profile. Therefore, this profile was labelled the moderate profile (Moderate; *n* = 154). The fourth profile was characterized by higher levels of interpersonal EI (in particular, empathy and altruism), moderate levels of intrapersonal EI and lower levels of situational EI. Accordingly, this profile was labelled the disproportional profile (Disproportional; *n* = 53). The fifth profile showed relatively lower levels of overall EI, with all the dimensions at approximately the same level within the profile. Thus, the profile was labelled the low profile (Low; *n* = 109). The sixth profile was characterized by the lowest levels of overall EI, and there were no significant differences between the levels of the dimensions within the profile. Thus, the profile was labelled the extremely low profile (E-Low; *n* = 59). Therefore, H1 was supported. The six latent profiles are illustrated in Figure 1.

---------- Figure 1 is here. ----------

3.3 Differences in well-being and job performance across the profiles

The results of the MANCOVAs are illustrated in Table 2.

---------- Table 2 is here. ----------

The multivariate test of MANCOVA yielded a significant overall main effect for the EI profiles ($F(20, 1483) = 8.43$, Wilk's $\lambda = 0.70$, $p = .000$, $\eta_p^2 = 0.09$). The follow-up ANCOVAs revealed significant differences for burnout ($F(5,450) = 7.98$, $p = .000$, $\eta_p^2 = 0.08$), depression ($F(5, 450) = 14.48$, $p = .000$, $\eta_p^2 = 0.14$), work engagement ($F(5, 450) = 15.29$, $p = .000$, $\eta_p^2 = 0.15$) and job performance ($F(5, 450) = 15.20$, $p = .000$, $\eta_p^2 = 0.14$).

Post-hoc pairing comparisons with Bonferroni correction were performed to identify the differences in subjective well-being and job performance between the six latent profiles. We found that the high and E-High profiles, marked by higher levels of overall EI, were associated with lower levels of burnout and depression, and with higher levels of work engagement and job performance. In particular, the E-High profile, characterized by relatively lower levels of interpersonal EI within the profile, showed the highest levels of job performance. Therefore, H2 was supported and H3 was partially supported. These results indicate that the high and E-High profiles can be beneficial profiles of EI.

In contrast, the low profile, marked by lower levels of overall EI, was associated with higher levels of burnout, slightly higher depression, lower work engagement and slightly lower job performance. Moreover, the E-Low profile, marked by the lowest levels of overall EI, was associated with higher levels of burnout and depression and lower levels of work engagement and job performance. In addition, the disproportional profile, characterized by relatively higher levels of interpersonal EI, moderate levels of intrapersonal EI and lower levels of situational EI within the profile, showed slightly higher levels of burnout, higher levels of depression, moderate levels of work engagement and lower levels of job performance. Therefore, H4 was supported and H5 was partially supported. The results suggest that the low, E-low and disproportional profiles can be risk profiles of EI. The visual representation of the results is presented in Figure 2.

---------- Figure 2 is here. ----------

4 Discussion

The purpose of this study was to reveal latent profiles of EI and to identify beneficial and risk profiles of trait EI in relation to subjective occupational well-being (burnout, depression and work engagement) and job performance among 461 Japanese eldercare nurses by applying a cross-sectional study design. This is the first study of EI profiling

that has been conducted among Japanese eldercare nurses.

We expected that LPA would reveal different EI profiles, and that the EI profiles with relatively higher scores across the dimensions but with lower interpersonal EI within the profile would be associated with better subjective well-being and higher job performance. In contrast, the EI profiles with relatively lower overall scores, and with higher interpersonal EI within the profile would show poorer outcomes. Our analysis yielded six latent profiles of EI, all of which supported our H1. This result is consistent with several empirical studies demonstrating the presence of different EI profiles (Fernández-Berrocal and Extremera, 2006; Gerits et al., 2005; Gohm, 2003, Keefer et al., 2012). In addition, we identified latent beneficial (high and E-High) and risk (low, E-Low and disproportion) profiles, which partially supported the remaining hypotheses.

4.1 The beneficial profiles of EI

The high and E-High profiles of EI showed better subjective well-being and higher job performance, thereby supporting H2. These results are congruent with previous findings that higher EI is associated with better mental health (Görgens-Ekermans and Brand, 2012; Martins et al., 2010; Mikolajczak et al., 2007; Santos et al., 2015), higher work engagement (Nel et al., 2014; Zhu et al., 2015) and better job performance (Fujino et al., 2015; O' Boyle et al., 2011).

Moreover, it is noteworthy that the E-High profile, which is characterized by lower interpersonal EI (in particular, empathy and altruism) compared to the scores for the other dimensions, resulted in the most beneficial outcomes, thereby partially supporting H3. In support of this finding, several studies have indicated that higher empathy may not always be associated with positive outcomes. For instance, although empathy is considered a central factor in establishing a superior professional-client partnership in nursing (Augusto-Landa and López-Zafra, 2010), excessive empathy was a risk factor for compassion fatigue (Wentzel and Brysiewicz, 2014), burnout (Tei et al., 2014) and depression (Schieman and Turner, 2001). Moreover, a similar finding has also been reported for altruism (Altun, 2002). Accordingly, it might be speculated that lower interpersonal EI in the E-High profile may have the effect of preventing nurses from experiencing excessive empathy towards nursing home residents (Grits et al., 2005). In addition, given the evidence that intrapersonal and situational EI have been found to be specifically crucial dimensions for better mental health (Gerits et al., 2005) and job performance (Fujino et al., 2015; Gerits et al., 2005; Imura et al., 2012), it is arguable that this dimensionality of EI may benefit eldercare nurses.

4.2 The risk profiles of EI

In contrast, the low and E-Low profiles of EI showed lower levels of subjective

well-being and job performance, thereby supporting H4. This result is congruent with previous studies indicating that lower EI is associated with poorer health (Görgens-Ekermans and Brand, 2012; Martins et al., 2010; Mikolajczak et al., 2007; Santos et al., 2015), work engagement (Nel et al., 2014; Zhu et al., 2015) and lower job performance (Fujino et al., 2015; O' Boyle et al., 2011).

More interestingly, the disproportional profile, characterized by higher interpersonal EI (particularly, empathy and altruism), moderate intrapersonal EI and lower situational EI, also showed poorer outcomes, which partially supported H5. The result is in line with the Petrides (2011), who argued that higher EI is not always associated with positive outcomes in certain situations. As previously mentioned, excessive empathy and altruism can accelerate psychological ill health (Altun, 2002; Schieman and Turner, 2001; Wentzel and Brysiewicz, 2014). Accordingly, one potential explanation for this result could be that higher interpersonal EI might lead to higher empathetic stress, which is reflected in poorer subjective well-being and lower job performance (Grits et al., 2005). In addition, nurses are often required to deal with their own and others' emotions in the process of taking immediate appropriate actions in various situations (Fujino et al., 2015). Therefore, lower situational EI might also contribute to such negative outcomes, as this dimension plays an important role in

adaptive stress management and flexible situational processing (Uchiyama et al., 2001). Finally, it is also important to note that the nurses with this profile showed moderate work engagement in spite of their slightly higher burnout and significantly higher depression levels. This might reflect the potentially ambivalent outcome of higher interpersonal EI. Therefore, further research is required to address this phenomenon. Considering these together, it can be argued that this dimensionality of EI may also be a potential risk for eldercare nurses.

In conclusion, our results suggest that the EI profile characterized by lower interpersonal EI and higher scores on the other dimensions within the profile, is likely to be the most beneficial profile of EI in terms of subjective well-being and job performance. In contrast, the EI profiles showing lower scores throughout the EI dimensions, could indicate a significant risk. The disproportional EI profile, characterized by higher interpersonal EI and lower situational EI, could also be considered a risk profile of EI. These findings indicate that the relationship between EI, subjective well-being and job performance may be dependent both on the overall levels of EI (high vs. low) and on the dimensionality of the sub-factors of EI within the different profiles. Therefore, although EI can be a learnt and trained human resource (Ruiz-Aranda et al., 2012), it is important to further consider the dimensionality of EI

and between-person variations across dimensions when planning and implementing EI interventions in practice.

This study has some important limitations. The design of the study was cross-sectional and the results are correlative only, meaning that no causal interpretations can be made. Thus, the relationships found here need to be confirmed longitudinally. Furthermore, all the data were collected via self-reports, which may induce common method variance bias. Finally, the respondents were drawn from just one Asian country, Japan, and therefore it is unsure whether the results can be generalized to other Asian contexts. Nevertheless, our results confirm that the dimensionality of the sub-factors of EI within the different EI profiles is related to occupational well-being and performance in the Japanese context, which thus far has remained under-studied in EI research.

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Table 1 Latent profile analysis goodness-of-model-fit-indices (N = 461)

	Model fit indices						Sample size under 10%	Minimum sample size
	AIC	BIC	adj. BIC	BLRT		Entropy		
1-profile solution	11801.34	11875.74	11818.61					
2-profile solution	10190.72	10306.46	10217.59	-13411.88	(p < .01)	0.886	0	49.0%
3-profile solution	9523.36	9680.43	9559.83	-5067.36	(p < .01)	0.907	0	13.9%
4-profile solution	9198.43	9396.84	9244.50	-4723.68	(p < .01)	0.899	1	3.5%
5-profile solution	9028.69	9268.42	9084.35	-4551.22	(p < .01)	0.880	1	3.5%
6-profile solution	8909.64	9190.71	8974.90	-4456.34	(p < .01)	0.874	1	3.5%
7-profile solution	8829.75	9152.15	8904.60	-4386.82	(p < .01)	0.864	2	3.0%
8-profile solution	8784.01	9147.75	8868.46	-4355.41	(p < .01)	0.867	3	0.4%
9-profile solution	8746.56	9151.63	8840.60	-4304.13	(p < .01)	0.867	4	0.4%

Table 2 Statistical differences in subjective well-being and job performance between the six latent profiles of EI

		Latent profiles of emotional intelligence (N = 461)							
		E-High (n = 16)	High (n = 70)	Moderate (n = 154)	DP (n = 53)	Low (n = 109)	E-Low (n = 59)	F (η_p^2)	Paired comparisons
Burnout	*M*	38.94	44.43	46.14	49.60	49.01	52.39	7.98*** (0.08)	**E-H** < M (p < .05), DP, L, E-L (p < .01) **H** < L (p < .05), E-L (p < .01) **M** > E-H (p < .05); **M** < E-L (p < .01) **L** > H (p < .05), E-H (p < .01) **E-L** > M, H, E-H (p < .01) **DP** > E-H (p < .01)
	(SD)	(8.01)	(6.07)	(6.61)	(6.62)	(6.87)	(7.93)		
Depression	*M*	35.44	41.13	41.62	48.92	44.54	48.41	14.48*** (0.14)	**E-H** < M (p < .05), DP, L, E-L (p < .01) **H** < E-L, DP (p < .01) **M** < DP, E-L (p < .01); **M** > E-H (p < .05) **L** < DP (p < .05); **L** > E-H (p < .01) **E-L** > M, H, E-H (p < .01) **DP** > L (p < .05), M, H, E-H (p < .01)
	(SD)	(5.95)	(5.24)	(5.03)	(6.28)	(5.63)	(5.16)		
Work engagement	*M*	64.38	61.50	55.32	50.72	48.44	40.66	15.29*** (0.15)	**E-H** > M (p < .05), E-L, L, DP (p < .01) **H** > E-L, L, DP (p < .01) **M** > L, E-L (p < .01) **L** < M, H, E-H (p < .01) **E-L** < DP (p < .05), M, H, E-H (p < .01) **DP** > E-L (p < .05); **DP** < E-H (p < .05), H (p < .01)
	(SD)	(11.98)	(10.97)	(11.43)	(11.15)	(9.70)	(12.71)		
Job performance	*M*	10.25	8.51	8.44	7.53	7.95	7.27	15.20*** (0.14)	**E-H** > H, M, DP, L, E-L (p < .01) **H** > E-L, DP, E-H (p < .01) **M** > E-L, DP (p < .01); **M** < E-H (p < .01) **L** < E-H (p < .01) **E-L** < M, H, E-H (p < .01) **DP** < M, H, E-H (p < .01)
	(SD)	(1.05)	(1.21)	(0.96)	(1.06)	(0.98)	(1.20)		

Note. E-H = the extremely high profile of EI; H = the high profile of EI; M = the moderate profile of EI; DP = the disproportional profile of EI; L = the low profile of EI; E-L = the extremely low profile of EI.

***p < .001.

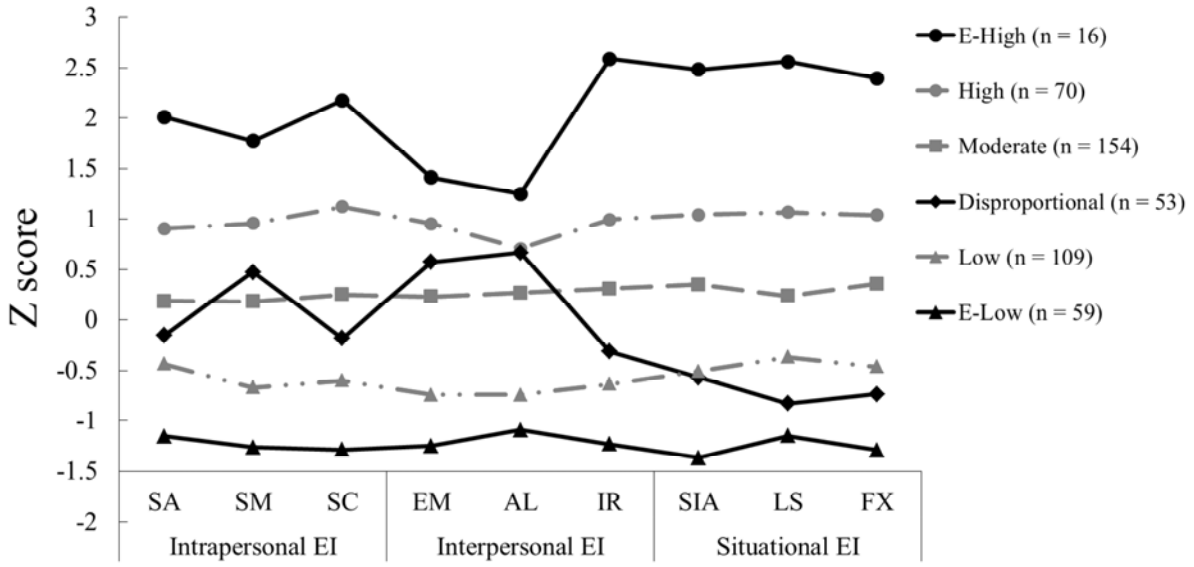

Figure 1 Visual representation of the six latent profiles on the subscales of EI (*N* = 461). SA = self-awareness, SM = self-motivation, SC = self-control, EM = empathy, AL = altruism, IR = interpersonal relationship, SIA = situational awareness, LS = leadership, FX = flexibility.

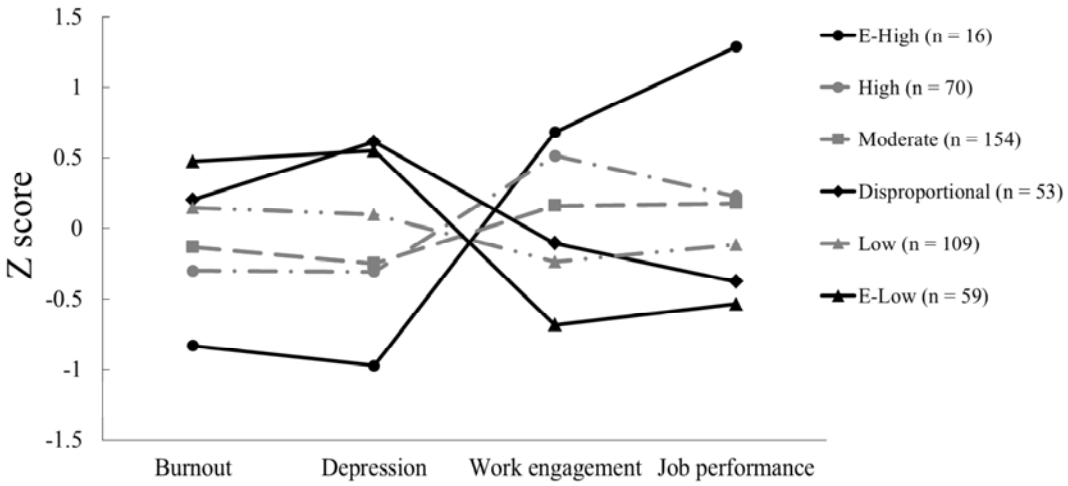

Figure 2 Visual representation of the differences in subjective well-being and job performance between the six latent profiles (*N* = 461).

Keywords: trait emotional intelligence, latent profile analysis, well-being, job performance, nurses