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TSL Family Therapy Followed by Improved Marital Quality and Reduced Oxidative Stress

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Abstract

Objectives: The current study evaluated the effectiveness of a form of family therapy developed in Korea. The "Thank you – Sorry – Love" (TSL) model was applied to a group of elderly retired men to improve the quality of their marriage and to reduce their stress. Methods: Thirty married retired Korean men were assigned to three groups. Group 1 received 14 sessions over 7 weeks of the TSL intervention. Group 2 received 14 sessions of educational classes related to retirement and aging. Group 3 received nothing. Assessments were made of the men's marital quality (using the Dyadic Adjustment scale) and oxidative stress (a biological marker of health), pretreatment, posttreatment, and 5 weeks after treatment. The husbands' wives were assessed in terms of marital quality at similar time points. Results: Husbands who received TSL therapy experienced statistically significant decreased oxidative stress (8-isoprostane levels) and increased marital quality. The spouses of the TSL program participants also showed statistically significant improvement in marital quality. The educational comparison group and no-treatment control group clients did not significantly improve on either measure, nor did their spouses experience improved marital quality. Conclusions: TSL family therapy was followed by both psychosocial (husbands and wives') and physiological (husbands') improvements. Additional randomized clinical trials of this promising family therapy may be warranted.

Keywords

TSL family therapy, marital quality, oxidative stress, elderly men, retirement

After retirement, many elderly men have problems in adjusting to aspects of their lives, including their changed family relationships. They may also experience psychological problems which may result in higher levels of physical stress (Wilson, Arnold, Schneider, Li, & Bennett, 2007). In addition, their marital relationships may worsen because of changes in their traditional roles within the family (Dorfman, 1992). Unlike elderly women (Nam, 2008) who continue to perform some domestic work even in old age and maintain existing social activities, many elderly men become isolated from the family and lose social roles (Kim, 2003; Yoon & Lee, 2006). The frustrations induced by this loss of role status can escalate into domestic violence. For example, in 1998, a Korean national survey found that more than 20% of elderly men were physically abusive to their spouses (Kim, 1998).

Few interventions have been developed to deal with postretirement problems, since these are often regarded as a natural developmental phenomenon. Previous studies in this area have focused mainly on the retirement process (Bosse, Aldwin, Levenson, Spiro, & Mroczek, 1993; Nuttman-Shwartz, 2004) and difficulties encountered after retirement (Fouquereau, Fernandez, Fonseca, Paul, & Uotinen, 2005; Gallo et al., 2006; Kogan, 1990; Kupperbusch, Levenson, & Ebling, 2003; Ruth & Coleman, 1996; Vaillant, DiRago, & Mukamal, 2006) and relatively few studies have evaluated ways to improve the retirement process and retirees' lives with their partners.

The "Thank you – Sorry – Love" (TSL) model of group therapy is a relatively long-term intervention program involving 14 sessions. It was developed by the first author and was designed to reduce domestic violence in Korean families (Kim, 2009). TSL focuses on three key expressions: "Thank you," "Sorry," and "Love." Clinically, the TSL model has been successful in improving and maintaining family relationships, and in the recovery of marital intimacy. It also seems to reduce stress and improve family relations at the individual level (Kim, Nam, & Choi, 2009). It is typically used with individuals, in an attempt to improve marital and family relationships.

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Table 1. Selected Demographic Characteristics of Participants (*N*s per Group)

Variable	Category	TSL Treatment Group	Educational Comparison Group	No-Treatment Control Group
Age	60–64	1	1	1
	65–69	9	9	9
Duration of marriage	30–34	1	2	1
	35–39	4	4	5
Level of education	More than 40 years	5	4	4
	Elementary school	2	2	3
	Middle school	2	2	1
	High School	3	3	4
	University	3	3	2
Occupation before retirement	Blue-collar	5	6	7
	White-collar	5	4	3

We believed that if retired elderly men suffer from maladjustment problems due to the loss of their patriarchal authority role, TSL could be used to improve the husbands' attitude toward their marriage by altering their roles. The TSL program is based on a model that integrates family systems, cognitive–behavioral, and ecological theories and emphasizes the importance of continuous practice of the model with spouses and family members. In a TSL therapy group of men, it attempts to change their negative behaviors and authoritarian attitudes. The purpose of the present study was to apply the TSL concepts to a program for elderly married men and to examine its effect on them and their spouses using a quasi-experimental research design.

Method

Participants

Study participants (retired married men aged 60–69 years) were recruited from December 2009 to January 2010. We distributed information about the study, including research purposes, general content, and the study period, to 26 senior welfare centers in Seoul, Korea. Thirty-six men agreed to participate, and these were screened using in-depth interviews from February 1 to February 19, 2010. Before study enrollment, all participants were assured of anonymity and gave informed consent. The research protocol for this study was approved by the Yonsei University Institutional Review Board.

During the screening interview, participants talked freely about their past history and family relations. In assigning clients to the three arms of the study, their available schedules and their desired program of participation were considered. As a result of the screening interviews, we excluded six men from the study: two had divorced, three couples were not living together, and one exceeded the age limit. Thus, 30 subjects and their spouses were nonrandomly assigned to TSL treatment, a comparison group, and a no-treatment control group, with 10 in each group.

Selected demographic data for clients comprising the TSL treatment group, educational comparison group, and no-treatment control group are reported in Table 1. With respect to age, duration of marriage, educational level, employment and the extent to which members had experienced an illness in the past year, the three groups did not significantly vary on any of these demographic variables.

Research Design

We conducted pretest, posttest, and follow-up assessments on 30 elderly Korean couples, in the context of a nonequivalent control group design that compares changes in the treatment, comparison, and control groups. The design may be diagrammed as below:

$N=$ 10 TSL Treatment Group $\quad O_1 - X - O_2 - O_3.$

$N=$ 10 Educational Comparison Group $\quad O_1 - Y - O_2 - O_3.$

$N=$ 10 No-Treatment Control Group $\quad O_1 \qquad O_2 - O_3.$

Only the husbands participated in the treatment and comparison groups, not their wives. The TSL program was carried out for 7 weeks in 14 sessions; the comparison group of men participated in general education for the elderly during this same period, while clients in the control group received no intervention. We evaluated the program's effectiveness during three time periods: pretest (1 week before the start of the program); posttest (1 week after the end of the program); and at follow-up (which was conducted 5 weeks after the program was terminated). One client in the no-treatment control group declined to participate in the posttest and follow-up assessments, citing personal reasons. The husbands' wives were assessed during these same time periods, even though they did not formally participate in the TSL treatment or educational group programming. The husbands were assessed in person and their spouses over the telephone.

Outcome Measures

In order to verify the effectiveness of the TSL program, we used a combination of psychosocial and physiological measures to assist in problem solving by combining various

Table 2. Pretreatment Levels on Oxidative Stress and DAS Score (Men)

Measure	Variable	Group	Mean Rank	χ^2	*df*	Sig.
Biological	Oxidative stress levels	TSL Treatment	18.40	1.970	2	.373
		Educational Comparison	15.20			
		No-Treatment Control	12.90			
Self-Report	DAS scores	TSL Treatment	13.30	1.600	2	.449
		Educational Comparison	15.00			
		No-Treatment Control	18.20			

Note. DAS = Dyadic Adjustment scale; TSL = Thank you – Sorry – Love.

perspectives, including medical, biological, and the social sciences (Kim, 2010).

The Dyadic Adjustment scale (DAS; Graham, Liu, & Jeziorski, 2006; Spanier, 1976) was used as our study's measure of the self-reported quality of our participants' marriages. The DAS contains 32 items and is available in a previously published Korean translation of the instrument (Lee & Kim, 1996), which we used. The men completed the DAS in person, while the wives completed it over the telephone. Higher scores are reflective of a higher quality marital relationship, hence higher scores over time indicate improvements. In the current study, the DAS demonstrated excellent internal consistency, with a Cronbach's α of .939.

Oxidative stress is a condition in which cells are damaged by reactive oxygen species (ROS). Because free radicals have high chemical affinity, they can cause structural and functional cell changes by reacting with most cellular components and damage fat, protein, and deoxyribonucleic acid, and so on in the body (Halliwell, 1996). Although humans have an antioxidant system for removing free radicals, the system is not strong enough to eliminate all free radicals, so cells are destroyed when free radicals attack peripheral cells (Kikuchi et al., 2002). Long-lasting psychosocial stress increases oxidative stress, which is related to cancer, hypertension, diabetes, Behcet's syndrome, Alzheimer's disease, and Parkinson's disease. Oxidative stress is also a major factor in the aging process (Collier et al., 1992; Higashi et al., 2002; Kikuchi et al., 2002; Sanderson, van Rij, Wade, & Sutherland, 1995; Zahavi, Betteridge, Jones, Galton, & Kakkar, 1981).

In this study, we assessed 8-isoprostane levels as an oxidative stress biomarker. 8-isoprostane is formed by lipid peroxidation and indicates the degree of ongoing stress. Free 8-isoprostane was purified by the affinity chromatography method, using a commercially available affinity column (Cayman Chemical, Ann Arbor, MI, USA). 8-isoprostane was obtained by blood testing. All blood samples were immediately centrifuged for 30 min at 3000 rpm to separate serum from the whole blood treated with the anticoagulant, heparin. Then, the supernatant was diluted 1:5 with a column buffer and applied to the column. An elution solution, extracted from the column using the elution solution in an affinity column kit, was evaporated and dried using vacuum centrifugation. Then, the concentration of free 8-isoprostane was measured by commercial enzyme immunoassay (Cayman Chemical). The sample volume was 50 µl. Absorbance was measured by enzyme-linked immunosorbent assay reader at a wavelength of 405 nm. The levels of free 8-isoprostane were presented as picograms per milliliter. Oxidative stress was only assessed among the men participating in this study, not their spouses. Higher scores on the measure of oxidative stress reflect higher levels of stress, hence a lowering of scores is movement in the desired direction.

Interventions

TSL family therapy regulates the most positive expressions in human relations as "Thank you, Sorry, Love" (Kim, 2009), focusing on the fact that families in Korean society are not accustomed to expressing positive emotions with one another. Kim developed TSL (using the acronym for Thank you, Sorry, Love) family therapy using these three core words as a means for families to develop and maintain harmonious relationships.

T (Thank you) indicates the need to recognize the value of one's family, while acknowledging the existence of the family, and expressing thankfulness. S (Sorry) denotes the need to apologize for wounds the individual has inflicted on family members and also for asking forgiveness by family members who have been hurt. L (Love) stands for the need to express affection to one another and for sharing time and material goods. In the concept of TSL family therapy, expressing the three core words is said to be a powerful tool for maintaining harmonious human relationships and peaceful living; for healing interrelationships, and for recovering a sense of closeness.

The TSL program has 14 sessions in three parts. Part 1 has six sessions devoted to "Thank you"; Part 2 has four sessions on "Sorry"; and the four Part 3 sessions focus on "Love." In each part, the group program is implemented in relation to the three main words and the practice of 5Re: Recall, recognize, realize (action), reinforcement, and refreshment. Program participants are asked to practice their 5Re missions on their spouses at home.

The core of the TSL program is on T (Thank you). When recognizing the preciousness of the family's existence and expressing thankfulness is done, the next steps S (Sorry) and L (Love) follow. Therefore, T (Thank you) is practiced in the initial six sessions. In the following steps of S (Sorry) and L (Love), the practice of T (Thank you) continues. This means participants must say "thank you" to their partner almost every day. While expressing thankfulness, they will also say sorry and express love to their spouses as they learn the next steps. The details of the TSL treatment program are available in Kim (2009). It can be seen as a culturally specific intervention created taking into account the unique characteristics of contemporary Korean society,

Table 3. Pretreatment, Posttreatment, and Follow-Up DAS Scores for Men

		Pretest–Posttest			Pretest-Follow-up Test			Case Score			
Group	Change	*N*	Mean Rank	*Z*	*N*	Mean Rank	*Z*	Case	Pretest	Posttest	Follow-up Test
TSL Treatment Group	Negative ranks	1	3.00	−2.497*	1	1.00	−2.705**	A	100	110	107
								B	61	78	81
								C	119	124	128
	Positive ranks	9	5.78		9	6.00		D	106	114	113
								E	109	129	126
								F	88	99	97
	Ties	0			0			G	67	70	73
								H	48	89	61
								I	50	44	48
								J	104	111	114
Educational Comparison Group	Negative ranks	5	5.00	−.297	6	6.25	−1.020	a	43	43	25
								b	87	88	83
								c	89	85	83
	Positive ranks	4	5.00		4	4.38		d	112	102	100
								e	120	112	111
								f	97	96	100
	Ties	1			0			g	110	125	127
								h	74	38	54
								i	91	101	92
								j	96	102	108
No-Treatment Control Group	Negative ranks	6	5.83	−1.482	5	5.10	−.356	1	99	91	97
								2	107	108	113
								3	30	25	16
	Positive ranks	3	3.33		4	4.88		4	115	119	116
								5	109	—	—
								6	112	94	110
	Ties	0			0			7	112	103	106
								8	88	94	95
								9	90	88	85
								10	107	102	110

Note. DAS = Dyadic Adjustment scale; TSL = Thank you – Sorry – Love.
*$p < .05$. **$p < .01$.

Table 4. Changes in DAS Scores for Men

Change	Group	Before (SEM)	After (SEM)	Mean Change (SEM)	DID ($\Delta_T - \Delta_C$)	Mean Rank	χ^2	*df*	Sig.
Pre–Post Change	TSL treatment	85.20 (8.34)	96.80 (8.42)	11.60 (3.98)		21.65	9.814	2	.007**
	Educational comparison	91.90 (6.92)	89.20 (8.88)	−2.70 (4.43)	14.30	12.80			
	No-Treatment control	95.56 (8.80)	91.56 (8.91)	−4.00 (2.45)	15.60	10.06			
Pre–Follow-up Change	TSL treatment	85.20 (8.34)	94.80 (8.77)	9.60 (1.93)		22.00	10.402	2	.006**
	Educational comparison	91.90 (6.92)	88.30 (9.39)	−3.60 (3.82)	13.20	10.90			
	No-Treatment control	95.56 (8.80)	94.22 (10.32)	−1.33 (2.19)	10.93	11.78			

Note. DAS = Dyadic Adjustment scale; DID = difference-in-differences; TSL = Thank you – Sorry – Love.
**$p < .01$

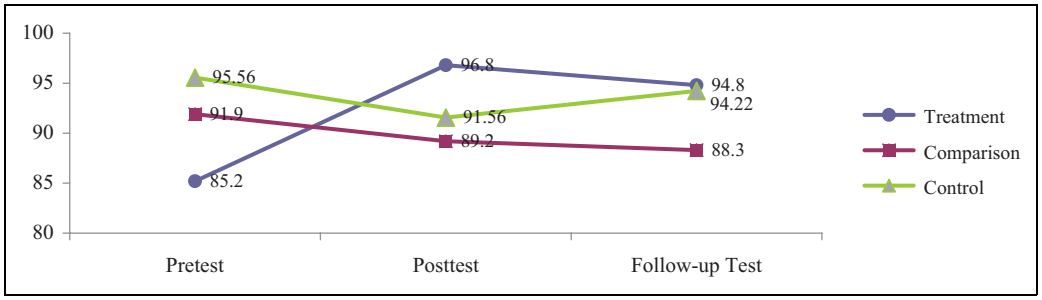

Figure 1. Changes in Dyadic Adjustment scale (DAS) scores: men.

Table 5. Pretreatment DAS Scores for Women

Measure Area	Measurement	Group	Mean Rank	χ^2	*df*	Sig.
Self-Report	DAS scores	TSL Treatment	13.70	.838	2	.658
		Educational Comparison	17.30			
		No-Treatment Control	15.50			

Note. DAS = Dyadic Adjustment scale; TSL = Thank you – Sorry – Love.

overlaying a conceptual foundation of cognitive–behavioral, family systems, and ecological theories.

The men assigned to the educational comparison group received general information pertaining to aging and retirement issues without any specific therapeutic elements. This was included in an attempt to partially control for nonspecific factors which might potentially impact an individual's marriage received by the TSL group, such as group meetings, getting out of the home, socializing with other elderly men, and so on.

The clients assigned to the no-treatment control condition were assessed using the same measures and within the same general times as the men in the TSL and educational groups, but otherwise received no formal intervention.

Results

Given our relatively small sample size, we evaluated effectiveness using posttest, and follow-up assessments using the Wilcoxon signed-rank test and compared relative changes by the difference-in-differences (DID) method. To examine homogeneity of basic status among the treatment, comparison, and control groups and verify the difference in the change rate for pre–post–follow-up tests for the respective groups, we used the Kruskal–Wallis test. When those tests had statistically significant results, we used the Mann–Whitney *U* test for pairwise comparisons as a *post hoc* test.

DAS Scores

At pretest, the DAS scores for the men were not significantly different (see Table 2), indicating the equivalence of the three groups on these measures at the beginning of the study. Over time, DAS scores for the men assigned to the TSL treatment group significantly improved (pretest to posttest and pretest to follow-up), whereas those of the men assigned to the

Table 6. Pretreatment, Posttreatment, and Follow-Up DAS Scores for Women

		Pretest–Posttest			Pretest–Follow-up Test			Case Score			
Group	Change	*N*	Mean Rank	*Z*	*N*	Mean Rank	*Z*	Case	Pretest	Posttest	Follow-up test
TSL Treatment Group	Negative ranks	2	2.25	−2.134*	3	2.33	−2.091*	A	104	106	102
								B	74	72	85
								C	94	112	108
	Positive ranks	7	5.79		7	6.86		D	102	107	114
								E	102	115	113
								F	82	78	79
	Ties	0			0			G	75	84	88
								H	84	99	89
								I	74	—	68
								J	88	104	98
Educational Comparison Group	Negative ranks	6	6.50	−1.174	5	7.00	−1.486	a	72	76	63
								b	94	102	94
								c	101	93	87
	Positive ranks	4	4.00		4	2.50		d	103	85	92
								e	116	103	106
								f	105	109	98
	Ties	0			1			g	99	90	102
								h	52	49	55
								i	96	101	99
								j	83	78	85
No-Treatment Control Group	Negative ranks	4	6.50	−1.123	6	5.83	−1.485	1	105	108	97
								2	92	76	88
								3	63	55	42
	Positive ranks	4	2.50		3	3.33		4	104	106	109
								5	78	—	—
								6	86	78	83
	Ties	1			0			7	92	95	84
								8	83	83	87
								9	98	99	93
								10	101	97	103

Note. DAS = Dyadic Adjustment scale; TSL = Thank you – Sorry – Love.
*$p < .05$

Table 7. Changes in DAS Scores for Women

Change	Group	Before (SEM)	After (SEM)	Mean Change (SEM)	DID ($\Delta_T - \Delta_C$)	Mean Rank	χ^2	*df*	Sig.
Pre–Post Change	TSL treatment	89.44 (3.88)	97.44 (5.19)	8.00 (2.71)		20.94	8.173	2	.017*
	Educational comparison	92.10 (5.87)	88.60 (5.61)	−3.50 (2.73)	11.50	11.65			
	No-treatment control	91.56 (4.39)	88.56 (5.69)	−3.00 (2.18)	11.00	11.22			
Pre–Follow-up Change	TSL treatment	89.44 (3.88)	97.33 (4.26)	7.89 (2.14)		21.70	9.524	2	.009**
	Educational comparison	92.10 (5.87)	88.10 (5.29)	−4.00 (2.16)	11.89	11.05			
	No-treatment control	91.56 (4.39)	87.33 (6.37)	−4.22 (2.64)	12.11	11.94			

Note. DAS = Dyadic Adjustment scale; DID = difference-in-differences; TSL = Thank you – Sorry – Love.
*$p < .05$. **$p < .01$.

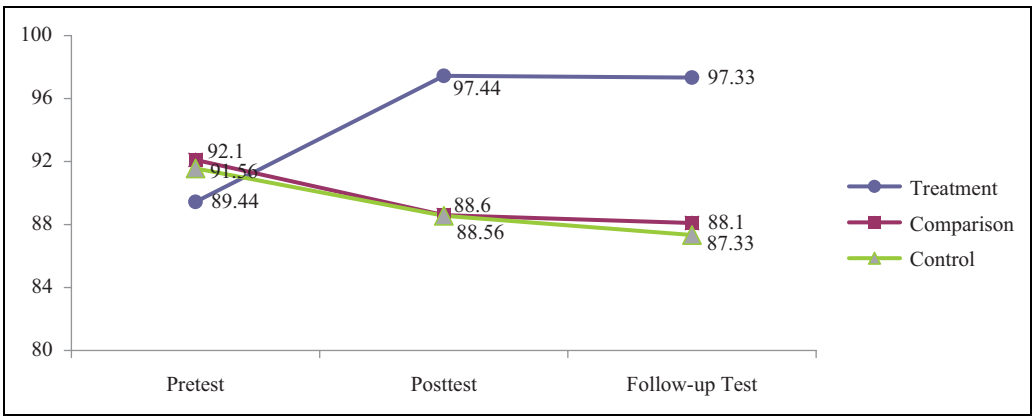

Figure 2. Changes in Dyadic Adjustment scale (DAS) scores: women.

educational comparison group or to the no-treatment control group did not improve (see Tables 3 and 4).

When we examined the change rate for pre–post tests, the mean ranking of the treatment group was 21.65 (mean change = 11.60) as opposed to 12.80 (mean change = −2.70) and 10.06 (mean change = −4.00) in the comparison and control groups, respectively ($p < .01$). DID between treatment and comparison group was 14.30, and between treatment and control group was 15.60. The change rate for pre–follow-up tests was significantly greater only in the treatment group ($p < .01$), indicating that the TSL program helped the retired men in that group improve their marital relationships. Figure 1 shows the change patterns of the mean DAS scores at pre–post–follow-up tests across the treatment, comparison, and control groups.

A similar positive outcome was observed with the untreated spouses of the men who were assigned to TSL therapy, compared to the spouses of clients who received general educational sessions or no treatment (see Tables 5–7 and Figure 2).

Oxidative Stress Levels

Pretreatment, the men assigned to the three arms of the study has similar levels of oxidative stress (see Table 2). Posttreatment and at follow-up, men who participated in the TSL program had statistically significant decreased 8-isoprostane levels (see Tables 8 and 9). The pretest to posttest and pretest to follow-up results for the comparison and control groups were not statistically significant, with no trends evident.

Also, when we tested change differences among the treatment, comparison, and control groups, the TSL program participants showed significantly reduced oxidative stress levels. For the treatment, comparison, and control groups, the mean ranks of oxidative stress levels between pretest and posttest were 7.60 (mean change = −39.48), 16.60 (mean change = −11.33), and 21.44 (mean change = 24.77), respectively. The level of change for the treatment group had a greater statistical differences than that of the comparison and control groups ($p < .01$). DID between treatment and comparison group was −28.15, and between treatment and control group was −64.25. Also, the change level from the pretest to the follow-up test was significantly greater in the treatment group than in the comparison and control groups ($p < .01$). These data demonstrated that the elderly men in the TSL program had decreased oxidative stress levels, which is a benchmark of overall stress level and of health. Figure 3 shows the changing levels of the mean oxidative stress index as measured by 8-isoprostane levels at pretreatment, posttreatment and follow-up, for men in the TSL treatment, educational comparison, and no-treatment control groups.

Discussion

Our findings suggest several practical implications for TSL therapy for elderly retired Korean married men. TSL is

Table 8. Pretreatment, Posttreatment, and Follow-Up Oxidative Stress Levels (8-isoprostane) for Men

		Pretest–Posttest			Pretest–Follow-up Test			Case Score			
Group	Change	*N*	Mean Rank	*Z*	*N*	Mean Rank	*Z*	Case	Pretest	Posttest	Follow-up Test
TSL Treatment Group	Negative ranks	10	5.50	−2.803**	10	5.50	−2.803**	A	140.80	61.47	52.48
								B	120.14	56.31	42.29
								C	140.80	103.58	47.09
	Positive ranks	0	.00		0	.00		D	115.47	105.54	50.36
								E	137.83	92.27	53.72
								F	108.94	72.46	58.24
	Ties	0			0			G	119.34	89.07	64.95
								H	88.03	45.08	72.84
								I	110.34	83.60	58.81
								J	76.47	53.97	49.91
Educational Comparison Group	Negative ranks	6	5.17	−.357	5	7.00	−.764	a	109.64	100.41	115.47
								b	211.32	84.08	113.97
								c	111.06	101.66	102.29
	Positive ranks	4	6.00		5	4.00		d	97.98	103.58	104.88
								e	101.04	94.50	89.07
								f	98.58	88.55	102.29
	Ties	0			0			g	102.93	126.80	92.27
								h	99.80	122.58	137.83
								i	102.93	118.55	111.77
								j	113.23	94.50	101.04
No-Treatment Control Group	Negative ranks	2	4.00	−1.400	4	3.00	−1.244	1	142.84	131.23	136.86
								2	141.82	161.97	79.92
								3	129.43	129.43	96.22
	Positive ranks	6	4.67		5	6.60		4	185.03	123.40	135.90
								5	80.37	—	—
								6	65.96	97.39	128.55
	Ties	1			0			7	63.97	120.94	154.82
								8	64.95	152.54	141.82
								9	76.06	133.07	127.67
								10	74.03	117.00	132.15

Note. TSL = Thank you – Sorry – Love.
**$p < .01$

Table 9. Changes in Oxidative Stress: 8-isoprostane for Men

Change	Group	Before (SEM)	After (SEM)	Mean Change (SEM)	DID ($\Delta_T - \Delta_C$)	Mean Rank	χ^2	*df*	Sig.
Pre–Post Change	TSL Treatment	115.82 (6.80)	76.33 (6.81)	−39.48 (6.37)		7.60	13.062	2	.001**
	Educational Comparison	114.85 (10.85)	103.52 (4.61)	−11.33 (13.72)	−28.15	16.60			
	No-Treatment Control	104.90 (15.09)	129.66 (6.34)	24.77 (14.82)	−64.25	21.44			
Pre–Follow-up Change	TSL Treatment	115.82 (6.80)	55.07 (2.83)	−60.75 (8.28)		7.40	12.652	2	.002**
	Educational Comparison	114.85 (10.85)	107.09 (4.37)	−7.76 (11.04)	−52.99	17.70			
	No-Treatment Control	104.90 (15.09)	125.99 (7.78)	21.09 (19.54)	−81.84	20.44			

Note. DID = difference-in-differences; TSL = Thank you – Sorry – Love.
**$p < .01$.

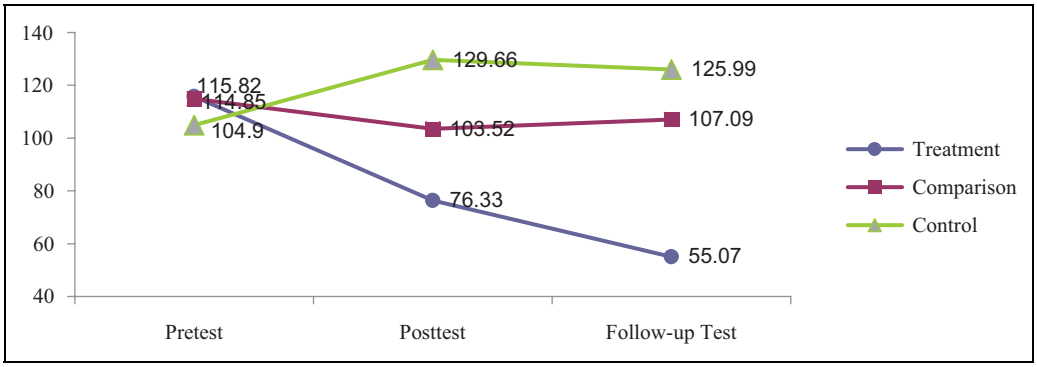

Figure 3. Changes in oxidative stress [8-isoprostane(pg/ml)]: men.

associated with improvements in reported marital quality for these men and their spouses, and in reductions of oxidative stress levels among the men (the wives were not assessed on this measure, due to logistical considerations). Finding consistent and congruent improvements on both a self-report measure of marital quality and a biomarker of stress, suggests the robustness of these possible effects of treatment. Oxidative stress is an outcome measure much less reactive to biases such as testing effects, social desirability, and placebo responses. Corresponding improvements were not obtained among the men who received general education classes or no intervention at all, suggesting that the positive results of TSL treatment were not related to several common threats to internal validity such as regression to the mean, the passage of time, nonspecific social contacts, or concurrent history.

Our positive experiences with the assessment of oxidative stress as a biologically based indicator of stress in the context of a social work intervention study among elderly retired men lead us to recommend that other social work researchers incorporate similarly valid benchmarks as outcome measures in psychosocial treatment studies. Such measures help move the field beyond a sole-reliance on self-report measures which are so prone to yielding inaccurate results. Also, the use of biological measures helps promote the development of genuinely interdisciplinary collaborations, which is being increasingly recommended due to the various strengths members of differing disciplines can bring to the design and conduct of social work research.

Our study illustrates the potential for relatively long-term group-based interventions (14 sessions) with Korean elderly men, who are currently typically offered short-term (e.g., 6–8 sessions) problem-focused individual therapies for depression, stress, and anger. We found that the TSL program was effective as a long-term intervention with 14 sessions that addressed comprehensive aspects of overall life and focused on family members including the spouse. The TSL program showed a constant effect after its termination as the subject's cognitive structure was shifted by recognizing and expressing appreciation, apology, and love verbally and behaviorally almost every day.

This research has limitations in regard to generalizability and internal validity. The size of the sample was limited and focused on retired men in their 60s. The lack of using true random assignment procedures to construct the three arms of the clinical trial is a significant limitation, which could be remedied in future investigations of the TSL program. Applying this model of treatment beyond the participants studied in the present investigation (elderly, retired, married Korean men, and their spouses) is also a natural extension, including testing this approach with persons in other countries, including

Westerners, groups who suffer from their own set of retirement-related stresses and issues (Baltes & Mayer, 2001; Dyer, Pavlik, Murphy, & Hyman, 2000; Waern, Rubenowitz, & Wilhelmson, 2003; Wilson et al., 2007). It will also be useful to assess the effects of this treatment on even older retired men, such as persons in their 70s.

As a preliminary evaluation of the TSL intervention for retired men at risk of stress, domestic violence, and marital problems, the outcomes of this study are promising. Clients who received the active treatment, TSL, improved on a valid self-report measure of marital quality, immediately posttreatment, and these gains were maintained at follow-up, after treatment had been discontinued for over a month. Clients who received a placebo-like intervention, educational classes about retirement and growing older, and those who received no intervention as all, did not improve on the measure of marital quality. This data pattern was mirrored when a biological marker of physiological stress was assessed, further supporting the value of the program. This has implications for the potential value of the TSL program as a treatment or preventive program related to domestic violence, which is not uncommon among retired couples.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

Baltes, P. B., & Mayer, K. U. (2001). *The Berlinaging study: Aging from 70 to 100*: Cambridge, England: Cambridge University Press.

Bosse, R., Aldwin, C. M., Levenson, M. R., Spiro, A., & Mroczek, D. K. (1993). Change in social support after retirement: Longitudinal findings from the normative aging study. *Journal of Gerontology*, *48*, 210-217.

Collier, A., Rumley, A., Rumley, A. G., Paterson, J. R., Leach, J. P., Lowe, G. D., & Small, M. (1992). Free radical activity and hemostatic factors in NIDDM patients with and without microalbuminuria. *Diabetes*, 41, 909913..

Dorfman, L. T. (1992). Academics and the transition to retirement. *Educational Gerontology*, *18*, 343-363.

Dyer, C., Pavlik, V. N., Murphy, K., & Hyman, D. J. (2000). The high prevalence of depression and dementia in elder abuse or neglect. *Journal of the American Geriatrics Society*, *48*, 205-208.

Fouquereau, E., Fernandez, A., Fonseca, A. M., Paul, M. C., & Uotinen, V. (2005). Perceptions of and satisfaction with retirement: A comparison of six European union countries. *Psychology and Aging*, *20*, 524-528.

Gallo, W. T., Bradley, E. H., Dubin, J. A., Jones, R. N., Falba, T. A., Teng, H. M. & Kasl, S. V. (2006). The persistence of depressive symptoms in older workers who experience involuntary job loss: Results from the health and retirement survey. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *61*, S221–S228.

Graham, J. M., Liu, Y. J., & Jeziorski, J. L. (2006). The Dyadic Adjustment Scale: A reliability generalization meta-analysis. *Journal of Marriage and Family*, *68*, 701-717.

Halliwell, B. (1996). Oxidative stress, nutrition and health. Experimental strategies for optimization of nutritional antioxidant intake in humans. *Free Radical Research*, *25*, 57-74.

Higashi, Y., Sasaki, S., Nakagawa, K., Matsuura, H., Oshima, T., & Chayama, K. (2002). Endothelial function and oxidative stress in renovascular hypertension. *New England Journal of Medicine*, *346*, 1954-1962.

Kikuchi, A., Takeda, A., Onodera, H., Kimpara, T., Hisanaga, K., & Sato, N., . . . , Itoyama, Y. (2002). Systemic increase of oxidative nucleic acid damage in Parkinson's disease and multiple system atrophy. *Neurobiology of Disease*, *9*, 244-248.

Kim, J. Y. (1998). Conjugal violence in Korean elderly couples: An analysis with socio-economic status. *Journal of the Korean Gerontological Society*, *18*, 170-183.

Kim, J. Y. (2009). *TSL therapy, theory and practice*. Seoul: Soya Press.

Kim, J. Y. (2010). *Neurobiosocial (NBS) perspective on family and child welfare*. Seoul: Yonsei University.

Kim, J. Y., Nam, S. I., & Choi, S. A. (2009). A study on the relationship between stress, depression, and suicidal inclination: Focusing on multiple group analysis according to TSL management method. *Korean Journal of Social Welfare Research*, *22*, 275-308.

Kim, W. (2003). An exploratory study on ageism experienced by the elderly and its related factors. *Journal of the Korean Gerontological Society*, *23*, 21-35.

Kogan, N. (1990). Personality and aging. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (3 rd ed., pp. 330-346). New York, NY: Academic Press.

Kupperbusch, C., Levenson, R. W., & Ebling, R. (2003). Predicting husbands' and wives' retirement satisfaction from the emotional qualities of marital interaction. *Journal of Social and Personal Relationships*, *20*, 335-354.

Lee, M. S., & Kim, Z. S. (1996). A preliminary study on the standardization of the Korean Dyadic adjustment scale. *Korean Journal of Clinical Psychology*, *15*, 129-140.

Nam, S. I. (2008). Study on the effects of the male elderly's age discrimination experiences on their perception of the elderly and attitude toward the old age life: Examination of mediation effects of family function and peer relations. *Journal of the Korean Gerontological Society*, *28*, 1297-1315.

Nuttman-Shwartz, O. (2004). Like a high wave: Adjustment to retirement. *The Gerontologist*, *44*, 229-236.

Ruth, J. A., & Coleman, P. (1996). Personality and aging: Coping and management of the self in later life. In J. E. Birren & K. W. Schaie (Eds.), *Handbook of the psychology of aging* (4th ed., pp. 308-322). San Diego, CA: Academic Press.

Sanderson, K. J., van Rij, A. E. M., Wade, C. R., & Sutherland, W. H. F. (1995). Lipid peroxidation of circulating low density

lipoproteins with age, smoking and in peripheral vascular disease. *Atherosclerosis*, *118*, 45-51.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and Family*, *38*, 15-28.

Vaillant, G. E., DiRago, A. C., & Mukamal, K. (2006). Natural history of male psychological health, XV: Retirement satisfaction. *American Journal of Psychiatry*, *163*, 682-688.

Waern, M., Rubenowitz, E., & Wilhelmson, K. (2003). Predictors of suicide in the old elderly. *Gerontology*, *49*, 328-334.

Wilson, R. S., Arnold, S. E., Schneider, J. A., Li, Y., & Bennett, D. A. (2007). Chronic distress, age-related neuropathology, and late-life dementia. *Psychosomatic Medicine*, *69*, 47-53.

Yoon, H. S., & Lee, M. J. (2006). Gender, residential areas, retirement transitions, and psychological well-being of the elderly. *Korean Journal of Social Welfare*, *58*, 197-217.

Zahavi, J., Betteridge, J. D., Jones, N. A. G., Galton, D. J., & Kakkar, V. V. (1981). Enhanced in vivo platelet release reaction and malondialdehyde formation in patients with hyperlipidemia. *American Journal of Medicine*, *70*, 59-64.