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가
가 가 가
(Burbank, Paudula & Nigg, 2000).

(Bouchard, Shepard & Stephen, 1993;
Powell, Thompson, Caspersen & Kendrick, 1987) 가 (Pender, 1997).

가 (Trans-theoretical model)
(Powell, Thompson, Caspersen & Kendrick., (Prochaska, DiClemente & Norcross, 1992),
1987). 가

Carmody,
Senner, Manilow & Matarazzo(1980), Robinson (Choi, 1991), 가
Rogers(1994)

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2001 11 9

2002 4 22

2002 8 1

, Marcus & Owen, 1992; Marcus, Selby, Niaura & Rossi, 1992b). Burkholder Nigg (2002) 가

2. Kim (2000) 가 Burkholder Nigg(2002)

1) 가

2) Pollark, Carbonari, DiClemente, Niemann Mullen(1998)

3) 가 가

3. 가 Kim et al. (2000) Lee, Chang Park(2001)

, (Marcus & Simkin, 1993). 가 가 가 가 가 가 가 가 가 가

(Prochaska, DiClemente & Norcross, 1992; Pender, 1997).

<Figure 1>

가 3 (2 :) 11 가 10 : , 가, , 가 (Marcus, Simkin, Rossi & Pinto, 1996; , , , 가

가 .73 가

가

가

3. 가가

(3)

1) (Stage of change for exercise) (Process of change for exercise)

, 5 가

(precontemplation) 6 5

(contemplation) 6

(preparation) (dramatic relief), 가

(action) 가 가(self reevaluation), 가

6 가(environmental reevaluation), (social

(maintenance) liberation) 5

6 30 1 3 가

Marcus et al.(1992b) (counter conditioning),

가 가 (helping

1, 2, relation),

3, 4, 5 (reinforce managment),

가 (self

(1) (Self efficacy) liberation),

(stimulus control)가

Marcus (1992a)

1-5

2 5 1-5

2 5 10 20

1-5 5 Marcus (1992b) Cronbach's Alpha

5 가 .94,

Cronbach's Alpha .89 , 가 .94, .82, 가 .59,

.85, 5 .91,

(2) 가 .75, .66, .73, .47

(Decisional balance) 가

가(Pros)

가(Cons) Lee Chang 4.

(2001)

, 1-5 가 13

Cronbach's Alpha .93, 1-5 8

pc-SAS program LISREL 8.0

- 1) pc-SAS program 65 (26.4%), 38 (15.4%),
14 (5.7%), 9 (3.7%)
가 92 (37.4%) 가 ,
- 2) 가 LISREL 8.0 64 (26.0%) , 가 58 (23.6%),
program , 가 24 (9.8%), 가 8 (3.3%)
가 가 167 (67.9%), 가 69
- 3) (28%), 10 (4.1%)
($X^2 = 568.853$, 139 (56.5%),
P = .000) 가 (Generally 가 100 (40.7%), 5 (2.0%),
Weighted Least Square(WLS)) 2 (0.8%)

2.

1.

가(= 3.27),
72.32 (= 7.51) , 가(= 2.56) 가
90 (36.5%), 156 (63.5 %) . (= 2.34) 가
120 (48.8%) 가 , , 10 ;

<Table 1> Descriptive statistics for selected variables in this study

Pros of decision making	3.279	0.690	1.000	5.000
Cons of decision making	2.560	0.578	1.000	4.000
Self efficacy for exercise	2.341	0.894	1.000	5.000
Helping relationship	5.256	2.139	2.000	10.000
Self liberation	5.967	1.899	2.000	10.000
Environmental reevaluation	7.057	1.670	2.000	10.000
Conscious raising	5.858	2.270	2.000	10.000
Dramatic relief	6.496	1.871	2.000	10.000
Counter conditioning	6.793	1.696	2.000	10.000
Social liberation	6.593	1.467	2.000	10.000
Reinforcement management	6.772	1.613	2.000	10.000
Stimulus control	5.573	1.841	2.000	10.000
Self reevaluation	6.248	1.656	2.000	10.000
Stage of change	2.240	1.537	1.000	5.000

<Table 2> Distributions of subjects across stage of change in exercise

N = 246

stage of change	Items	frequency	percent
(1)Precontemplation	I do not exercise regularly and I do not intend to do exercise in the next 6 months	126	51.2
(2)Contemplation	I don't exercise regularly but I intend to in the next 6 months.	30	12.2
(3)Preparation	Now I currently do exercise but I do not exercise regularly.	41	16.7
(4)Action	I do exercise regularly and I have been for less than 6 months	3	1.2
(5)Maintenance	I do exercise regularly and I have been for more than 6 months	46	18.7

($\beta = 5.25$), ($\beta = 5.96$), 가 (Kim & Kang, 2000)
 ($\beta = 7.05$), ($\beta = 5.85$), ($\beta = 6.49$), ($\beta = 6.79$), ($\beta = 6.59$), ($\beta = 6.77$), ($\beta = 5.57$), 가 가
 가($\beta = 6.24$) 가

<Table 1>.

126 (51.2%), 30 (12.2%), 2) 가 (parameter estimate), 가
 41 (16.7%), 3 (1.2%), 가 (Beta, Gamma)
 46 (18.7%) <Table 2> 가 (SMC) 가

3. 가

(path diagram)

<Table 3, Figure 2>.

t

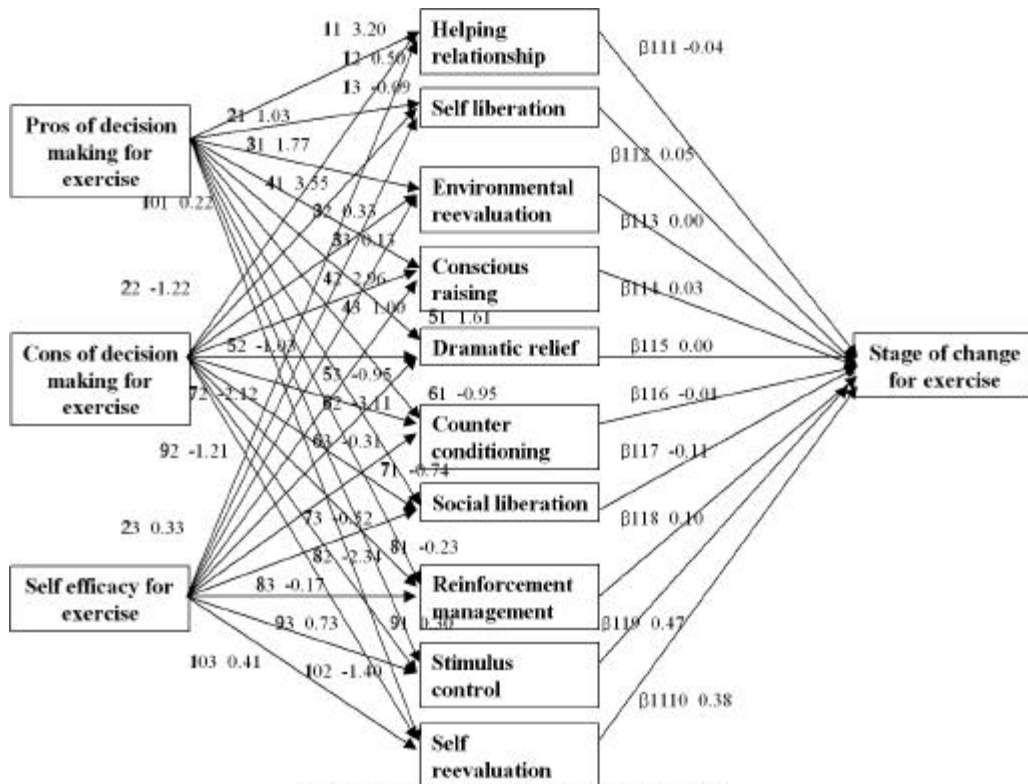
1) 가 1.96 (p<.05)
 가 가 가
 $\chi^2 = 184.78$ (df=48, p=.000) GFI 가
 (Goodness of fit index) .95, NFI(Normed fit index) .99 .90 .95 가 가 (' $\chi^2 = .50$, p>.05)
 AGFI(Adjusted goodness of fit index) .90, NNFF(Non-normed fit index) .98 .85 .90 가 (' $\chi^2 = -.09$, p>.05)
 가 가 (' $\chi^2 = .33$, p<.05) 가 가
 (' $\chi^2 = .13$, p>.05) 가 가 ,

<Table 3> Direct, indirect ,total effect and standardized solution in hypothetical model

Endogenous Variables	Predictive Variable	Direct effect (t-value)	Indirect effect (t-value)	Total effect (t-value)	standardized solution	SMC
Helping relationship	Pros	3.20(11.83)		3.20(11.83)	0.91	0.61
	Cons	0.50(1.23)		0.50(1.23)	0.13	
	Self efficacy	-0.09(-0.36)		-0.09(-0.36)	-0.04	
Self liberation	Pros	1.03(5.48)		1.03(5.48)	0.34	0.70
	Cons	-1.22(-4.04)		-1.22(-4.04)	-0.38	
	Self efficacy	0.33(2.16)		0.33(2.16)	0.17	
Environ-reevaluation	Pros	1.77(9.23)		1.77(9.23)	0.81	0.58
	Cons	0.33(1.15)		0.33(1.15)	0.14	
	Self efficacy	0.13(0.80)		0.13(0.80)	0.09	
Conscious raising	Pros	3.55(9.39)		3.55(9.39)	0.99	0.54
	Cons	2.96(4.78)		2.96(4.78)	0.77	
	Self efficacy	1.00(3.11)		1.00(3.11)	0.42	
Dramatic relief	Pros	1.61(6.39)		1.61(6.39)	0.56	0.29
	Cons	-1.03(-2.29)		-1.03(-2.29)	-0.33	
	Self efficacy	-0.95(-4.26)		-0.95(-4.26)	-0.50	
Counter conditioning	Pros	-0.95(-3.15)		-0.95(-3.15)	-0.35	0.46
	Cons	-3.11(-5.54)		-3.11(-5.54)	-1.07	
	Self efficacy	-0.31(-1.15)		-0.31(-1.15)	-0.17	
Social liberation	Pros	-0.74(-2.67)		-0.74(-2.67)	-0.35	0.20
	Cons	-2.12(-4.76)		-2.12(-4.76)	-0.95	
	Self efficacy	-0.52(-2.27)		-0.52(-2.27)	-0.37	
Reinfor- management	Pros	-0.23(-1.01)		-0.23(-1.01)	-0.11	0.71
	Cons	-2.34(-6.44)		-2.34(-6.44)	-1.03	
	Self efficacy	-0.17(-0.98)		-0.17(-0.98)	-0.12	

<Table 3> Direct, indirect ,total effect and standardized solution in hypothetical model

Endogenous Variables	Predictive Variable	Direct effect (t-value)	Indirect effect (t-value)	Total effect (t-value)	standardized solution	SMC
Stimulus control	Pros	0.30(1.62)		0.30(1.62)	0.11	0.72
	Cons	- 1.21(-3.93)		- 1.21(-3.93)	-0.40	
	Self efficacy	0.73(4.75)		0.73(4.75)	0.39	
Self reevaluation	Pros	0.22(1.07)		0.22(1.07)	0.09	0.76
	Cons	- 1.40(-4.58)		- 1.40(-4.58)	-0.56	
	Self efficacy	0.41(2.91)		0.41(2.91)	0.26	
Stage of change	Pros		0.30(2.01)	0.30(2.01)	0.11	0.69
	Cons		-1.05(-4.82)	-1.05(-4.82)	-0.37	
	Self efficacy		0.59(4.98)	0.59(4.98)	0.33	
	Helping relationship	-0.04(-1.25)		-0.04(-1.25)	-0.06	
	Self liberation	0.05(0.98)		0.05(0.98)	0.06	
	Envir-reevaluation	0.00(-0.06)		0.00(-0.06)	0.00	
	Conscious raising	0.03(0.84)		0.03(0.84)	0.04	
	Dramatic relief	0.00(-0.11)		0.00(-0.11)	0.00	
	Counter conditioning	-0.01(-0.43)		-0.01(-0.43)	-0.02	
	Social liberation	-0.11(-2.05)		-0.11(-2.05)	-0.08	
	Reinfo-management	0.10(1.10)		0.10(1.10)	0.08	
	Stimulus control	0.47(7.61)		0.47(7.61)	0.49	
	Self reevaluation	0.38(4.83)		0.38(4.83)	0.34	



<Figure 2> Path diagram of Hypothetical model

<Figure 2> Path diagram of hypothetical model

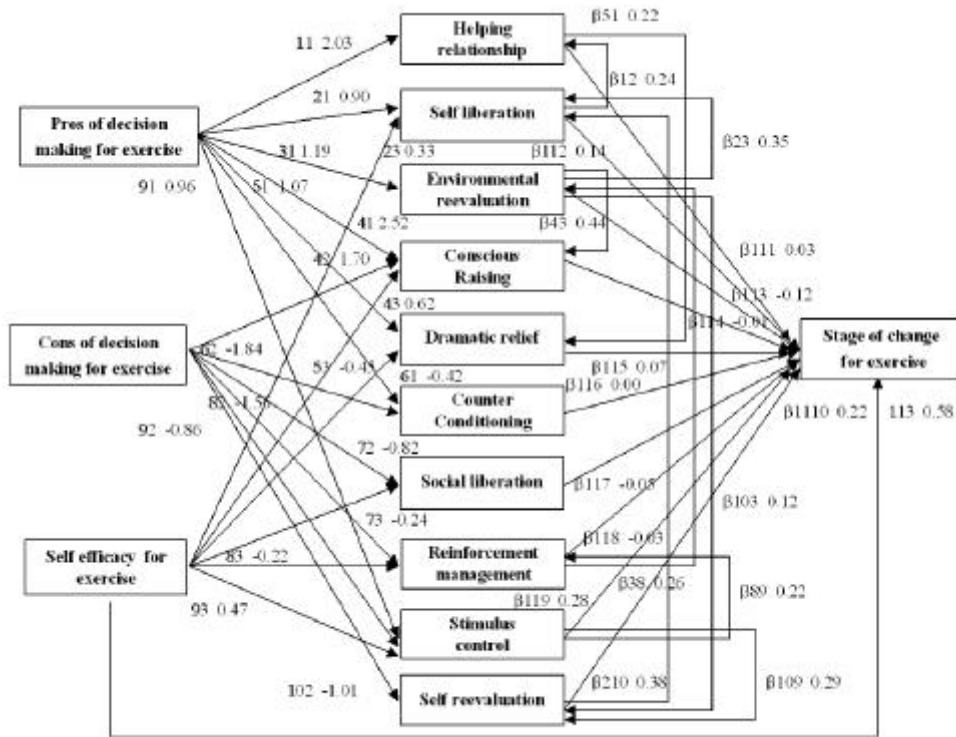
-3.83), (= .22, t=4.27) t=2.53), 가(= .02, t=2.76)
 (= .05, t=2.82), 23%
 가(= .02, t=2.51), (= .01, .

<Table 4> Direct, indirect, total effect and standardized solution in modified model

Endogenous Variable	Predictive Variable	Direct effect (t -value)	Indirect effect (t-value)	Total effect (t-value)	standardized solution	SMC
Helping relationship	Pros	2.03(9.15)	0.36(3.42)	2.39(15.07)	0.63	0.49
	Cons		-0.16(-3.02)	-0.16(- 3.02)	-0.04	
	Self Efficacy		0.09(2.43)	0.09(2.43)	0.04	
	Self liberation	0.24(3.50)		0.24(3.50)	0.21	
	Enviro-reevaluation		0.10(2.88)	0.10(2.88)	0.07	
	Reinfor-management		0.03(1.98)	0.03(1.98)	0.02	
	Stimulus control		0.03(3.00)	0.03(3.00)	0.03	
	Self reevaluation		0.09(3.29)	0.09(3.29)	0.06	
Self liberation	Pros	0.90(5.45)	0.60(6.56)	1.50(10.18)	0.46	0.69
	Cons		-0.66(-5.62)	-0.66(- 5.62)	-0.21	
	Self Efficacy	0.33(3.49)	0.03(1.51)	0.36(3.85)	0.18	
	Enviro-reevaluation	0.35(6.01)	0.05(2.35)	0.40(6.84)	0.32	
	Reinfor-management		0.10(2.74)	0.10(2.74)	0.07	
	Stimulus control		0.13(4.90)	0.13(4.90)	0.13	
	Self reevaluation	0.38(5.93)		0.38(5.93)	0.29	
Enviro- reevaluation	Pros	1.19(7.60)	0.06(2.19)	1.25(8.59)	0.49	0.40
	Cons		-0.46(-3.16)	-0.46(- 3.16)	-0.18	
	Self Efficacy		-0.03(- 1.10)	-0.03(- 1.10)	-0.02	
	Reinfor-management	0.26(3.32)		0.26(3.32)	0.24	
	Stimulus control		0.06(2.71)	0.06(2.71)	0.07	
Conscious raising	Pros	2.52(9.66)	0.55(5.21)	3.07(12.41)	0.78	0.52
	Cons	1.70(5.30)	-0.20(-2.52)	1.50(4.40)	0.39	
	Self Efficacy	0.62(3.69)	-0.02(- 1.07)	0.60(3.64)	0.24	
	Envir-reevaluation	0.44(5.64)		0.44(5.64)	0.29	
	Reinfor-management		0.11(2.58)	0.11(2.58)	0.07	
	Stimulus control		0.03(2.26)	0.03(2.26)	0.02	
	Self reevaluation					
Dramatic relief	Pros	1.07(4.42)	0.53(3.94)	1.60(8.43)	0.53	0.23
	Cons		-0.04(-2.56)	-0.04(- 2.56)	-0.01	
	Self Efficacy	-0.45(-3.83)	0.02(2.28)	-0.43(- 3.67)	-0.22	
	Helping relationship	0.22(4.27)		0.22(4.27)	0.28	
	Self liberation		0.05(2.82)	0.05(2.82)	0.06	
	Enviro-reevaluation		0.02(2.51)	0.02(2.51)	0.02	
	Reinfor-management		0.01(1.82)	0.01(1.82)	0.00	
	Stimulus control		0.01(2.53)	0.01(2.53)	0.01	
	Self reevaluation0		0.02(2.76)	0.02(2.76)	0.02	
Counter conditioning	Pros	-0.42(-2.01)		-0.42(- 2.01)	-0.15	0.33
	Cons	-1.84(-7.73)		-1.84(- 7.73)	-0.67	
Social liberation	Cons	-0.82(-4.62)		-0.82(- 4.62)	-0.38	0.08
	Self Efficacy	-0.24(-2.13)		-0.24(- 2.13)	-0.18	
Reinfor-management	Pros		0.21(2.94)	0.21(2.94)	0.09	0.65
	Cons	-1.56(-9.19)	-0.19(-2.98)	-1.75(- 10.26)	-0.77	
	Self Efficacy	-0.22(-2.19)	0.10(2.55)	-0.12(- 1.19)	-0.08	
	Stimulus control	0.22(4.40)		0.22(4.40)	0.30	
Stimulus control	Pros	0.96(4.86)		0.96(4.86)	0.31	0.55
	Cons	-0.86(-3.20)		-0.86(- 3.20)	-0.28	
	Self Efficacy	0.47(3.67)		0.47(3.67)	0.24	

<Table 4> Direct, indirect, total effect and standardized solution in modified model

Endogenous Variable	Predictive Variable	Direct effect (t -value)	Indirect effect (t-value)	Total effect (t-value)	standardized solution	SMC
Self reevaluation	Pros		0.43(4.31)	0.43(4.31)	0.17	0.62
	Cons	-1.01(-6.90)	-0.31(-3.74)	-1.32(- 8.73)	-0.54	
	Self Efficacy		0.13(2.65)	0.13(2.65)	0.08	
	Enviro-reevaluation	0.12(2.43)		0.12(2.43)	0.13	
	Reinfor-management		0.03(2.01)	0.03(2.01)	0.03	
	Stimulus control	0.29(6.20)	0.01(1.86)	0.30(6.39)	0.37	
Stage of change	Pros		0.56(4.59)	0.56(4.59)	0.20	0.64
	Cons		-0.50(-3.13)	-0.50(- 3.13)	-0.18	
	Self Efficacy	0.58(6.87)	0.20(2.95)	0.77(8.01)	0.43	
	Helping relationship	0.03(0.79)	0.01(1.74)	0.04(1.26)	0.06	
	Self liberation	0.14(2.41)	0.01(1.12)	0.15(2.63)	0.18	
	Envir-reevaluation	-0.12(-2.21)	0.08(2.78)	-0.04(- 0.84)	-0.03	
	Conscious raising	-0.01(-0.47)		-0.01(- 0.47)	-0.02	
	Dramatic relief	0.07(1.98)		0.07(1.98)	0.07	
	Counter conditioning	0.00(-0.11)		0.00(- 0.11)	0.00	
	Social liberation	-0.05(-0.89)		-0.05(- 0.89)	-0.04	
	Reinfor-management	-0.03(-0.45)	-0.01(-0.82)	-0.04(- 0.60)	-0.03	
	Stimulus control	0.28(5.31)	0.07(3.06)	0.35(7.86)	0.39	
	Self reevaluation	0.22(3.12)	0.06(2.26)	0.28(4.35)	0.25	

<Figure 3> Path diagram of Modified model $\chi^2=96.75(df=49, p=0.0005, GFI=0.98, NFI=0.99, AGFI=0.95, NNFI=0.99$

<Figure 3> Path diagram of modified model

Pender(1999)
(tailored intervention)
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(Kim et al., 2000)
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(Marcus et al., 1996; Marcus & Owen, 1992; Marcus, Selby, Niaura & Rossi, 1992b) 가
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(DiClemente, Prochaska & Gilbertini, 1985)
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Velicer, Fava & Prochaska, 1998) 2000 6 1 7 20
Marcus et al.(1992b)
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, Lee & Chang(2001)
, Marcus et al.
(1992a)
(Lee, Chang & Park,
2001) pc-SAS program
LISREL 8.0
가
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² 96.75(df= 49, p= .00005) 가
² 184.78(df= 48, p= .000)
 , GFI= .98, NFI= .99, AGFI= .95, NNFI= .99

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- Abstract -

A Study on the Relationships among the Influential Variables on Stage of Change of Exercise in the Elderly

Chang, Sung-Ok *. Lee, Pyoung-Sook *
Park, Eun-Young *

Purpose: The purpose of this study was to investigate the relationships among variables of transtheoretical model for exercise in the elderly.

Method: A hypothetical model explaining the stage of change was constructed based on a transtheoretical model. Empirical data for testing the hypothetical model was collected from 246 old adults over 65 years old in a community settings in Seoul, Korea in June and July, 2000. Data were analyzed by descriptive statistics and correlational analysis using pc-SAS program. The Linear Structural Modeling(LISREL) 8.0 program was used to find the best fit model which explain causal relationship of variables.

Result: The fitness of modified model to the data was $X^2 = 96.75(df=49, p=.00005)$, GFI=.98, NFI=.99, AGFI=.95, NNFI=.99. The predictable variables of stage of change

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explained 64% of stage of change for exercise

Conclusion : Results are consistent with the studies of application of the transtheoretical model, which has been used to understand how people change health behaviors. The findings of this study give useful informations to construct

exercise intervention program for the elderly about relationships among variables influencing to the stage of change of exercise.

Key words : Stage of change, The elderly