

The Study of Cross-Hierarchical Linear Correlation of Teachers' Interpersonal Networks and Well-Being Correlated with Principals' Positive Emotional Leadership

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Abstract

This study aims to investigate how teachers' well-being is affected by interpersonal networks and school principals' positive emotional leadership and how the contextual moderating effects are at play among the cross-hierarchical factors. The research framework is divided into two levels, the individual level on how "teachers' interpersonal networks" affect "teachers' well-being", and the group level on the impact of "principals' positive emotional leadership". Teachers from 62 elementary schools in Taiwan were invited to participate in the survey study, and 1,452 valid data were returned. The demographic variables were analyzed by the use of descriptive statistics. The cross-level moderating effects were further examined via Hierarchical Linear Modelling (HLM). The results show that teachers' interpersonal networks will impact well-being positively. Principals' positive emotional leadership will affect teachers' well-being positively as well. Moreover, the joyful leadership dimension of principals' positive emotional leadership plays a positive moderator role in how teachers' interpersonal networks contribute to well-being. The implication of this study is to discover the predictive model which enhanced teachers' well-being from the cross-hierarchical perspective.

Keywords

Interpersonal Network, Well-Being, Positive Emotional Leadership, Cross-Level Moderating Effects

1. Introduction

According to Wu (2012), educational well-being is the source of national

well-being, and teachers are the key figures of overall educational well-being. Education is a two-way interactive process between teachers and students, and teachers' well-being is closely related to the quality of their teaching and students' learning effectiveness. If teachers feel happy in their careers and retain enthusiasm and vitality for teaching, they will critically impact students (Chiu & Tung, 2010; Day & Qing, 2009).

According to Argyle (1987), increased interpersonal interactions enhance well-being, and the intimacy of providing social support is a major source of well-being. Lu, Shih, Lin, and Ju (1997) have suggested that social support is the most relevant to well-being. According to Seligman (2002), having a fulfilling social life is associated with greater happiness, sharing with others is the best predictor of well-being, and doing good deeds to help others increases well-being. According to Acton and Glasgow (2015), teachers' well-being is a sense of professional fulfillment that can be achieved by working with colleagues and students. These factors, such as interpersonal interactions, social relationships, and social support, are all related to interpersonal networks, and well-being can be significantly enhanced through good interpersonal networks, emotional attachment, and resource sharing. Therefore, this study links teachers' interpersonal networks with well-being to investigate the effect of teachers' interpersonal networks on teachers' well-being.

The perspective of well-being-related research has changed from a single orientation to a confluence approach. Instead of examining individual well-being solely in terms of personality traits or thinking styles, a multifaceted perspective has been adopted to explore how the environment interacts with individuals to influence their well-being (Hackman, 2003; Gurt, Schwennen, & Elke, 2011; Yukl, 2013). From this perspective, the environment affects the development of individual well-being, and the role of the leader is more important in this regard. They must be sensitive to the individual situation and the overall atmosphere of the organization and intervene promptly in the operation of the team and the establishment of systems to avoid negative group pressure or conflict (Aelterman, Engels, Van Petegem, & Verhaeghe, 2007; Okpara, 2007). From an educational field perspective, principals are school leaders whose leadership effectiveness is related to school operations, teacher instruction, and student learning (Fessehatsion, 2017; Victoria State Government, 2017; Nielsen & Munir, 2009; Skakon, Nielsen, Borg, & Guzman, 2010). In terms of internal organizational factors, the role of the principal leader has a significant and direct impact on teacher well-being (Kalshoven & Boon, 2012; Nielsen & Daniels, 2012; Zineldin & Hytter, 2012). The primary key to leadership is the leader's ability to be emotionally intelligent—how they manage emotions and interpersonal relationships—in order to generate enthusiasm and passion for the work of their members and to foster an atmosphere of cooperation and trust. Principals play an important leadership role in schools, and their emotions have many impacts and influences on schools. If principals maintain positive emotions, they can effectively

exert their influence and lead the organization's members to be more committed to their work and improve school performance (Berkovich & Eyal, 2020; Goleman, Boyatzis, & Mckee, 2002; Hsieh & Yang, 2013). Therefore, it is important to examine whether principals' positive emotional leadership influences teachers' well-being.

From an interaction-theory perspective, teachers' interpersonal networks and well-being are individual-level factors, and the principal's positive emotional leadership is an environmental factor. Under this hierarchical-interaction perspective, analyzing individual behaviors in terms of individual or environmental factors alone will not provide a true picture of why each particular behavior occurs (Davis, Jindal-Snape, Collier, Digby, Ha, & Howe, 2013; Sharma, 2017). Therefore, because the moderating effect of environmental factors must be noted, the researcher investigated the correlation that teachers' interpersonal networks and well-being have with principals' positive emotional leadership. Additionally, a multilevel analysis was conducted to investigate the moderating effect of principals' positive emotional leadership on the relationship between teachers' interpersonal networks and well-being.

2. Literature Review

2.1. Teachers' Interpersonal Networks

A network is a web-like structure formed through the contact between individuals and others, which explores how people interact with each other to maintain a certain social identity and receive material and spiritual support and services (Luo & Chu, 2004). The network consists of an egocentric network and a complete network, and the egocentric network is the relationship between an individual and other members, which is closely related to the individual's personality and the characteristics of the social network in which the individual lives. A complete network, on the other hand, emphasizes the distribution of the overall network structure, with clear boundaries that allow information to be transmitted among all individuals (Igarashi et al., 2008; Kalish & Robins, 2006). Sauer and Coward (1985) identified an interpersonal network as a formal or informal relationship between an individual and others that meet the individual's needs in society to allow individuals to receive assistance, information, and support for their needs for work or life. Interpersonal networks help to build connections among teachers, bring opportunities for teachers to share experiences, and bring knowledge and resources. Teacher networks provide various supports to meet practical and emotional needs (Brannan & Bleistein, 2012; Guevel & Jourdan, 2009). Therefore, this study defines teachers' interpersonal network as "a network of interactions among teachers and others to exchange expertise, information, and emotions, and to obtain needed resources".

Many researchers have classified interpersonal networks into instrumental networks and affectional networks (Tsai, 2007; Umphress et al., 2003; Granovetter & Swedberg, 1992; Ibarra & Andrews, 1993; Moolenaar, Slegers, Karsten, &

Daly, 2012). The instrumental network is an interpersonal network used when an individual seeks and obtains resources that he or she lacks. The content of the relationship includes the channel of the resources that the individual wants to seek, the interpersonal interaction related to work or business, etc., through the instrumental network to achieve the needs of one's work or life. The affectional network is a network relationship developed with long-term trust as the core, such as friends chatting and talking together to enhance feelings and maintain a good interactive relationship, which is based on the trust of shared values and interaction norms to build mutual love, warmth, security, and belonging. In this study, two indicators, interpersonal networks, and affectional networks were used to measure the dimensions of teachers' interpersonal networks, taking into account the school environment and the characteristics of teachers' practical work.

2.2. Teachers' Well-Being

Well-being encompasses emotional and cognitive dimensions, including positive and negative emotions, happiness, life satisfaction, life goal expectation and achievement congruence, physical and mental harmony, mood, self-esteem, self-efficacy, and personal autonomy (Levin & Chatters, 1998). Well-being is often associated with concepts such as happiness, optimism, vitality, self-actualization, and optimal life satisfaction (Carruthers & Hood, 2004). Veenhoven (1995) has argued that well-being is the degree to which an individual likes his or her overall lifestyle when he or she decides to live the way he or she chooses. Buss (2000) views well-being as a sense of continuity in an individual's sense of self-fulfillment, meaningfulness, and enjoyment of life, either at the moment or in all of life. Andrews and Withey (2012) consider well-being as an individual's satisfaction with life and its positive and negative emotions, which is a subjective feeling of the individual. Therefore, well-being is an abstract concept, which is a subjective feeling of well-being in which an individual judges things or life encounters. Berrocoso, Sanchez, and Dominguez (2013) have suggested that teachers' life satisfaction, positive emotions, self-esteem, and self-confidence are related to well-being. Zhu, Devosan, and Li (2011) define teachers' well-being as the sum of specific contextual factors on the one hand and a harmonious and positive emotional state between school and personal needs and expectations on the other. In summary, well-being encompasses emotional and cognitive dimensions, including positive emotions, happiness, self-esteem, life satisfaction, self-actualization, physical and mental harmony, self-efficacy, and personal autonomy, taking into account the integration of job and life satisfaction and positive psychology. In this study, teachers' well-being is defined as "teachers' psychological feelings of satisfaction and positive optimism about their work and life".

Regarding the measurement of well-being, different scholars have different ways of classifying well-being based on different theories and research subjects. Diener (2000) has measured well-being in terms of positive and negative emotions and job satisfaction. McCallum, Price, Graham, and Morrison (2017) have

suggested that objective measures of well-being can focus on economic, health, and political dimensions, while subjective measures of well-being cover a wide range of factors, including happiness, affection, engagement, goals, life satisfaction, social relationships, competence, and achievement. Overall, self-satisfaction and positive optimism are the most commonly used measures of well-being (Acton & Glasgow, 2015; Andrews & Withey, 2012; Cenkseven-Onder & Sari, 2009; Diener, 2000; Hoy, 2008; Huxhold, Fiorib, & Windsor, 2013). In this study, the researcher separated teachers' well-being into the two dimensions of self-satisfaction and positive optimism. Self-satisfaction is a measure of teachers' satisfaction with their work and life, and positive optimism is the psychological perception that teachers can view their situation positively and have positive expectations, including optimism, vitality, and continuous growth.

2.3. Principals' Positive Emotional Leadership

Luthans, Luthans, Hodgetts, & Luthans (2001) have introduced the concept of positive leadership, which encompasses confidence, hope, emotional intelligence, and authentic optimism. Leaders who possess these attributes can inspire quality leadership effectiveness and effectively lead the organization to a positive culture to enhance competitiveness. According to Cameron (2008), positive leadership leads to positive organizational performance, promotes positive optimism, and fosters cooperative relationships between individuals and organizations. When the relationship between the leader and the organization's members moves to a collaborative level, they can work harmoniously and reduce unnecessary friction. Youssef-Morgan, and Luthans (2013) argue that positivity is an observable phenomenon that can add value to processes and outcomes, making employees more motivated and progressive and improving their performance in better ways. Hsieh (2011) has suggested that positive leadership promotes positive individual and organizational excellence. Therefore, positive leadership refers to an organization's leaders who lead by example, think positively, help their members solve problems, and maintain a positive attitude through empathy and caring. It is a leadership style that helps organization members to solve problems, maintain positive relationships among organization members, and provide sufficient authority and trust to create a quality, positive atmosphere and work environment, promote positive communication among organization members, enhance the value of the organization members and build organizational consensus, bring into play strengths and stimulate potential, and achieve overall organizational performance (Chi, Hu, & Fan, 2018; Chung, 2018; Tseng & Fan, 2019). Positive leadership increases organizational members' self-esteem, boosts work morale, and facilitates task completion.

Goleman (1995) introduced the concept of Emotional Intelligence, and he believes that Emotional Intelligence influences 80% of most people's achievements in life and that intelligence is not a critical influence. According to Goleman, Boyatzis, & Mckee (2002), the primary key to leadership is the leader's ability to

be emotionally intelligent, that is, how the leader handles himself or herself and how he or she handles interpersonal relationships, which also promotes enthusiasm and passion for the work of members and fosters an atmosphere of cooperation and trust. Therefore, principals play an important leadership role in schools; the principal's emotions have many impacts and implications on the school. If principals can maintain positive emotions, self-awareness, and self-management, and understand and improve their own and others' emotional patterns, they will be able to effectively exercise their leadership influence, lead the organization's members to commit to their educational work, and drive innovation in the school organization. These actions will lead to innovative school organizations (Berkovich & Eyal, 2020; Hsieh & Yang, 2013). In summary, this study combines the concepts of positive leadership and emotionally intelligent leadership to form "positive emotional leadership". The study defines positive emotional leadership as "a principal's ability to shape the school vision with positive emotions, interact with school members with kindness and empathy, build positive interpersonal relationships and a positive school atmosphere, and motivate school members to achieve self-actualization through positive communication, thereby improving school effectiveness and achieving school goals".

In measuring positive leadership and emotionally intelligent leadership, different scholars have different classifications based on different theories and research subjects, including positive meaning, positive communication, positive relationships, and positive atmosphere (Cameron, 2008; Hsieh, 2011; Yu, 2019; Chou, 2022); harmony, joy, happiness, empathy, self-awareness, emotion management, motivation, and empathy (Goleman, Boyatzis, & McKee, 2002; Hatch & Cunliffe, 2006; Katz-Buonincontro, 2011; Shen, Huang, & Jiang, 2014). Taking into account the study population, the purpose of the study, and the meaning of the dimensions, this study divided principals' positive emotional leadership into two dimensions: "harmonious leadership" and "joyful leadership". Harmonious leadership is the ability of principals to self-awareness and self-management of emotions, to understand and improve their own and others' emotional patterns, and to build positive interpersonal relationships and a positive school atmosphere. Joyful leadership is a partnership between the principal and members to work together and motivate school members to achieve self-actualization through positive communication, to encourage, assist and share with each other, and to improve work effectiveness.

2.4. Hypothesis Development

2.4.1. Teachers' Interpersonal Networks and Well-Being

Argyle (2001) has explored the causes of human well-being and indicated that increased interpersonal interactions lead to increased well-being and that the provision of social support and intimacy is the main source of well-being. Kutek, Turnbull, and Fairweather-Schmidt (2011) find that social support is the most important variable in predicting well-being. According to Huang (1998), the

quality of social integration and relationships in an individual's social network has an important impact on well-being. The quality of interpersonal interactions is a key element of well-being, and the desire to pursue goals and work with valued friends will lead to desired happiness (Harris, 1990). Umberson et al. (1996) have viewed social support as a positive quality of social relationships. The better the social support is, the better the well-being is (House, Umberson, & Landis, 1988; Ross, Romer, & Horner, 2012). Hong (2022) suggests that the most important factor in teachers' well-being is not objective conditions such as one's socioeconomic status but interpersonal networks. The factors of interpersonal interactions, social relationships, and social support discussed above are all related to interpersonal networks, indicating that interpersonal networks are an important factor affecting well-being. Accordingly, Hypothesis 1 is proposed below.

H1: Teachers' interpersonal networks are positively correlated with well-being.

2.4.2. Principals' Positive Emotional Leadership and Teachers' Well-Being

Many studies have found significant effects of leader leadership style on member well-being (Skakon, Nielsen, Borg, & Guzman, 2010; Zhu, Devos, & Li, 2011; Chao, Hung, & Chuang, 2018). Kelloway, Weigand, McKee, & Das (2013) suggest that positive leadership can promote positive psychological capital, such as hope, optimism, and self-efficacy in employees. MacIntyre et al. (2019) suggest that the positive encouragement teachers receive has an impact on teachers' well-being. Hsu (2018) has shown that principals' positive leadership helps build positive relationships on campus, allowing teachers to maintain emotional stability in a friendly work environment and enhancing their well-being. According to Mayer, Caruso, and Salovey (1999), emotional intelligence increases an individual's ability to lead and influence others. The primary key to leadership is the leader's emotional intelligence ability (Goleman, Boyatzis, & McKee, 2002). The principal is the highest leader in the school, and the principal's emotions have many impacts and influences on the school (Hsieh & Yang, 2013). Accordingly, Hypothesis 2 of this study is proposed below.

H2: Principals' positive emotional leadership is positively correlated with teachers' well-being.

2.4.3. Principals' Positive Emotional Leadership, Teachers' Interpersonal Networks, and Well-Being

Hackman (2003) has argued that individual behavior in organizations is a result of the interaction of personal and environmental factors. Ross, Romer, & Horner (2012) suggest that organizations that adopt a leadership style conducive to well-being will strengthen the impact of personal factors on well-being. Zineldin & Hytter (2012) have found that leadership style moderated the effect of overall psychological well-being on their subordinates' well-being. From an interactionist perspective, individual behavior is determined by the interaction of personal and environmental factors, i.e., the interaction between the individual and the

environment still has a role to play in the effect of personal and environmental factors. Related research studies support the idea that positive affective leadership among principals should have an impact on teachers' interpersonal networks and well-being (Fessehatsion, 2017; Kisaka & Osman, 2013). In this study, the interaction between individual and contextual factors is considered to investigate the effect on individual attitudes or behaviors so that the interaction between individual and contextual factors can have a more complete explanation of teachers' well-being. Hypothesis 3 of this study is proposed below.

H3: There is a mediation effect among principals' positive emotional leadership, teachers' interpersonal networks, and well-being.

3. Research Design

3.1. Framework

The research framework is illustrated in **Figure 1**. In the framework, teachers' interpersonal networks (X) are separated into the two dimensions of instrumental networks (X1) and affectional networks (X2) that defined as individual level. Furthermore, teachers' well-being (Y) is separated into self-satisfaction (Y1) and positive optimism (Y2), all those factors were defined at the individual level. Principals' positive emotional leadership (Z) is separated into the two dimensions of harmonious leadership (Z1) and joyful leadership (Z2) which were defined as the group level.

3.2. Participants

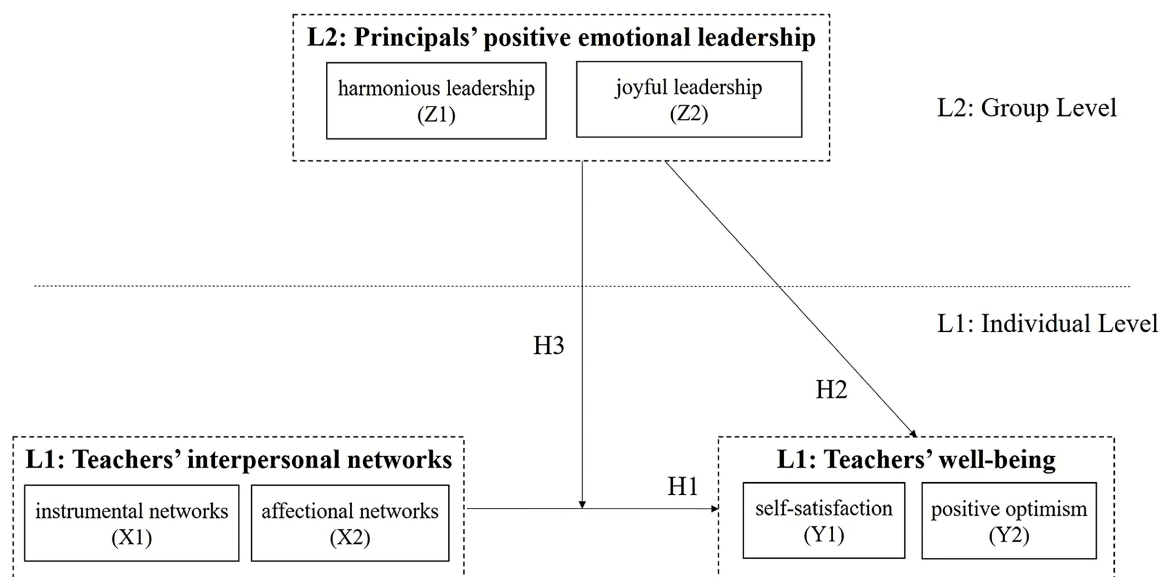
Study participants were elementary school teachers in Taiwan. With regard to sampling, Maas and Hox (2005) suggested that each organization must have at least five valid questionnaires for hierarchical linear modeling to be conducted. Moreover, to obtain results of sufficient statistical power for the analysis of cross-level interactions, at least 30 sets of samples are required (de Leeuw & Kreft, 1998). The stratified sampling was employed in this study. This study distributed 20 questionnaires to schools with 18 or fewer classes and 30 questionnaires to schools with more than 18 classes. Researchers asked school authorities to participate before sending them the questionnaires by email or in person. A total of 1,750 questionnaires were distributed to 70 elementary schools. After repeated checks, 1,452 valid questionnaires from 62 elementary schools were returned.

3.3. Instruments

The questionnaire was pre-tested after construction and then revised into a formal questionnaire after item analysis and exploratory factor analysis. The items were designed with a Likert-type 5-point scale, with scores of 5, 4, 3, 2, and 1 from very agree, agree, neutral, disagree, and strongly disagree, respectively, and the higher the total score, the higher the level of perception. All the scales had good reliability and validity (see **Table 1**).

Table 1. The originality of instruments.

Factors	Sources	Reliability and validity
Interpersonal Networks	Compiled based on a modified version of the measurement scale of Chen & Tseng (2009) and Hofman & Dijkstra (2010)	Instrumental networks: 8 items Affectional networks: 6 items Total explained variance: 56.743% Cronbach's α : 0.857/0.916 Overall scale: 0.932
Well-Being	Compiled based on a modified version of the measurement scale of Lu (1998) , Nielsen & Daniels (2012) , and Yu, Chen, & Chen (2017)	Self-satisfaction: 6 items Positive optimism: 7 items Total explained variance: 57.781% Cronbach's α : 0.913/0.890 Overall scale: 0.927
Positive Emotional Leadership	Compiled based on a modified version of the measurement scale of O'Donovan (2015) , Polat & Oztoprak-Kavak (2011) , and Shen, Huang, & Jiang (2014)	Harmonious leadership: 9 items Joyful leadership: 7 items Total explained variance: 63.743% Cronbach's α : 0.910/0.874 Overall scale: 0.921

**Figure 1.** The study framework.

3.4. Data Analysis

Descriptive statistics were used to analyze teachers' interpersonal networks and well-being as well as principals' positive emotional leadership. Additionally, the Pearson Product-Moment correlation was used to analyze the correlation between each variable, and hierarchical linear modeling (HLM software 7.0 version) was used to determine the causal structure between each variable. The HLM included four models. The first model was a null model; it was used to examine the within-group internal consistency and between-group variances. The second model was a random coefficients regression model; it was used to examine the direct effect on teachers' well-being. The third model was an inter-

cepts-as-outcomes model; it was used to investigate the direct effect of principals' positive emotional leadership on teachers' well-being. The fourth model was a slopes-as-outcomes model; it was used to investigate the moderating effect of principals' positive emotional leadership on the relationship between teachers' interpersonal networks and teachers' well-being.

4. Research Results

4.1. Foundational Characteristic Check

In this study, the principal's positive emotional leadership was based on the teacher's perceived leadership style of the school principal and was therefore considered a shared variable (Wen & Chu, 2009). Before conducting the cross-level analysis, the researcher examined the appropriateness of aggregating the individual-level contextual variables to group-level contextual variables. Within-group indexes (rwg) were used as evaluating indicators to verify the appropriateness of data integration. In the results, principals' positive emotional leadership had a mean rwg of 0.93 (range: 0.71 - 0.99), which indicates that our integration process was within reasonable limits (James, Demaree, & Wolf, 1993).

4.2. Model and Hypothesis Test

4.2.1. Null Model

Prior to conducting a multilevel analysis, the existence of a cross-level effect must be evaluated. Specifically, between-group and within-group variance of all dependent variables must be significant; the researcher conducted a null model test to test for such significance. According to the results, the between-group variances for Y1 (self-satisfaction) and Y2 (positive optimism) were 0.063 and 0.078, respectively, and their χ^2 values were 233.124 and 343.128, respectively ($df = 61$, and all variances were significant at $p < 0.001$). The interclass correlation coefficients for the two aforementioned variances were 0.243 and 0.221, respectively. These values suggest strong correlations (Cohen, 1988), which allow for further tests on other models to be conducted.

4.2.2. Random Coefficient Regression Model

This model aimed to examine the effect of teachers' interpersonal networks on their well-being; the researcher examined the existence of intercept and slope items in individual-level regression (Wen & Chu, 2009). Additionally, the model further tested for the existence of a group-level effect. In the model, γ_{10} and γ_{20} are X1 (instrumental networks) and X2 (affectional networks) estimated parameters of each dimension of well-being. If the estimates were significant, then X1 and X2 had a significant effect on the dimensions of well-being. A random effect was set, and this random effect allowed for different means between the various between-group schools. Therefore, if the between-group intercept variance component τ_{00} is significant, then different between-group schools have different intercepts. That is, the significant variance of teachers' well-being between different between-group schools can be used to further examine the exis-

tence of a direct contextual effect of principals' positive emotional leadership on teachers' well-being. In addition, the random effect allowed for different regression coefficients between the various between-group schools. Therefore, if the between-group slope variance components τ_{11} and τ_{22} were significant, then the different between-group schools have different slope items. The significant variance of the influence of teachers' interpersonal networks on well-being can be used to further examine the existence of the direct contextual effect of principals' positive emotional leadership on the relationship between teachers' interpersonal networks and their well-being (Wen & Chu, 2009; Wen, 2014). The results are presented in Table 2.

As presented in Table 2, all values were statistically significant. These results indicated that teachers' interpersonal networks (which are at the individual level) had a significantly positive effect on each dimension of teachers' well-being. Therefore, hypotheses from H1 were supported.

As for the variance component of the random effect which indicates that different between-group schools have different intercepts. Therefore, principals' positive emotional leadership may have a direct effect on teachers' well-being.

Table 2. The coefficient summary of hierarchical linear modeling analysis results: null model and random coefficient regression model.

Model	Null Model		Random Coefficient Regression Model	
	Y1	Y2	Y1	Y2
Fixed effect	Regression Coefficient	Regression Coefficient	Regression Coefficient	Regression Coefficient
γ_{00} of β_{0j}	3.347*	3.382*	3.353*	3.377*
γ_{00} of β_{0j} vision formation (Z1)				
γ_{02} of β_{0j} vision practice (Z2)				
γ_{10} of β_{1j} reproductive imagination (X1)			0.539*	0.613*
β_{1j} γ_{11} of X1 and Z1				
β_{1j} γ_{12} of X1 and Z2				
γ_{20} of β_{1j} creative imagination (X2) β_{2j}			0.263*	0.267*
β_{2j} γ_{21} of X2 and Z1				
β_{2j} γ_{22} of X2 and Z2				
Random effect	Variance	Variance	Variance	Variance
Between-group intercept variance component τ_{00}	0.063*	0.078*	0.073*	0.082*
Between-group slope variance component τ_{11}			0.022*	0.013*
Between-group slope variance component τ_{22}			0.031*	0.007*
Within-group variance component σ^2	0.431	0.383	0.201	0.141

Note: * $p < 0.05$; X1 = instrumental networks; X2 = affectional networks; Y1 = self-satisfaction; Y2 = positive optimism; Z1 = harmonious leadership; Z2 = joyful leadership.

For Y1 and Y2, all values were statistically significant. This indicates that different between-group schools have different slopes (Wen & Chu, 2009). The dimensions of principals' positive emotional leadership may exert a contextual moderating effect on Y1 and Y2 of teachers' interpersonal networks (Wen, 2014). Therefore, a slope prediction model could be tested.

4.2.3. Intercepts-as-Outcomes Model

This model was constructed to investigate the direct and contextual effect of principals' positive emotional leadership on teachers' well-being. It was further examined the intercept variance in the group-level regression model (Wen & Chu, 2009). In this model's equation, γ_{01} and γ_{02} represent the direct and contextual effects of Z1 (harmonious leadership) and Z2 (joyful leadership) on teachers' well-being.

As presented in Table 3, all values were statistically significant. These results indicated that principals' positive emotional leadership had a significantly positive effect on each dimension of Y1 (self-satisfaction) and Y2 (positive optimism). Therefore, hypotheses from H2 were supported.

A further examination of the between-group intercept variance components of an intercept prediction model indicated that all these values were statistically

Table 3. The coefficient summary of hierarchical linear modeling analysis results: intercepts-as-outcomes model and slopes-as-outcomes model.

Model	Intercepts-as-Outcomes Model		Slopes-as-Outcomes Model	
	Y1	Y2	Y1	Y2
Fixed effect	Regression Coefficient	Regression Coefficient	Regression Coefficient	Regression Coefficient
γ_{00} of β_{0j}	0.163	0.592	0.157	0.013
γ_{00} of β_{0j} vision formation (Z1)	0.562*	0.501*	0.563*	0.572*
γ_{02} of β_{0j} vision practice (Z2)	0.677*	0.643*	0.612*	0.513*
γ_{10} of β_{1j} reproductive imagination (X1)	0.659*	0.534*	0.889*	1.427*
β_{1j} γ_{11} of X1 and Z1			0.063	0.197
β_{1j} γ_{12} of X1 and Z2			0.312*	0.329*
γ_{20} of β_{1j} creative imagination (X2) β_{2j}	0.307*	0.323*	0.263	0.398
β_{2j} γ_{21} of X2 and Z1			0.223	0.201
β_{2j} γ_{22} of X2 and Z2			0.549*	0.303*
Random effect	Variance	Variance	Variance	Variance
Between-group intercept variance component τ_{00}	0.024*	0.026*	0.019*	0.023*
Between-group slope variance component τ_{11}	0.029*	0.019*	0.026*	0.012*
Between-group slope variance component τ_{22}	0.035*	0.013*	0.021*	0.007*
Within-group variance component σ^2	0.203	0.147	0.203	0.149

Note: * $p < 0.05$; X1 = instrumental networks; X2 = affectional networks; Y1 = self-satisfaction; Y2 = positive optimism; Z1 = harmonious leadership; Z2 = joyful leadership.

significant. Different between-group schools were still determined to have different intercepts. This suggests that in addition to principals' positive emotional leadership, other variables also exert direct and contextual effects on Y1 and Y2. However, these variables were not included in our study; they can be included in a future study as potential contextual variables (Lin & Pen, 2006; Wen & Chu, 2009).

4.2.4. Slopes-as-Outcomes Model

This model was constructed to investigate the existence of the cross-level variables' interaction effects on the dependent variables. Specifically, the model was tested to determine first, the contextual moderating effects of cross-level variables on dependent variables and second, the slope variance in a group-level regression model (Wen & Chu, 2009). In the model's equation, γ_{11} , γ_{12} , γ_{21} , and γ_{22} represent the contextual moderating effects of Z1 and Z2 on each dimension of teachers' well-being in X1 and X2. The results were as follows (see Table 3):

1) For Y1 (self-satisfaction)

The coefficient of interaction between (1) X1 and Z2 as well as (2) X2 and Z2 were statistically significant. This suggests that Z2 at Level 2 exerted a significant contextual moderating effect between (1) X1 and Y1 as well as (2) X2 and Y1, thus supporting H3.2 and H3.4. However, The coefficient of interaction between (1) X1 and Z1 as well as (2) X2 and Z1 were not statistically significant. This suggests that Z1 at Level 2 had no significant moderating effect between (1) X1 and Y1 as well as (2) X2 and Y1, thus H3.1 and H3.3 were not supported.

2) For Y2 (positive optimism)

The coefficient of interaction between (1) X1 and Z2 as well as (2) X2 and Z2 were statistically significant. This suggests that Z2 at Level 2 exerted a significant contextual moderating effect between (1) X1 and Y2 as well as (2) X2 and Y2, thus supporting H3.6 and H3.8. However, the coefficient of interaction between (1) X1 and Z1 as well as (2) X2 and Z1 were not statistically significant. This suggests that Z1 at Level 2 had no significant moderating effect between (1) X1 and Y2 as well as (2) X2 and Y2, thus H3.5 and H3.7 were not supported.

The overall result shows in Figure 2.

5. Discussion

5.1. Teachers' Interpersonal Networks to Well-Being

The study results showed that each dimension of teachers' interpersonal networks had a significant positive effect on each dimension of well-being, as shown in Figure 2, and the results supported H1.1 to H1.4. This is consistent with the findings of Argyle (2001), Kutek, Turnbull, and Fairweather-Schmidt (2011), Harris (1990), Hong (2022), and Pilkington, Windsor, & Crisp (2012), they believe that interpersonal networks and well-being are closely related. According to the resource dependency theory, interpersonal networks can exchange and complement each other, better interpersonal networks have higher resources and social support (Kalshoven & Boon, 2012), and reliable people to

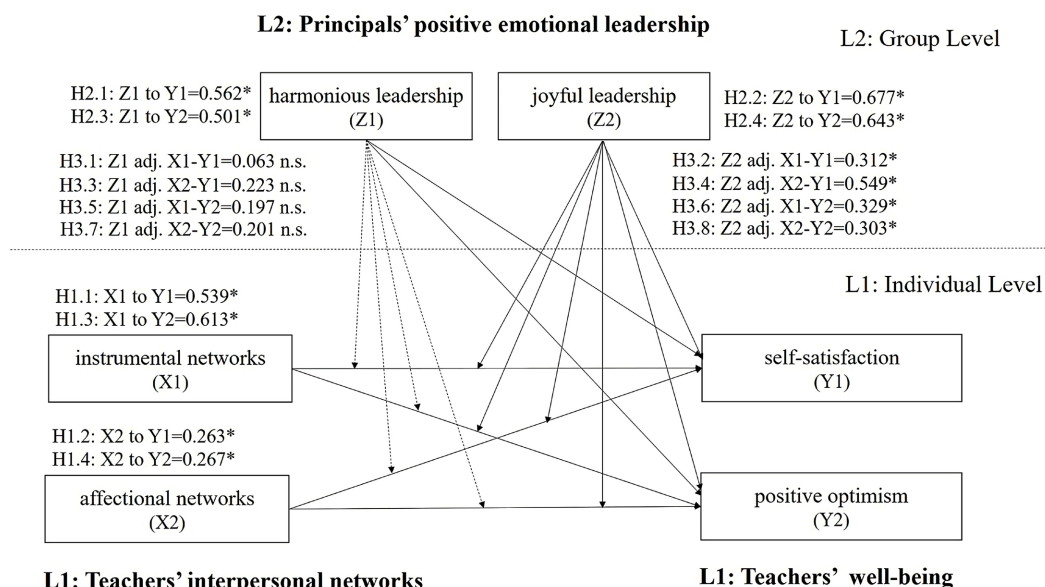


Figure 2. The overall result of the assumption model.

consult when problems and concerns arise and can help face and solve problems. Such caring friendships provide emotional attachment, enhance personal well-being, and contribute to teachers' self-satisfaction and positive optimism. Having good interpersonal networks is a key element of well-being.

5.2. Principals' Positive Emotional Leadership to Teachers' Well-Being

The study results showed that each dimension of principals' positive emotional leadership had a significant positive effect on each dimension of teachers' well-being, as shown in **Figure 2**, where the results supported H2.1 to H2.4. This is consistent with the findings of Hsu (2018), and MacIntyre et al. (2019), their findings suggest that positive leadership styles and positive emotions help build positive relationships within organizations and enhance the well-being of their subordinates. According to the social exchange theory, when the exchange relationship between leaders and members is pleasant and positive, leaders develop positive social exchange relationships based on social exchange and promote members' happiness through the development of high-quality exchange relationships, which has a positive impact on members' well-being (Laschinger, Finegan, & Wilk, 2011; Cropanzano, Anthony, Daniels, & Hall, 2017), and positive affective leadership behaviors of principals, which support high-quality exchange relationships between principals and teachers, can enhance teachers' well-being.

5.3. The Contextual Moderation Effect of Principals' Positive Emotional Leadership to Teachers' Well-Being

The results of the study showed that the joyful leadership dimension had a significant positive effect on the influence of teachers' interpersonal networks on well-being. The results supported H3.2, H3.4, H3.6, and H3.8. The higher the

teacher's perception of principal-pleasing leadership, the greater the positive influence of the teacher's interpersonal networks on well-being. This is consistent with the findings of Fessehatsion (2017), Kisaka & Osman (2013), and Ross, Romer, & Horner (2012). Nielsen and Daniels (2012) found that between transformational leadership and social support, the well-being of the subordinates was enhanced by the effect of group-level social support. Lin (2005) suggested that contextual variables regulate individual-level attitudes toward behavior direction and intensity. According to the contextual interaction theory, group-level contextual variables regulate the direction and intensity of individual-level attitudes toward behaviors. The study's results support the view that contextual variables of joyful leadership have a reinforcing role in the influence of individual-level teachers' interpersonal networks on well-being.

However, the harmonious leadership dimension did not have a significant positive pulsed moderation effect on the influence of teachers' interpersonal networks on well-being. The results did not support H3.1, H3.3, H3.5, and H3.7. Eisner (2002) has argued that teachers play an important role in teaching and learning as interpreters of educational policies and the main decision-makers of teaching content. The majority of elementary schools in Taiwan are public schools, and the subjects of this study were all public elementary school teachers. Therefore, each teacher has his or her own teaching style and instructional policies and strategies for the class he or she teaches (Cheng, Hsu, & Chiu, 2015; Lin, 2010), which may be the reason for the lack of significant moderating effect of principals' harmonious leadership on the effect of teachers' interpersonal networks on well-being, which can be further verified in subsequent studies.

The present study differs from the previous studies in that few previous studies on leaders' effect on organizational well-being have used positive emotional leadership as a moderating variable. In addition, few studies have examined the moderating effect of interpersonal networks on well-being, and few have used a hierarchical linear model. In the case of school organizational hierarchy, where teachers are nested under the leadership of the principal, multilevel analysis of the structural data of school teachers to estimate the effect of hierarchical factors on the dependent variables can be used to obtain more precise parameter estimates (Hsiao, 2015; Wu, 2012). This study examined the effect of principals' positive affective leadership on teachers' well-being and the effect of principals' positive affective leadership on the adjustment of teachers' interpersonal networks and well-being by using a hierarchical linear model. The results may help other scholars in this field to further understand the effect of different levels of variables on teachers' well-being and enrich the research results in this field.

6. Recommendations

6.1. To the School Administrators

6.1.1. Provide More Interpersonal Networks Workshop for Teachers

People with higher well-being can live happier and more self-affirming lives (Lin

& Huang, 2006), and teachers' well-being is closely related to teachers' teaching quality and students' learning outcomes (Chiu & Tung, 2010; Qing, 2009). The results of this study indicate that teachers' interpersonal networks have a significant positive effect on well-being. We suggest that school administrators should include more interpersonal network-related courses in their training programs and encourage teachers to participate in them to improve their interpersonal networks' literacy and well-being.

6.1.2. Create a Social Support System with Good Interaction

In order to revitalize teachers' interpersonal networks, schools administrators should create a social support system with good interaction, such as establishing various spiritual growth groups for teachers, organizing various cultural and recreational activities, and setting up a teachers' seminar room or a social hall, so that teachers can get together from time to time to share their experiences and insights, and then solve problems so that teachers' interpersonal networks can be more sound. Through interaction, teachers can learn, encourage, and grow with each other, and enhance the friendship and emotional exchange among teachers, thus forming a warm and positive working environment.

6.1.3. Emphasis on Building and Deepening Positive Relationships with Teachers

The results of this study reveal that principals' positive emotional leadership has a significant effect on teachers' well-being. Among them, joyful leadership strengthens the positive influence of teachers' interpersonal networks on well-being. Therefore, the principals should emphasize creating a harmonious atmosphere on campus, use positive and rational expressions to communicate with colleagues and provide adequate support to colleagues. In addition, principals can use emotional and joyful leadership to guide teachers to pay attention to their emotions and perceptions, share their emotions with ideas, and move people in a caring way so that teachers are willing to do their jobs happily. A positive relationship can be built not only with superficial gratitude, care, and praise but also in the hearts of teachers.

6.2. To the Higher Education Officers

Positive leadership promotes positive personal and organizational excellence, and the leader's ability to be emotionally intelligent is the primary key to leadership (Hsieh, 2011; Goleman, Boyatzis, & McKee, 2002). The results of this study also indicate that principals' positive emotional leadership has a significant impact on teachers' well-being. We suggest that when planning training or in-service training programs for principals, educational administrators should conduct more workshops on positive emotional leadership and invite exemplary principals of positive emotional leadership to share their experiences and provide exemplary learning so as to enhance principals' positive emotional leadership skills and improve teachers' well-being and quality of teaching.

6.3. To the Future Researchers

6.3.1. Apply Longitudinal Study

A long-term longitudinal study could be conducted to collect data in a phased manner to investigate the correlation between teachers' interpersonal networks, well-being, and principals' positive emotional leadership and the effect of the chordal adjustment.

6.3.2. Use the Qualitative Study

Future studies can use observation or in-depth interviews to conduct the study, and the qualitative research method can be used to gain a deeper understanding.

6.3.3. From Different Perspectives

Future studies are advised to simultaneously consider the perspectives of principals and students in a cross-analysis, thus making the findings representative of different perspectives.

6.3.4. Add More Variables

Future studies are advised to incorporate more group-level contextual variables, in accordance with relevant discourses, and more extensively explore factors that affect teachers' well-being.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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