

# The Mediating Effect of Work Friendship on the Relationship between Grit and Work Engagement among Millennial and Generation Z Nurses in Korea

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**Purpose:** This study aimed to explore the relationship between grit and work engagement among millennial and Generation Z (MZ generation) nurses, as well as the moderating effect of work friendships on this relationship. **Methods:** The study included 191 MZ generation nurses with over six months of experience, surveyed via a self-administered questionnaire at four general hospitals in Daejeon and Seoul from December 2020 to February 2021. Descriptive statistics, t-tests, one-way analysis of variance, Pearson's correlation analysis, and hierarchical multiple regression were used to analyze the collected data. The PROCESS macro program with bootstrapping was employed to evaluate the significance of mediating effects. **Results:** Work friendships partially mediated the association between grit and work engagement, with an explanatory power of 29.9%. The significance of the indirect mediating effect using bootstrapping analysis indicated an effect size of 0.33, a lower limit confidence interval of 0.17, and an upper limit confidence interval of 0.52, which was significant as it did not include Zero. **Conclusion:** Developing a program to improve grit is necessary to increase the work engagement of MZ generation nurses, and establishing and implementing a program to improve work friendships, along with education for individual nurses, is crucial.

**Key Words:** Grit; Nurses; MZ generation; Work engagement; Work friendship

## INTRODUCTION

Nurses play a pivotal role in patient satisfaction and health outcomes in healthcare facilities and constitute over 20% of the entire healthcare workforce in South Korea [1-3]. This underscores the importance of nurses in hospital human-resource management and highlights the need for highly skilled and proactive nurses to deliver high-quality healthcare services. These characteristics can be encapsulated by the concept of work engagement [4].

Currently, the nursing workforce in South Korea primarily comprises four generational cohorts: a) Baby Boomers (born 1946~1964), b) Generation X (born 1965~1979), c) Millennials (born 1980~2000), and d) Generation Z (born post-2001), and the clinical nursing environment is characterized by diverse ages and generational values [5]. As

Baby Boomers retire, Millennials and Generation Z, collectively referred to as Generation MZ in South Korea, are becoming the central demographic of the nursing workforce [6]. Therefore, it is essential to understand and evaluate new perspectives on work engagement among Generation MZ nurses.

Among nurses, work engagement is considered a positive job attitude and motivational factor crucial for enhancing nursing standards and hospital efficiency [7]. This refers to a positive and fulfilling state of mind regarding work [4], allowing individuals to enjoy the work itself, be immersed in it, and ultimately accomplish positive outcomes [4,8]. Individuals with high work engagement tend to maintain a positive attitude toward their organization and exhibit a lower propensity to change jobs [9]. High work engagement also helps nurses focus on patient care

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amidst heavy workloads, facilitating efficient job performance [10]. Thus, work engagement is deemed a critical determinant of organizational efficiency and the quality of nursing care. Recent studies have indicated that factors influencing work engagement vary across generations in clinical nurses [11]. Specifically, job conflict has a greater impact on work engagement among Generation MZ nurses than that of Generation X nurses [11]. This suggests that generational differences contribute to differences in work engagement. Therefore, it is crucial to explore the predictors of work engagement among Generation MZ nurses from various perspectives.

Grit, defined as perseverance and passion for long-term goals at both the individual and group level, has been identified as a potential contributor to increased work engagement by enhancing organizational commitment, reducing turnover intention, and increasing retention intention [12,13]. Additionally, grit is associated with lower burnout rates and reduced stress, anxiety, and depression [14]. Nurses with high grit are more likely to demonstrate resilience and perseverance when faced with unpredictable clinical challenges, thereby maintaining a positive psychological state [14]. Those with high grit often possess altruistic goals that contribute to others' happiness through their work [15], enabling them to foster positive relationships with colleagues and promote cooperation and participation, which, in turn, positively affects work engagement [16].

Unlike typical corporate teams, nursing units operate through shifts to maintain continuity of care and are interdependent in nature, with routine handoffs and task delegation [17]. Work friendships among colleagues provide a sense of psychological safety, which positively influences organizational commitment and job performance [16]. Generation MZ nurses view their profession as a means of personal growth and development, emphasizing the social value of their work [18]. In addition, this generation tends to prefer a vibrant work environment and seeks to maintain amicable relationships with colleagues [18], is significantly influenced by interpersonal relationships, and strives for positive and close connections while maintaining independence [18,19]. Furthermore, Generation MZ nurses value individual capabilities and rational achievements [20], suggesting that strong work friendships may channel high energy and enthusiasm toward their work, thereby enhancing work engagement [17-19]. Hence, work friendships are considered an essential factor in nursing organizations that can contribute to improving the quality of nursing care [21].

In this context, this study aimed to evaluate the levels

of grit, work friendships, and work engagement among Generation MZ nurses working in clinical settings in order to provide foundational data for developing strategies to enhance work engagement. Specifically, we sought to determine whether work friendships mediate the relationship between grit and work engagement.

## METHODS

### 1. Study Design

This descriptive correlational study confirms the mediating effect of work friendship in the association between nurses' grit and work engagement.

### 2. Participants

The study participants are nurses who have worked for >6 months in four general hospitals in D and S cities and are MZ generation nurses who voluntarily agreed in writing to participate in the study after hearing a study explanation. Specific inclusion criteria are a) nurses who have worked at a general hospital for >6 months, b) nurses born from 1981 to 2010, and c) nurses who voluntarily agreed to participate in the study after hearing its purpose and necessity. The exclusion criteria are a) nurses who have worked <6 months in general hospitals, b) nurses born before 1980 or after 2010, and c) nurses whose main job is not patient care (e.g., nursing director, head nurse, insurance review nurses, etc.). The sample size was calculated using the G\*power 3.1.9.7 program. The sample size required for the analysis was calculated to be 189, with an effect size of .15 (moderate), a significance level ( $\alpha$ ) of .05, and a power of .95, and 13 predictor variables (11 general characteristics and 2 independent variables). Considering a dropout rate of 5%, questionnaires were distributed to 200 subjects, and 195 questionnaires were collected. Of these, 4 insufficient questionnaires were excluded, and a total of 191 were finally analyzed.

### 3. Measurements

#### 1) Grit

The Korean version of the grit tool [22], adapted by Lee et al. from the original Grit Scale developed by Duckworth et al. [12], was used to measure grit. This tool consists of 12 questions in two subdomains: interest consistency and effort perseverance, with six questions for each. Each item is rated on a five-point Likert scale from 1 (not at all) to 5 (very much), with higher scores indicating higher grit. Lee

et al. [12] found a Cronbach's  $\alpha$  for reliability of .79, whereas the reliability of the tool in our study was .74.

## 2) Work engagement

The Korean version of the Utrecht Work Engagement Scale (UWES), adapted by Kim et al. from the original UWES developed by Schaufeli et al. [23], was used to measure work engagement [24]. This tool consists of three subareas: vigor, dedication, and absorption, with three questions for each, for a total of nine questions. Each item is rated on a Likert scale from 0 (never) to 6 (always), with higher scores indicating stronger work engagement. During tool development [23], the Cronbach's  $\alpha$  for reliability was .84, whereas this was .91 in the study by Kim et al. [24]. The reliability of the instrument in our study was indicated by a Cronbach's  $\alpha$  of .93.

## 3) Work friendship

The Korean version of the work friendship tool, adapted by Kim et al. [25] from the two-dimensional Work Friendship Scale developed by Nielsen et al. [26], was used to measure work friendships. This tool consists of 12 questions in two subareas: opportunities to build intimacy and expansion of intimacy, with six questions for each. Each item is rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating stronger work friendship. Kim et al. [25] reported an instrument reliability of .73~.79, and the reliability of the instrument in our study was indicated by a Cronbach's  $\alpha$  of .89.

## 4. Data Collection

The research was conducted from December 2020 to February 2021 after obtaining authorization for data collection from the nursing departments of four general hospitals located in Daejeon and Seoul. Participants completed a self-administered questionnaire, which typically required 10~15 min to complete. Only individuals who consented to participate received the questionnaires. Each questionnaire was enclosed in a separate envelope sealed by the participants and collected by the researcher.

## 5. Data Analysis

IBM SPSS Statistics for Windows, version 24.0 (IBM Corp, Armonk, NY, USA), was used to analyze the collected data. Descriptive statistics were used to analyze participants' general characteristics, grit degree, work engagement, and work friendships. Pearson's correlation coefficients were used to analyze the correlations between

grit, work engagement, and work friendships. A three-step hierarchical multiple regression, as presented by Baron and Kenny [27], was used to analyze the mediating effect of work friendships on the association between grit and work engagement. The significance of the mediating effect was evaluated through Sobel test and bootstrapping using the PROCESS macro program version 4.0 (IBM Corp). The number of bootstrap samples was set at 1,000 with a 95% confidence interval. The mediating effect was considered significant if the confidence interval did not include a 0.

## 6. Ethical Consideration

The study was conducted using raw data after obtaining approval from the Institutional Review Board of E University (IRB No: EU20-063).

# RESULTS

## 1. Participants' Characteristics

Table 1 presents the general characteristics of the study participants. The participants were mostly female (89.5%), and the average age was  $29.0 \pm 3.9$  years. Additionally, there was a higher proportion of unmarried (88.5%) and non-religious (69.6%) individuals. The highest level of education was a bachelor's degree at 79.1%, and the majority of the departments worked at were special departments at 37.7% and surgical wards at 36.6%. The average total clinical and working experience in the current department was  $4.3 \pm 4.4$  years and  $2.9 \pm 3.2$  years, respectively. The most common position was general nursing (93.7%), and the most prevalent work duty was the third shift (94.8%). Most participants (51.3%) reported high stress levels.

## 2. Degree of Independent Variables

Table 2 presents the degree of grit, work engagement, and work friendships of participants. The average grit score, work engagement, and work friendship were  $3.12 \pm 0.36$  out of 5,  $2.82 \pm 0.93$  out of 6, and  $3.64 \pm 0.55$  out of 5, respectively.

## 3. Correlations among Study Variables

Table 3 presents the correlation analysis between grit, work engagement, and work friendships. Grit was significantly and positively correlated with work engagement ( $r = .38$ ,  $p < .001$ ) and friendships ( $r = .30$ ,  $p < .001$ ).

**Table 1.** General Characteristics of Participants

(N=191)

| Characteristics                                   | Categories         | n (%) or M±SD | Min-Max |
|---------------------------------------------------|--------------------|---------------|---------|
| Sex                                               | F                  | 171 (89.5)    |         |
|                                                   | M                  | 20 (10.5)     |         |
| Age (year)                                        |                    | 29.0±3.9      | 24~43   |
| Marital status                                    | Married            | 22 (11.5)     |         |
|                                                   | Single             | 169 (88.5)    |         |
| Religious                                         | Yes                | 58 (30.4)     |         |
|                                                   | No                 | 133 (69.6)    |         |
| Educational level                                 | Diploma            | 22 (11.5)     |         |
|                                                   | Bachelor           | 151 (79.1)    |         |
|                                                   | ≥ Master           | 18 (9.4)      |         |
| Department                                        | Medical unit       | 34 (17.8)     |         |
|                                                   | Surgical unit      | 70 (36.6)     |         |
|                                                   | Special unit*      | 72 (37.7)     |         |
|                                                   | Other <sup>†</sup> | 15 (7.9)      |         |
| Length of clinical experience (year)              |                    | 4.3±4.4       | 0~23    |
| Length of clinical current unit experience (year) |                    | 2.9±3.2       | 0~20    |
| Job position                                      | Nurses             | 179 (93.7)    |         |
|                                                   | Charge nurses      | 12 (6.3)      |         |
| Type of duty                                      | 3-shift            | 181 (94.8)    |         |
|                                                   | Day-time only      | 10 (5.2)      |         |
| Level of stress during the month                  | Low                | 4 (2.1)       |         |
|                                                   | Normal             | 89 (46.6)     |         |
|                                                   | High               | 98 (51.3)     |         |

\*Emergency room, operation room, intensive care unit, neonatal intensive care unit, delivery room, recovery room; <sup>†</sup>Comprehensive nursing service units; M=Mean; SD=Standard deviation.

**Table 2.** Degree of Variables

(N=191)

| Variables       | M±SD      | Min  | Max  | Range |
|-----------------|-----------|------|------|-------|
| Grit            | 3.12±0.36 | 2.33 | 4.33 | 1~5   |
| Work engagement | 2.82±0.93 | 0.33 | 6.00 | 0~6   |
| Work friendship | 3.64±0.55 | 1.67 | 5.00 | 1~5   |

M=Mean; SD=Standard deviation.

**Table 3.** Correlation between Grit, Work Engagement, and Work Friendship

(N=191)

| Variables       | Grit        | Work engagement | Work friendship |
|-----------------|-------------|-----------------|-----------------|
|                 | r (p)       | r (p)           | r (p)           |
| Grit            | 1           |                 |                 |
| Work engagement | .38 (<.001) | 1               |                 |
| Work friendship | .30 (<.001) | .50 (<.001)     | 1               |

Work engagement exhibited a statistically significant positive correlation with work friendships ( $r = .50, p < .001$ ).

#### 4. The Mediating Effect of Work Friendship on the Association between Grit and Work Engagement

A three-step regression analysis was conducted, according to the procedure suggested by Baron and Kenny [27], to confirm the mediating effect of work friendships on the association between grit and work engagement among Generation MZ nurses (Table 4). The Durbin-Watson value was checked to verify the independence of the residuals before verifying the mediating effect and was revealed to be 1.68~2.13, which is close to 2, indicating that the dependent variable demonstrated no autocorrelation. Additionally, the tolerance was 0.91, below 1.0, confirming multicollinearity, and the variance expansion coefficient for all variables was 1.00~1.10, not  $>10$ , thereby indicating no multicollinearity, confirming that the model was suitable for regression analysis.

The regression analysis in step 1 confirmed that grit, an independent variable, demonstrated a statistically significant effect on work friendship as a mediator variable ( $\beta = .30, p < .001$ ). The effect of grit, an independent variable, on work engagement, a dependent variable, was confirmed to be statistically significant in the second step of regression analysis ( $\beta = .38, p < .001$ ). In the last step, a regression analysis was conducted by inputting grit and work friendships as independent variables to analyze the effect of work friendships as the mediator variable on work engagement as the dependent variable. Both grit ( $\beta = .26, p < .001$ ) and work friendship ( $\beta = .42, p < .001$ ) affected work

engagement. Both grit as the independent variable and work engagement as the mediator variable were significant in step 3, and the coefficient of grit was smaller in step 3 than that in step 2; thus, work friendships partially mediated the association between grit and work engagement. Hence, grit had a direct effect on work engagement and had an indirect effect on work engagement by changing work friendships. The explanatory power of the regression analysis in this study was confirmed at 29.9%. The significance of the indirect mediating effect using bootstrapping analysis indicated that the effect size was 0.33, the lower limit confidence interval was 0.17, and the upper limit confidence interval was 0.52, which was significant as it did not include Zero (Table 5). Additionally, the Sobel test results showed a z-value of 2.44 ( $p = .014$ ), further confirming the statistical significance of the mediating effect of work friendship (Table 4).

## DISCUSSION

This study aimed to evaluate the levels of grit, work engagement, and work friendships among Generation MZ nurses and to explore the mediating effect of work friendships on the relationship between grit and work engagement.

The mean work engagement score for Generation MZ nurses in this study was 2.82 out of 6, indicating a below-average level. Work engagement is crucial for enhancing work efficiency, productivity [28], and work performance. High work engagement among nurses enables them to prioritize patient care despite heavy workloads [10], ultimately contributing to the quality of nursing care pro-

**Table 4.** The Mediating Effect of Work Friendship on the Relationship between Grit and Work Engagement (N=191)

| Step                        | Independent variables | Dependent variables | B    | SE   | $\beta$ | t (p)         | Adj. R <sup>2</sup> | F (p)          |
|-----------------------------|-----------------------|---------------------|------|------|---------|---------------|---------------------|----------------|
| 1                           | Grit                  | Work friendship     | 0.47 | 0.10 | .30     | 4.39 (< .001) | .088                | 19.28 (< .001) |
| 2                           | Grit                  | Work engagement     | 0.99 | 0.17 | .38     | 5.70 (< .001) | .142                | 32.53 (< .001) |
| 3                           | Grit                  | Work engagement     | 0.66 | 0.16 | .26     | 4.01 (< .001) | .299                | 61.50 (< .001) |
|                             | Work friendship       | Work engagement     | 0.70 | 0.10 | .42     | 6.57 (< .001) |                     |                |
| Sobel test; z=2.44 (p=.014) |                       |                     |      |      |         |               |                     |                |

Adj.=Adjusted; SE=Standard error.

**Table 5.** Statistical Significance of Indirect Mediation Effects (N=191)

| Effect | Boot SE | 95% Confidence interval |           |
|--------|---------|-------------------------|-----------|
|        |         | Boot LLCI               | Boot ULCI |
| 0.33   | 0.08    | 0.17                    | 0.52      |

Boot=Bootstrapping; SE=Standard error; LLCI=Lower limit confidence interval; ULCI=Upper limit confidence interval.

vided [29]. Recent studies have demonstrated generational differences in work engagement, with Generation MZ nurses displaying lower levels than that of Generation X nurses [5,11,30]. A study that measured work engagement among nurses in tertiary hospitals using the same instrument also found that nurses aged  $\geq 40$  years had higher work engagement than that of those  $<40$  years [30]. This difference may be attributed to factors such as career advancement and increased clinical experience with age. However, work engagement may not necessarily increase with age alone, as various other factors may play a role. It is essential to understand and support Generation MZ nurses in adapting to the clinical environment and developing them into expert nurses. Given that Generation MZ nurses comprise a majority of the current hospital workforce [6], enhancing their work engagement is a critical task. To this end, it is imperative to identify and facilitate factors that can elevate work engagement among Generation MZ nurses.

The mean work-friendship score among Generation MZ nurses in this study was 3.65 out of 5, consistent with previous studies on Korean nurses [13,21]. Work friendships refer to the formation of authentic relationships and mutual trust among colleagues, which fosters a psychologically safe environment for open communication and problem solving [27]. Once these friendships are formed, members experience psychological comfort, which plays a vital role in interpersonal interactions [31]. A stronger emotional bond leads to increased organizational commitment and positive organizational engagement [32]. Work friendships among nurses can affect organizational well-being and retention intentions, thereby critically affecting the overall quality of nursing services [13,21].

In South Korea, Generation MZ is often portrayed negatively, dubbed as “self-centered,” “prioritizing personal lives over organizational harmony,” and “unhesitant in expressing opinions on perceived injustices,” and is believed to lack responsibility and loyalty to their organizations [33]. However, Generation MZ individuals argue that they value their work and are loyal to their organizations, despite acknowledging these stereotypes to some degree [33]. There are generational differences in the perception of organizational culture [5]. These differing perceptions and the negative societal image of Generation MZ may lead to biases among the older generations, potentially resulting in generational conflict. Such conflicts can precipitate frequent turnover among nurses, lead to a shortage of skilled nurses, and induce mental and physical stress, ultimately reducing work efficiency and deteriorating patient care [11,34]. The Korea Institute of Public

Administration’s Social Integration Survey [35] indicates that there are no significant differences between Generation MZ and older generations in most parameters, including valuing work and inclusivity toward other groups. However, society perceives generational gaps, indicating a need for efforts to build and expand work friendships between Generation MZ and older generations within organizations.

Generation MZ individuals tend to prefer digital communication, which can lead to differences in communication styles within organizations. In particular, a phenomenon called “call phobia,” a sense of anxiety and fear during phone calls, tends to be more prevalent among this generation [36]. Consequently, Generation MZ nurses may feel tenser in clinical settings that require communication across various professions [36]. In contrast, older generations generally experience less anxiety in communication situations and express themselves more confidently [37]. Thus, if Generation X nurses understand the characteristics of Generation MZ and facilitate smooth communication, Generation MZ nurses may positively experience the organizational culture, which would increase their job satisfaction, leading to high-quality healthcare facilitated by personal growth [38]. Therefore, Generation X nurses should avoid perceiving Generation MZ as a disloyal, individualistic group, and instead strive to acknowledge and bridge generational gaps. Such efforts are crucial in fostering work friendships characterized by open dialogue and close relationships that help solve problems collaboratively [27].

Work friendships partially mediated the relationship between grit and work engagement. This finding suggests that for Generation MZ nurses, who are passionate about their work and persistently strive toward their goals, being recognized and feeling a sense of belonging within their organization would enhance their work engagement. Generation MZ nurses develop a stronger sense of belonging when praised for their work and feel more valued when they receive recognition, which, in turn, will likely motivate them to engage more actively in their work [39]. In clinical settings, the feeling of being accepted as a member of an organization instills a sense of responsibility in Generation MZ nurses and provides the strength to overcome challenges alongside colleagues [38]. Therefore, to enhance work friendships among Generation MZ nurses, it is essential for senior nurses and leaders to understand them as individuals rather than as a monolithic group. Establishing a horizontal organizational culture characterized by smooth communication and mutual respect is crucial. Within this culture, MZ nurses are likely to feel a

sense of belonging and stability, which can lead to increased work engagement and, ultimately, an improvement in the quality of patient care. Accordingly, nursing organizations must make continuous organizational efforts to enhance work friendships. Above all, implementing mentorship programs and collaborative projects can be effective in strengthening the professional support relationships that MZ generation nurses need [38]. These programs can foster trust and cooperation among colleagues and contribute to sustaining nurses' enthusiasm for their work. Additionally, nursing organizations should support activities that promote teamwork to encourage cooperative behavior and cultivate a culture of altruism. In addition, conflict management programs should be introduced to reduce negative interactions between nurses and an environment should be created in which team members can communicate freely [30]. These organizational efforts play a critical role in providing psychological safety, helping nurses feel a sense of belonging, and strengthening collaboration within the team.

The mean grit score among Generation MZ nurses in this study was 3.12 out of 5, which is similar to the score (3.03) reported in a previous study that used the same instrument [13]. Grit in nurses signifies a commitment to continuous professional development and the pursuit of long-term goals [40], which positively impacts nursing competence and work engagement [16,41]. Therefore, it is crucial to enhance nurses' grit. Duckworth et al. [12] suggested that fostering grit requires clarifying personal interests and developing them in the long term. Generation Z, in particular, focuses on enjoying jobs and achieving self-realization, which positively influences work engagement [5]. Thus, hospitals should implement educational programs to set and support the achievement of their long-term goals. While work engagement may vary by generation [30], grit does not differ significantly [16,41]. This indicates that while Generation MZ nurses share similar levels of personal perseverance and interest with Generation X nurses, they differ in work engagement. In other words, there is a need to enhance work friendships to boost work engagement among Generation MZ nurses. Furthermore, it is essential to identify factors other than work friendships that increase work engagement.

This study is significant because it identified the predictors of job engagement among Generation MZ nurses with a focus on work friendships. However, the limitations of this study included the use of a convenience sample of nurses from only a few hospitals in South Korea, which may limit the generalizability of the findings. Additionally, direct comparisons between Generation MZ and

other generations may be limited because of a lack of research on differences in work friendships and grit across generations.

## CONCLUSION

This study attempted to confirm the mediating effect of work friendship in the relationship between grit and work engagement and to provide basic data for identifying predictors of workplace engagement for MZ generation nurses. Our findings suggested that enhancing grit and increasing work friendships in MZ generation nurses positively influences work engagement. Therefore, there is a need to develop programs to improve grit to increase the work engagement of MZ generation nurses, and actively support the establishment and implementation of programs to improve workplace camaraderie along with education for individual nurses.

Our findings have led us to propose certain recommendations. First, future studies should replicate this study with a broader sample from various regions and hospitals, as this study was conducted on a subset of nurses in secondary hospitals in Daejeon and Seoul. Second, generation-specific education programs should be developed and implemented in clinical practice to boost work engagement. Finally, although work friendships were identified as a key predictor of work engagement, further research should be conducted on work friendships among nurses to supplement the inadequate body of evidence in this area.

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