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RELATIONSHIP BETWEEN EMOTIONAL DISSONANCE, PSYCHOLOGICAL EXHAUSTION, AND SOCIAL SUPPORT AMONG REHABILITATION EXERCISE PARTICIPANTS

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Abstract
Background/Objectives: This study sought to determine the relationship between emotional dissonance, psychological exhaustion, and social support in rehabilitation exercise participants. Based on this purpose, the following conclusions were obtained.
Methods/Statistical analysis: The study surveyed subjects participating in rehabilitation exercises at hospitals, individuals and centers providing rehabilitation services in the metropolitan area of Korea. The questionnaire used in this study consisted of 4 items on characteristics, 4 items on emotional dissonance, 22 items on psychological exhaustion, and 27 items on social support. The collected data were processed through frequency analysis, descriptive statistics, item analysis, correlation analysis, exploratory factor analysis, and reliability analysis.
Findings: Significant results were obtained in the relationship between emotional dissonance and psychological exhaustion, emotional dissonance and social support, and psychological exhaustion and social support in rehabilitation exercise participants.
Improvements/Applications: The research results showed a meaningful causal relationship between the emotional dissonance, psychological exhaustion, and social support of rehabilitation exercise participants, and research focusing on the removal of negative factors and improvement of positive factors is needed to continue rehabilitation exercise in the future.
Keywords: Emotional Dissonance, Psychological Exhaustion, Social Support, Rehabilitation Exercise, Participants

1. INTRODUCTION

Public interest in healthcare has been growing steadily. Rehabilitation exercise, as a way to relieve pain or illness, is considered by the general public to be a method of health promotion and a practical means of preventing disease in advance. Yet, it takes a long period of time for the effects of rehabilitation exercises to be realized. Due to this lengthy timeframe, rehabilitation exercises may be discontinued for a variety of reasons. In particular, the participants in the rehabilitation exercise may feel the need to withdraw from the rehabilitation exercise due to psychological self-expression or psychological stress during the rehabilitation exercise process. In such a psychological state, advice and support from those around them may make it possible to continue rehabilitation exercises. Rehabilitation exercises must be practiced for a long period of time to achieve sufficient effects. From this perspective, this study aimed to examine the relationship between the emotional state and psychological exhaustion experienced by participants during the rehabilitation exercise process as well as the social support of those around them. Through this, the study sought to increase the motivation of rehabilitation exercise participants to continue their engagement in the exercise and the effects of rehabilitation exercise.

2. Materials and Methods

2.1. *Subject of Study*

The study surveyed subjects participating in rehabilitation exercises at hospitals, individuals and centers providing rehabilitation services in the metropolitan area of Korea. Convenience sampling was used for sampling, and self-administered questionnaires were used to collect data. The survey process involved direct contact with persons in charge of providing rehabilitation services, and a preliminary meeting to explain the purpose of the study and request cooperation. On the day of the survey, the purpose of the study was clearly explained to the subjects with the cooperation of the persons in charge, and the subjects who agreed to the survey were then asked to complete the survey. A total of 322 subjects participated in the

survey, but after the post-survey evaluation of the collected data, 313 questionnaires were used for analysis, excluding 9 questionnaires that contained insincere responses or many missing values. The specific characteristics of the subjects are shown in Table 1.

Table 1. The Physical Characteristic of Subjects

Characteristic	Division	Frequency	ratio(%)
Gender	meal	136	43.5
	female	177	56.5
Age	under 30s	78	24.9
	40s	125	39.9
	over 50s	110	35.1
Frequency /weeks	one time	43	13.7
	two times	171	54.6
	more than three times	99	31.6
Rehabilitation location	waist/pelvis	51	14.6
	shoulder/arm	101	28.9
	neck/spine	23	6.6
	knee/leg	175	50.0

2.2. ***Research Instruments***

The questionnaire used in this study consisted of 4 items on characteristics, 4 items on emotional dissonance, 22 items on psychological exhaustion, and 27 items on social support. The collected data were processed through frequency analysis, descriptive statistics, item analysis, correlation analysis, exploratory factor analysis, and reliability analysis.

2.2.1. Emotional Dissonance

To measure emotional dissonance, based on the scale developed by Morris & Feldman[1] and Brotheridge & Grandey[2], the items adapted and modified by Kang[3] to fit the Korean context were used, with modifications and supplements considering the context of this study. The items were designed to assess the participants' feelings about their usual rehabilitation exercise services. Specifically, the items consisted of four negative statements: "Sometimes I feel uncomfortable because I can't express what I feel about rehabilitation exercise," "Sometimes I feel confused by the difference between my actual feelings and the feelings I am supposed to express," "Sometimes I feel frustrated because I have to express feelings that are different from my true feelings," and "Sometimes I feel disconnected between my true feelings and the feelings I am supposed to express while I am in the program." The responses were formatted on a 5-point Likert scale ranging from "Not at all" to "Very much so," with higher sum scores indicating greater emotional dissonance. Validity and reliability were verified based on the collected data, and the single-factor loadings ranged from .73 to .92, with a reliability of .76.

2.2.2. Psychological Exhaustion

To measure psychological exhaustion, this study used the scale developed by Maslach & Jackson[4] (1981) (Maslach Burnout Inventory (MBI)), which was then adapted by Park Sung-Ho (2001) to fit the Korean environment. This scale consisted of 22 items in 3 factors: emotional exhaustion, dehumanization, and decreased personal fulfillment. The responses were formatted on a 5-point Likert scale ranging from "Not at all" to "Very much so," and the negative items (4, 7, 9, 12, 17, 18, 19, 21) were reverse-scored for analysis. An exploratory factor analysis was conducted for validation. A three-factor structure was examined, but 7 items were deleted in the analysis process due to redundancy and different factor loadings. The reliability analysis results ranged from .76 to .88, with inter-factor correlations of .11 to .25.

Table 2. The result of factor analysis of the psychological exhaustion scale

Question	Factor			h^2	α
	1	2	3		
emotional exhaustion 1	.77	.27	.22	.71	
emotional exhaustion 3	**.76**	**.21**	**.21**	.67	
emotional exhaustion 4	**.82**	**.19**	**.20**	.75	.88
emotional exhaustion 6	**.80**	**.26**	**.21**	.75	
emotional exhaustion 7	**.84**	**.20**	**.27**	.82	
emotional exhaustion 8	**.77**	**.18**	**.11**	.64	
dehumanization 1	.20	.83	.11	.74	
dehumanization 3	**.19**	**.81**	**.21**	.74	
dehumanization 4	**.19**	**.77**	**.19**	.67	.76
dehumanization 5	**.21**	**.71**	**.23**	.60	
decreased fulfillment 1	.28	.21	.80	.76	

decreased fulfillment 2	**.15**	**.19**	**.83**	.75	
decreased fulfillment 4	**.18**	**.25**	**.70**	.58	.81
decreased fulfillment 5	**.21**	**.23**	**.72**	.62	
decreased fulfillment 6	.22	.19	.73	.62	
	correlation between factors				
2	.11				
3	.22	.25			
eigenvalue	4.16	2.97	3.28		

2.2.3. Social Support

Social support was measured using the Student Social Support Scale translated and modified by Park[5] based on Nolten's[6] Student Social Support Scale, which was then modified and supplemented to fit the context of this study. This scale consisted of 27 items in 3 factors: teachers, family, and peers. Representative items include "My rehabilitation instructor compliments me when I try hard or do well," "My family is interested in my activities," and "My friends/peers are interested and concerned about my participation in rehabilitation." The responses were formatted as a 5-point Likert scale ranging from "Not at all" to "Very much so." An exploratory factor analysis was conducted to verify validity, and a three-factor structure was examined; however, 10 items were removed due to redundancy or different factor loadings during the analysis. The reliability analysis results showed a range of .77 - .86, and inter-factor correlations of .23 - .29.

Table 3. The result of factor analysis of the social support

Question	**Factor**			h^2	α
	1	**2**	**3**		
teacher 1	**.71**	.08	**.22**	.56	
teacher 2	**.66**	.12	**.24**	.51	
teacher 3	**.58**	.17	**.20**	.41	.86
teacher 5	**.77**	.22	**.27**	.71	
teacher 6	**.69**	.18	**.17**	.54	
teacher 8	**.66**	.26	**.01**	.50	
family 1	**.26**	**.77**	**.11**	.67	
family 2	.27	**.78**	**.23**	.73	
family 4	.29	**.62**	**.19**	.50	
family 5	.27	**.60**	**.22**	.48	.77
family 7	.19	**.57**	**.15**	.38	
colleague 2	.24	.23	**.63**	.51	
colleague 3	**.18**	**.26**	**.74**	.65	
colleague 5	.22	**.07**	**.77**	.65	
colleague 6	**.16**	**.23**	**.88**	.85	.82
colleague 7	**.17**	**.24**	**.77**	.68	
colleague 8	**.22**	**.29**	**.61**	.50	
	correlation between factors				
2	**.25**				
3	.29	.23			
eigenvalue	3.36	2.79	3.70		

2.3. *Data Analysis*

The data collected in this study were first examined by conducting frequency analysis and descriptive statistics to analyze the characteristics of the respondents and the items. Second, exploratory factor analysis and reliability coefficients were calculated to verify the validity and reliability of the scale. Third, correlation analysis was conducted to explore the relationship between variables. Fourth, stepwise regression analysis was conducted to analyze the causal relationship. Finally, the significance level of the analysis was α =.05, using SPSS 25.0.

3. Results & Discussion

3.1. *Correlation Analysis*

Before validating the causal relationship between emotional dissonance, psychological exhaustion, and social support of rehabilitation exercise participants, a correlation analysis between subfactors was conducted using the sum scores of each latent variable. The specific results are shown in the following Table 4. The correlation analysis showed that the correlation coefficients between the subfactors of psychological exhaustion and social support showed a significant positive correlation, and

the correlation coefficients between the subfactors of emotional dissonance and psychological exhaustion showed the same result. However, the correlation coefficients between the subfactors of emotional dissonance and psychological exhaustion and the subfactors of social support showed a significant negative correlation. The means of these subfactors ranged from 3.27 to 3.62, with standard deviations of .75 to .83.

Table 4. Correlation matrix and descriptive statistics between subfactors

Factor	1	2	3	4	5	6	7
Emotional dissonance	1.00						
emotional exhaustion	.42**	1.00					
dehumanization	.38**	.36**	1.00				
decreased fulfillment	.41*	.39**	.45**	1			
teacher	-.35**	-.24**	-.32**	-31**	1		
family	-.44**	-.27*	-.39**	-.36**	.41**	1	
friend/colleague	-.27**	-.19**	-.30**	-.33*	.49**	.36**	1
M	3.48	3.38	3.32	3.27	3.62	3.58	3.46
SD	.82	.79	.75	.78	.81	.83	.82

****Significant at the .01 level.**

3.2. *Regression analysis*

3.2.1. The Relationship Between Emotional Dissonance and Psychological Exhaustion

A simple regression analysis was conducted to verify the relationship between emotional dissonance and psychological exhaustion of rehabilitation exercise participants. The results are shown in Table 5. First, a regression analysis was conducted with the total score of emotional dissonance as the independent variable and emotional exhaustion, a subfactor of psychological exhaustion, as the dependent variable, and it was found that emotional dissonance (β=.420) significantly explained psychological exhaustion. Here, R^2=.176, F(1)=66.610, and p=.000. Second, a regression analysis was conducted with the total score of emotional dissonance as the independent variable and dehumanization, a subfactor of psychological exhaustion, as the dependent variable, and it was found that emotional dissonance (β=.380) significantly explained psychological exhaustion. In this case, R^2=.144, F(1)=52.488, and p=.000. Third, a regression analysis was conducted with the total score of emotional dissonance as the independent variable and reduced sense of fulfillment, a subfactor of psychological exhaustion, as the dependent variable, and it was found that emotional dissonance (β=.410) significantly explained psychological exhaustion. Here, R^2=.168, F(1)=62.843, and p=.000. Emotional disharmony is the inability to objectify phenomena or relationships and causes psychological exhaustion due to internal negative emotions because emotions that are opposite to actual internal emotions are expressed externally due to the surrounding environment or human relationships. Dehumanization and emotional exhaustion are negatively correlated with self-efficacy[7,8], so psychological exhaustion will be maximized due to this loss of efficacy.

Table 5. The effect of emotional dissonance on psychological exhaustion

Dependent variable	Independent variable	Unstandardized estimates		Standardized estimates	t	p-value
		B	Standard Error	beta		
emotional exhaustion R^2=.176	Constant	1.972	.177	-	11.125	.000
	emotional dissonance	.405	.050	.420	8.162	.000
dehumanization R^2=.144	Constant	2.110	.172	-	12.306	.000
	emotional dissonance	.348	.048	.380	7.245	.000
decreased fulfillment R^2=.168	Constant	1.913	.176	-	10.876	.000
	emotional dissonance	.390	.049	.410	7.927	.000

3.2.2. The Relationship Between Emotional Dissonance and Psychological Exhaustion

A simple regression analysis was conducted to verify the relationship between emotional dissonance and social support of rehabilitation exercise participants. The results are shown in Table 6. Specifically, first, a regression analysis was conducted with the total score of emotional dissonance as the independent variable and teacher, a subfactor of social support, as the dependent variable, and it was found that emotional dissonance (β=-.350) significantly explained teacher, the subfactor. Here,

R^2=.122, F(1)=43.416, and p=.000. Second, a regression analysis was conducted with the sum score of emotional dissonance as the independent variable and family, a subfactor of social support, as the dependent variable, and it was found that emotional dissonance (β=-.440) significantly explained family, the subfactor. At this time, R^2=.194, F(1)=74.665, p=.000. Third, a regression analysis was conducted with the sum score of emotional dissonance as the independent variable and friends/colleagues, a subfactor of social support, as the dependent variable, and it was found that emotional dissonance (β=-.410) significantly explained friends/colleagues, the subfactor. In this case, R^2=.073, F(1)=24.455, and p=.000. Because emotional dissonance mainly occurs within social relationships such as teachers, family, friends, or colleagues, it has an impact on social support [9], social support is a variety of positive resources provided by people with whom an individual has social relationships, such as family, friends, and colleagues, and plays a role in alleviating stress. In other words, social support can reduce emotional dissonance by reducing the negative psychological and physiological responses that individuals experience in stressful situations and increasing adaptability to the environment.

Table 6. The effect of emotional dissonance on social support

Dependent variable	Independent variable	Unstandardized estimates		Standardized estimates	t	p-value
		B	Standard Error	beta		
teacher R^2=.122	Constant	4.823	.188	-	25.712	.000
	emotional dissonance	-.346	.052	-.350	-6.589	.000
family R^2=.194	Constant	5.130	.184	-	27.840	.000
	emotional dissonance	-.445	.052	-.440	-.8641	.000
friend/colleague R^2=.073	Constant	4.400	.195	-	22.540	.000
	emotional dissonance	-.270	.055	-.270	-4.945	.000

3.2.3. The Relationship Between Psychological Exhaustion and Social Support

A multiple regression analysis was conducted to verify the relationship between psychological exhaustion and social support of rehabilitation exercise participants. The results are shown in Table 7. Specifically, first, a regression analysis was conducted with emotional exhaustion, dehumanization, and decreased sense of fulfillment of psychological exhaustion as independent variables, and teacher, the subfactor of social support, as the dependent variable. Only dehumanization (β=-.226) and decreased sense of fulfillment (β=-.208) significantly explained teacher. In this case, R^2=.137, F(2)=24.596, and p=.000. Second, a regression analysis was conducted with emotional exhaustion, dehumanization, and decreased sense of fulfillment of psychological exhaustion as independent variables and family, a subfactor of social support, as the dependent variable, and it was found that only dehumanization (β=-.286) and decreased sense of fulfillment (β=-.231) significantly explained family. Here, R^2=.195, F(2)=37.495, and p=.000. Third, a regression analysis was conducted with psychological exhaustion, dehumanization, and decreased sense of fulfillment as independent variables and friends/colleagues, a subfactor of social support, as the dependent variable, and it was found that only dehumanization (β=-.245) and decreased sense of fulfillment (β=-.190) significantly explained friends/colleagues. At this point, R^2=.138, F(2)=24.748, and p=.000. In many studies, social support has a mediating effect on emotional labor, job satisfaction, emotional exhaustion and exhaustion, and thus affects emotional dissonance[10,11]. Therefore, in order to increase the sustainability of rehabilitation exercise participants, customized educational intervention is needed that takes into account the individual characteristics of rehabilitation exercise participants to reduce emotional dissonance or psychological exhaustion and increase social support.

Table 7. The effect of psychological exhaustion on social support

Dependent variable	Independent variable	Unstandardized estimates		Standardized estimates	t	p-value
		B	Standard Error	beta		
teacher R^2=.137	Constant	5.138	.221	-	23.284	.000
	dehumanization	-.244	.064	-.226	-3.831	.000
	decreased fulfillment	-.216	.061	-.208	-3.523	.000

family R^2=.195	Constant	5.435	.218		24.884	.000
	dehumanization	-.316	.063	-.286	-5.009	.000
	decreased fulfillment	-.246	.061	-.231	-4.054	.000
friend/colleague R^2=.138	Constant	4.990	.223		22.346	.000
	decreased fulfillment	-.257	.062	-.245	-4.140	.000
	dehumanization	-.208	.065	-.190	-3.217	.001

4. Conclusion & Suggestion

The study aimed to determine the relationship between emotional dissonance, psychological exhaustion, and social support of rehabilitation exercise participants. Based on these aims, the following conclusions were drawn. First, the correlation coefficients between the subfactors of psychological exhaustion and social support were all significantly positive, as were the correlation coefficients between the subfactors of emotional dissonance and psychological exhaustion. On the other hand, the correlation coefficients between emotional dissonance, psychological exhaustion, and social support were significantly negative. Next, significant results were found for the relationship between emotional dissonance and psychological exhaustion, emotional dissonance and social support, and psychological exhaustion and social support. The findings indicate that emotional dissonance, psychological exhaustion, and social support of rehabilitation exercise participants have a meaningful causal relationship, and future research should focus on the elimination of adverse factors and the improvement of static factors for the continuation of rehabilitation exercises.

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