

to have a lot of informal social contact outside their PW sphere. Such gender differences in social contact may explain our findings, in which no association between VW and depressive symptoms was found in retirement-aged women in Japan.

However, there was a limitation in the way VW was analyzed in this study. Although previous studies on VW and well-being in the United States have often investigated the effects of formal VW, this study could not distinguish between formal and informal VW because of the relatively small number of people who engage in formal volunteerism in Japan. Volunteerism in Japan has started to increase over the past decade, so further investigation on the relationship between VW and the well-being of older adults is needed.

This study was also limited by the fact that it does not investigate the context of productive roles and the individual situation in much detail. As the diversity of the older population increases, research on productive roles and well-being is required to specify these relationships within more detailed contexts of the various roles. Furthermore, the study's sample was limited to late-middle-aged adults, that is, those aged between 55 and 64 years at baseline and between 59 and 68 at Wave 3, because the research from which this study obtained data focused on the retirement transition. The relationships between productive roles and well-being may differ for adults aged 70 and older.

Nonetheless, this study contributes to the growing body of knowledge on late-life roles and well-being from the cross-cultural and role-context perspective. This study also has the advantage that it used three waves of a longitudinal data set to control for preexisting depressive symptoms. Consistent with previous studies in the United States, our findings suggest that being involved in either PW or VW can protect retirement-aged men from increased levels of depressive symptoms in Japan. However, the findings also demonstrate that neither all types of productive roles are associated with reduced depressive symptoms, nor are they associated with depressive symptoms for women. Further research is needed to address the limitations of this study and to develop a more precise understanding of gender differences on the impact and meaning of productive roles.

ACKNOWLEDGMENTS

This research was supported in part by Grant Kiban-kenkyu (A) 12301013 from the Japanese Ministry of Education, Culture, Sports, Science and Technology (Hiroshi Shibata, Principal Investigator). We gratefully acknowledge the work of Erika Kobayashi and Taro Fukaya in setting up this study, Yutaka Matsuyama for helpful advice on the statistical analyses, and the editor (Dr. Karen Hooker) and anonymous reviewers for their thoughtful comments and suggestions on the manuscript.

CORRESPONDENCE

Address correspondence to Yoko Sugihara, PhD, Human Care Research Team, Tokyo Metropolitan Institute of Gerontology, 35-2 Sakae-cho, Itabashi-ku, Tokyo 173-0015, Japan. E-mail: sugihara@tmig.or.jp

REFERENCES

- Adelmann, P. K. (1994a). Multiple roles and physical health among older adults: Gender and ethnic comparisons. *Research on Aging, 16*, 142-166.
- Adelmann, P. K. (1994b). Multiple roles and psychological well-being in a national sample of older adults. *Journal of Gerontology: Social Sciences, 49*, S277-S285.
- Bass, S. A. (1996). An overview of work, retirement, and pensions in Japan. *Journal of Aging & Social Policy, 8*, 57-78.
- Bass, S. A., Caro, F. G., & Chen, Y. P. (Eds.). (1993). *Achieving a productive aging society*. Westport, CT: Auburn House.
- Bird, C. E. (1999). Gender, household labor, and psychological distress: The impact of the amount and division of housework. *Journal of Health and Social Behavior, 40*, 32-45.
- Butler, R. N., & Gleason, H. P. (Eds.). (1985). *Productive aging: Enhancing vitality in later life*. New York: Springer.
- Cabinet Office. (2002). *Kouzeisyu no seikatu to ishiki: Dai 5kai kokusai hikaku tyousa kekka honkoku-syo* [The 5th international comparative survey of the life and perception of the elderly]. Tokyo: Gyousei.
- Cabinet Office. (2005). *Heisei 17nen-ban kousei syakai hakusyo* [Annual report on the aging society]. Tokyo: Gyousei.
- Chambré, S. M. (1984). Is volunteering a substitute for role loss in old age? An empirical test of activity theory. *The Gerontologist, 24*, 292-298.
- Danigelis, N. L., & McIntosh, B. R. (1993). Resources and the productive activity of elders: Race and gender as contexts. *Journal of Gerontology: Social Sciences, 48*, S192-S203.
- Diggle, P. J., Heagerty, P., Liang, K.-Y., & Zeger, S. (2002). *Analysis of longitudinal data* (2nd ed.). New York: Oxford University Press.
- Economic Planning Agency. (2000). *Heisei 12 nendo kokumin seikatu senkoudo tyousa* [National survey on lifestyle preferences]. Tokyo: Zaimu-syousho Insatu-kyoku.
- Glass, T. A., Mendes de Leon, C., Marottoli, R. A., & Berkman, L. F. (1999). Population based study of social and productive activities as predictors of survival among elderly Americans. *British Medical Journal, 319*, 478-483.
- Glass, T. A., Seeman, T. E., Herzog, A. R., Kahn, R., & Berkman, L. F. (1995). Change in productive activity in late adulthood: MacArthur studies of successful aging. *Journal of Gerontology: Social Sciences, 50B*, S65-S76.
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review, 25*, 483-496.
- Greenfield, E. A., & Marks, N. F. (2004). Formal volunteering as a protective factor for older adults' psychological well-being. *Journal of Gerontology: Social Sciences, 59B*, S258-S264.
- Hardy, M. A., & Quadagno, J. (1995). Satisfaction with early retirement: Making choices in the auto industry. *Journal of Gerontology: Social Sciences, 50B*, S217-S228.
- Herzog, A. R., & House, J. S. (1991). Productive activities and aging well. *Generations, 15*, 49-54.
- Herzog, A. R., Kahn, R. L., Morgan, J. N., Jackson, J. S., & Antonucci, T. C. (1989). Age differences in productive activities. *Journal of Gerontology: Social Sciences, 44*, S129-S138.
- Herzog, A. R., & Morgan, J. N. (1992). Age and gender differences in the value of productive activities. *Research on Aging, 14*, 169-198.
- Hinterlong, J., Morrow-Howell, N., & Sherraden, M. (2001). Productive aging: Principles and perspectives. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 3-18). Baltimore: Johns Hopkins University Press.
- International Labor Organization. (2004). *LABORSTA*. Retrieved September 8, 2006, from <http://laborsta.ilo.org/>
- Independent Sector. (2001). *Giving and volunteering in the United States*. Retrieved February 27, 2006, from <http://www.independentsector.org/PDFs/GV01keyfind.pdf>
- Kim, J. E., & Moen, P. (2002). Retirement transitions, gender, and psychological well-being: A life-course, ecological model. *Journal of Gerontology: Psychological Sciences, 57B*, P212-P222.
- Lum, T. Y., & Lightfoot, E. (2005). The effects of volunteering on the physical and mental health of older people. *Research on Aging, 27*, 31-55.
- Luoh, M. C., & Herzog, A. R. (2002). Individual consequences of volunteer and paid work in old age: Health and mortality. *Journal of Health and Social Behavior, 43*, 490-509.
- Marks, S. R. (1977). Multiple roles and role strain: Some notes on human energy, time and commitment. *American Sociological Review, 42*, 921-936.
- McCallum, J. (1988). Japanese *teinen taisyoku*: How cultural values affect retirement. *Aging and Society, 8*, 23-41.
- McIntosh, B. R., & Danigelis, N. L. (1995). Race, gender, and the relevance of productive activity for elders' affect. *Journal of Gerontology: Social Sciences, 50B*, S229-S239.

- Menaghan, E. G. (1989). Role changes and psychological well-being: Variations in effects by gender and role repertoire. *Social Forces*, 67, 693-714.
- Menec, V. H. (2003). The relation between everyday activities and successful aging: A 6-year longitudinal study. *Journal of Gerontology: Social Sciences*, 58B, S74-S82.
- Merton, R. K. (1957). Reference group behavior: Structural elements. In *Social theory and social structure* (pp. 336-386). Glencoe, IL: The Free Press.
- Ministry of Internal Affairs and Communications, Statistics Bureau. (2001). *Heisei 13nen syakai seikatu kihon tyousa* [Survey on time use and leisure activities]. Retrieved February 27, 2006, from <http://www.stat.go.jp/data/shakai/2001/tokeihyo.htm>
- Moen, P., Dempster-McClain, D., & Williams, R. M., Jr. (1992). Successful aging: A life-course perspective on women's multiple roles and health. *American Journal of Sociology*, 97, 1612-1638.
- Morrow-Howell, N., Hinterlong, J., Rozario, P. A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *Journal of Gerontology: Social Sciences*, 58B, S137-S145.
- Morrow-Howell, N., Hinterlong, J., Sherraden, M., & Rozario, P. (2001). Advancing research on productivity in later life. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 285-311). Baltimore: Johns Hopkins University Press.
- Musick, M. A., Herzog, A. R., & House, J. S. (1999). Volunteering and mortality among older adults: Findings from a national sample. *Journal of Gerontology: Social Sciences*, 54B, S173-S180.
- Musick, M. A., & Wilson, J. (2003). Volunteering and depression: The role of psychological and social resources in different age groups. *Social Science & Medicine*, 56, 259-269.
- Oman, D., Thoresen, C. E., & McMahon, K. (1999). Volunteerism and mortality among the community-dwelling elderly. *Journal of Health Psychology*, 4, 301-316.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401.
- Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *The Gerontologist*, 37, 433-440.
- Rushing, B., Ritter, C., & Burton, R. P. D. (1992). Race differences in the effects of multiple roles on health: Longitudinal evidence from a national sample of older men. *Journal of Health and Social Behavior*, 33, 126-139.
- Sabin, E. P. (1993). Social relationships and mortality among the elderly. *Journal of Applied Gerontology*, 12, 44-60.
- Schafer, J. L. (1997). *Analysis of incomplete multivariate data*. London: Chapman & Hall.
- Seike, A., & Yamada, A. (2004). *Koureisya syuugyou no keizaigaku* [Economics of later-life labor force participation]. Tokyo: Nihon Keizai Shinbun-sya.
- Sherraden, M., Morrow-Howell, N., Hinterlong, J., & Rozario, P. (2001). Productive aging: Theoretical choices and directions. In N. Morrow-Howell, J. Hinterlong, & M. Sherraden (Eds.), *Productive aging: Concepts and challenges* (pp. 260-284). Baltimore: Johns Hopkins University Press.
- Shibata, H. (1998). *Motomerareteiru koureisya zou* [Productivity and quality of life]. In Tokyo Metropolitan Institute of Gerontology (Ed.), *Successful aging* (pp. 42-52). Tokyo: World Planning.
- Shibata, H. (2002). *Hati wari ijyou no roujin ha jiritu siteiru* [Eighty percent or more of older Japanese are independent]. Tokyo: Business-sya.
- Shima, S., Shikano, T., Kitamura, T., & Asai, M. (1985). *Atarashi yokuu sei jiko hyouka syakudo ni tuite* [New self-rating scale for depression]. *Clinical Psychiatry*, 27, 717-723.
- Sieber, S. D. (1974). Toward a theory of role accumulation. *American Sociological Review*, 39, 567-578.
- Stephens, M. A. P., Franks, M. M., & Townsend, A. L. (1994). Stress and rewards in women's multiple roles: The case of women in the middle. *Psychology and Aging*, 9, 45-52.
- Sugihara, Y., Sugisawa, H., Nakatani, Y., & Hougham, G. W. (2004). Longitudinal changes in the well-being of Japanese caregivers: Variations across kin relationships. *Journal of Gerontology: Psychological Sciences*, 59B, P177-P184.
- Sugisawa, H., & Shibata, H. (Eds.). (2003). *Syongai geneki no kiki: Heisei fukyou ka ni okeru tyuukoumen no sinri* [The crisis of active aging: Psychology of middle aged and older adults in the Heisei-recession]. Tokyo: World Planning.
- Zsinovacz, M. E., & Davey, A. (2004). Retirement transitions and spouse disability: Effects on depressive symptoms. *Journal of Gerontology: Social Sciences*, 59B, S333-S342.
- Thoits, P. A. (1986). Multiple identities: Examining gender and marital status differences in distress. *American Sociological Review*, 51, 259-272.
- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42, 115-131.
- Van Willigen, M. (2000). Differential benefits of volunteering across the life course. *Journal of Gerontology: Social Sciences*, 55B, S308-S318.
- Wang, H. X., Karp, A., Winblad, B., & Fratiglioni, L. (2002). Late-life engagement in social and leisure activities is associated with a decreased risk of dementia: A longitudinal study from the Kungsholmen project. *American Journal of Epidemiology*, 155, 1081-1087.
- Yatomi, N., Liang, J., Krause, N., & Akiyama, H. (1993). Cross-cultural differences in depressive symptoms among the aged: Comparison of the factor structure of the CES-D. *Social Gerontology [Shakai Ronengaku]*, 37, 37-47.

Received May 31, 2007

Accepted December 21, 2007

Decision Editor: Karen Hooker, PhD

