

- Thompson, L. W., Gallagher, D., & Czurr, R. (1989). Personality disorder and outcome in the treatment of late life depression. *Journal of Geriatric Psychiatry, 21*, 133-146.
- Trull, T.J., & Larson, S.L. (1994). External validity of two personality disorder inventories. *Journal of Personality Disorders, 8*, 96-103.
- World Health Organization. (1995). *The International Personality Disorder Examination (IPDE) DSM-IV Module*. Washington, DC: American Psychiatric Press.
- Yesavage, J.A., Brink, T.L., Rose, T.L., Lum, O., Huang, V., Adey, M., & Leirer, V. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37-49.
- Zimmerman, M., & Coryell, W. (1989). DSM-III personality disorder diagnoses in a nonpatient sample. *Archives of General Psychiatry, 46*, 682-689.

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## Improvement and Deterioration in Sleep Status of "Younger" and "Older" Seniors: A Longitudinal Study

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Goals for the present study were to (1) compare changes in sleep quality in "younger" and "older" seniors, both longitudinally and cross-sectionally, over a 2-year period and (2) identify predictors of "vulnerability" and "resilience" for developing significant insomnia complaints. We classified 149 community residents age 55 and over into three sleep status groups: good, medium quality, and poor sleepers at pretesting and again at a 2-year follow-up. The sample was also divided into "young old" (mean age = 64; range = 58-69) and "old old" (mean age = 75; range = 70-90) individuals. We evaluated change in sleep status over time and compared pretest personality, lifestyle and sleep characteristics of participants whose sleep quality improved, deteriorated, or was stable over a 2-year period. The findings indicate that in each age group and at both testing times the percentage of individuals in the three sleep status categories was similar. Approximately 40% were good sleepers, 40% were poor sleepers, and 20% were medium-quality sleepers. At the end of 2 years, 66% were unchanged. Of those who changed, approximately 1/2 improved and approximately 1/2 deteriorated. Improvement was

related to better daytime psychological adjustment as well as to lower levels of negative, anxious thoughts during the presleep period. No evidence for age-related increases in sleep complaints was found.

Cross-sectional studies of a wide variety of populations have generally indicated that insomnia complaints increase with age (cf. Bliwise, King, Harris, & Haskell, 1992). The prevalence of sleep disruption in individuals over age 65 has been estimated as high as 50% (National Institutes of Health, Prinz, Vitiello, Raskind, & Thorpy, 1990; White, Kohout, Evans, Cornoni-Huntley, & Ostfeld, 1986). Sleep disruption, accompanied by distress over the sleep problem appears to increase with increasing age. The rate of deterioration is commonly believed to be accelerated in older people because of the psychophysiological changes in sleep architecture which normally accompany the aging process. However, recent evidence suggests that the complaint of insomnia may not simply be an age-related phenomenon in seniors. For example, our own work has demonstrated that a sizable percentage of older individuals experience extensive sleep disruption, but are minimally or not at all distressed by this experience (cf. Fichten et al., 1995). Also, psychological maladjustment has been shown to have an important association with persistent complaints of poor sleep in older samples (Fichten et al., 1995; Henderson, Jorm, Mackinnon, Christensen, & Korten, 1995; Morgan, Dalosso, Ebrahim, Arie, Fentem, 1988; Morgan, Healey, & Healey, 1989). Perhaps most important, the chronic insomnia often seen in later life is closely related to declining health. Recent epidemiological studies of older individuals have demonstrated that when health problems were controlled for or when studies were longitudinal, insomnia complaints generally showed no age-related increases (Bliwise et al., 1992; Foley et al., 1995; Hoch et al., 1994; Monjan & Foley, 1995). Moreover, both cross-sectional and longitudinal studies which examined healthy, well-functioning seniors have demonstrated exceptionally low levels of sleep complaints (Morgan et al., 1989; Kronholm & Hyypa, 1985).

While increases in sleep disturbances with increasing age have been found in nonelderly samples (Janson et al., 1995; McGhie & Russell, 1962; Weyerer & Dilling, 1991), a re-examination of studies from the 1960s as well as more recent investigations suggest that rather than accelerating after age 65, insomnia problems peak considerably earlier (in the 50-to-60 age group) (Hammond, 1964; McGhie & Russell, 1962; Mellinger, Balter, Uhlenhuth, 1985). For example, some studies of sleep patterns in aging populations have found that when older individuals were divided into "young old" and "old old" categories, sleep quality did not decline with age (Frisoni et al., 1993; Gislason, Reynisdottir, Kristbjarnarson, & Benediksdottir, 1993; Kronholm & Hyypa, 1985). Similar results are reported by Hoch et al. (1994), who used both physiological and self-report assessment. When older subjects are divided into good and poor sleepers, longitudinal studies have suggested that sleep quality can even improve over time (Mellinger et al., 1985; Mendelson, 1995; Monjan & Foley, 1995; Morgan et al., 1989).

Our evaluation of the literature leads us to conclude that insomnia is a multifactorial phenomenon; advancing age adds an additional dimension, possibly changing the configuration of etiological and maintaining factors in the insomnia complaint. To better understand the functional significance of developmental psychophysiological

changes in sleep structure and to enhance our knowledge of contributors to "successful aging," we addressed the following two questions. (1) "As they age, what happens to older individuals who start out being good sleepers, poor sleepers, or somewhere in between?" (2) "Which older individuals are likely to experience deterioration or improvement in their sleep?"

Prospective, longitudinal data often provide insights about problem domains that cannot be obtained using cross-sectional methodologies. Therefore, our objective was to examine developmental trends longitudinally in order to explore the natural course of sleep problems in people over the age of 55 by conducting a 2-year follow-up of participants in our Sleep and Aging Project. We grouped participants into three categories (good, "medium quality," and poor sleepers) and examined demographic, personality, lifestyle, and sleep characteristics of people who improved, deteriorated, and remained unchanged. The goals were to (a) compare improvement and deterioration in "younger" and "older" seniors and (b) develop predictors of "vulnerability" and "resilience" to development of significant insomnia complaints.

## METHOD

The 149 subjects for the present investigation were derived from a sample of 266 individuals participating in a larger study of sleep and aging (Fichten et al., 1995; 1998; Libman, Creti, Amsel, Brender, & Fichten, 1997). They were recruited on a voluntary basis from the community through media publicity consisting of press releases, presentations and mailings to seniors' groups, and notices in community clinics and seniors' residences. Selection criteria for the volunteer participants were: (a) age 55 and over, (b) community resident, and (c) sufficient intellectual and language skills to complete questionnaire measures. Approximately 1/2 of the subjects belonged to university or college seniors' groups.

The pretest battery included measures evaluating demographics, sleep parameters, aspects of daytime and nighttime psychological adjustment and lifestyle factors. All 266 subjects completed the Background Information Form (e.g., age, sex, marital status) and the Sleep Questionnaire (Fichten et al., 1995; Libman et al., 1997). These allowed us to diagnose and classify subjects as Good, "Medium Quality," and Poor Sleepers and also provided 9 of the 11 measures of sleep parameters evaluated. Most participants also completed the following: Stanford Sleepiness Scale (Hoddes, Zarcone, Smythe, Phillips, & Dement, 1973), Sleep Self-Efficacy Scale (Lacks, 1987), Daytime Activity Record Form (Libman, 1988), Life Events Scale (Siegal, 1990), Pre-Sleep Arousal Scale (Nicassio, Mendlowitz, Fussel, & Petras, 1985), Brief Symptom Inventory (BSI) (Derogatis, Rickels, & Rock, 1976), Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1968), Satisfaction With Life Scale, (Diener, Emmons, Larsen, & Griffen, 1995), Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990), Overall Thought Pleasantness Rating (Fichten et al., 1995, 1998), Anxious Self-Statements Questionnaire (ASSQ) (Kendall & Hollon, 1989), and Cognitive Content Questionnaire (Fichten et al., 1995, 1998).

Approximately 2 years later ( $M = 28$  mo, range 17 to 43 mo.) we tried to contact those 266 participants in the larger investigation for whom we had a name, address, or telephone number. We were able to contact only 212 individuals whom we asked to

complete a second set of questionnaires, including the Sleep Questionnaire and the Life Events Scale. These were administered either in a telephone interview or they were mailed. One hundred and sixty three individuals (77% of those contacted) provided Post Test information; however, only 149 provided sufficient data to be classified as Good, "Medium Quality," or Poor Sleepers at both testing times. Therefore, the sample for the present study consisted of 149 participants where the mean age at pretest was 69 (range = 58-90).

### Good Sleepers, "Medium Quality," and Poor Sleepers

Participants were classified into three groups. Poor Sleepers were those who met the research criteria for the diagnosis of psychophysiological insomnia (i.e., 30 minutes of undesired awake time at least 3 times per week, problem duration at least 6 months) and whose Sleep Questionnaire responses indicated problematic sleep on two items evaluating sleep difficulty. Good Sleepers were individuals who failed to meet the criteria for diagnosis of psychophysiological insomnia and whose Sleep Questionnaire responses on 4 items indicated minimal difficulty with sleep and minimal distress about sleep problems. "Medium Quality" Sleepers had elements of both Good and Poor sleep (see Fichten et al., 1995 for details).

## RESULTS

At pretest, 40% of participants were Good Sleepers, 18% "Medium Quality," and 42% were Poor Sleepers. For example, Good Sleepers reported that they slept an average of 7.05 hours, "Medium Quality" Sleepers 6.59 hours, and Poor Sleepers 5.13 hours,  $F(2,146) = 41.41, p < .001$ . The corresponding Sleep Efficiencies for the 3 groups were 89%, 82%, and 63%, respectively,  $F(2,142) = 42.54, p < .001$ . The 3 groups were not significantly different on age: 70 yrs, 69.1 yrs, and 69 yrs, respectively,  $F(2,141) = .36, p > .05$ . Poor Sleepers had experienced insomnia for a mean of 13 years (range = 6 mo. to 59 yr). The sex ratio in all categories at both testing times was approximately two-thirds female and male; this is consistent with our previous findings (Fichten et al., 1995, 1998; Libman et al. 1997).

### Change in Sleep Status with Time and Age

There was relatively little change with time. The majority of individuals who experienced Good or Poor Sleep at pretesting continued in these categories (see Table 1). Of those who changed, most changed only 1 category—to "Medium Quality" status. Participants who experienced Medium Quality Sleep at the pretest were more likely to change categories. This probably reflects a measurement artifact because the criteria for Medium Quality included both Good and Poor Sleeper characteristics. Therefore, relatively minor changes could occasion a change in sleep status for this group.

Because participants' ages spanned a whole generation—from 58 to 90—we also examined the possibility that "younger" and "older" participants had different outcomes. Therefore we divided the sample by age. There were 71 "Young Old" (Pretest age < 70, mean = 64 yr, 53 females, 18 males) and 73 "Old Old" participants (pretest age = > 70, mean = 75 yr, 49 females, 24 males). Age data were unavailable for 5 people. As

TABLE 1. Sleep Status at Pre- and Posttesting

	Pretest		Posttest		
	n	%	Good	Medium	Poor
Whole Sample: Participants	All 149		58 (39%)	35 (23%)	56 (38%)
Good	59 (40%)		43	13	3
Medium	27 (18%)		12	9	6
Poor	63 (42%)		3	13	47
71 "Young Old" Participants			31 (44%)	16 (23%)	24 (34%)
Good	29 (41%)		22	5	2
Medium	12 (17%)		7	5	0
Poor	30 (42%)		2	6	22
73 "Old Old" Participants			25 (34%)	19 (26%)	29 (40%)
Good	29 (40%)		20	8	1
Medium	13 (18%)		4	4	5
Poor	31 (42%)		1	7	23

Note. Age data were unavailable for 5 participants. Boxed frequencies denote "Unchanged."

Table 1 indicates, pre- to posttest results for "Young Old" and "Old Old" participants were quite similar. Moreover, as can be seen in Table 1, the cross-sectional comparison of Younger and Older subjects at pretesting indicates that, in spite of an 11-year age difference, approximately 40% of both groups were Good Sleepers, 42% were Poor Sleepers, and 18% were "Medium Quality" Sleepers. In addition, Younger and Older subjects did not differ significantly at pretesting on any of the 11 sleep parameters evaluated, even when  $\alpha$  was set at a liberal .05. These findings indicate that age, per se, was not linked to sleep quality in our sample of seniors.

### Evaluating Improvement and Deterioration

Table 2 shows that most people (66%) remained Unchanged. Nevertheless, there was both substantial Improvement (31% of those who were not already Good Sleepers at pretesting improved) as well as Deterioration (26% of those who were not Poor Sleepers at pretesting deteriorated).

To determine which participants would Improve, Deteriorate, and remain Unchanged, we performed both *t*-tests and discriminant function analyses. Three sets of pretest predictors—Sleep Parameters, Psychological Adjustment, Lifestyle—involving a total of 41 variables, were evaluated. Eleven variables evaluated Sleep Parameters (total sleep and wake times, sleep efficiency, 2 measures of sleep difficulty, 2 measures of distress related to sleep, sleep self-efficacy, sleep medication use, daytime fatigue, and daytime sleepiness). Twelve variables evaluated daytime and nocturnal Psychological Adjustment (life satisfaction, depression, psychopathology, neurotic and worrying personality styles, nocturnal cognitive and somatic arousal, nocturnal anxious self-statements, overall nocturnal thought pleasantness, nocturnal positive and negative thoughts and the balance between these). Eighteen variables evaluated various

TABLE 2. Improvement and Deterioration

Change Pre to Post	Actual/Potential <sup>1</sup>		% of Whole Sample
	# of Subjects	%	
Deteriorated (from Good or Medium)	22/86	26%	15%
Unchanged (from Good, Medium or Poor)	99/149	66%	66%
Improved (from Medium or Poor)	28/90	31%	19%

<sup>1</sup>Actual = number of people who actually changed or remained unchanged. Potential = individuals who had the potential to fit the category (e.g., only those who were not already Good or Poor Sleepers could Improve or Deteriorate).

aspects of Lifestyle and Demographics (age, education, income, income adequacy, daytime quality, positive daily activities, negative daily activities, diversity of daily activities, busyness, bedtimes, arising times, time in bed, naps, falling asleep outside the bedroom, life events, and variability in meal times, bed times, and out of bed times).

Because Pretest Good Sleepers could not Improve—and Poor Sleepers could not Deteriorate—two sets of evaluations were made on each of the 3 groups of predictors: prediction of Unchanged vs. Improved status (for pretest Poor and “Medium Quality” Sleepers) and prediction of Unchanged vs. Deteriorated status (for Pretest Good and “Medium Quality” Sleepers).

### Improvement

Of the 90 “Medium Quality” and Poor Sleeper subjects at pretesting, 28 Improved and 62 remained Unchanged.

**Sleep Parameters.** On the discriminant function analysis, of the 11 variables used in the prediction equation, distress about one’s sleep problem was the only variable which entered into the equation to distinguish between the two groups,  $F(1,41) = 6.55, p < .05$ . Means show that the group which Improved had lower distress scores than the group which remained Unchanged. The classification analysis based on one variable shows a 65.5% overall success rate, with 75% of the Unchanged group, but only 36% of the Improved group, correctly classified. Variables that correlated strongly to the discriminant function were distress ( $r = .79$ ), fatigue ( $r = .68$ ), and low self-efficacy ( $r = -.63$ ).

*t*-test results with  $\alpha$  set at .05 show significant findings on 5 of the 11 variables. All were in the direction of better sleep at pretesting in the Improved group. After a Bonferroni adjustment of the  $\alpha$  level, however, none of the comparisons remained significant.

**Psychological Adjustment.** The discriminant analysis using the 12 Psychological Adjustment measures shows that 2 variables—neuroticism and nocturnal anxious self-statements, together distinguished between the two groups,  $F(2,26) = 6.04, p < .01$ . Classification analysis based on these 2 variables indicates a 56% success rate, with 66% of the Unchanged group and 36% of the Improved group correctly classified. Means indicate that the group which remained Unchanged had more anxious self-statements and greater neuroticism than the group which Improved. Variables that correlate strongly to the discriminant function were neuroticism ( $r = .70$ ), anxious self-statements ( $r = .76$ ), a worrying personality style ( $r = .70$ ), overall symptom severity ( $r = .62$ ), and depression ( $r = .63$ ).

Of the 12 *t*-test comparisons, four were significant: neuroticism and anxious self-statements (the two variables which were significant in the discriminant analysis) and overall symptom severity and negative thought frequency. Two approached

significance: cognitive arousal and a worrying personality style. Although none of the comparisons remained significant after a Bonferroni adjustment of the  $\alpha$  levels, all means indicated worse scores in the Unchanged group.

**Lifestyle.** None of the lifestyle variables could distinguish Improved from Unchanged status, either on the discriminant analysis or on *t*-test comparisons. It is noteworthy that the findings on age indicate that the mean of both those who Improved and those who remained Unchanged was 69 at pretesting.

### Deterioration

Neither the discriminant function analyses nor the series of *t*-tests (Unchanged / Deteriorated) revealed any significant findings ( $p > .05$ ); thus, none of the 41 Psychological Adjustment, Sleep Parameter, or Lifestyle variables could predict Deterioration in our sample. In particular, we stress that the *t*-test comparisons on age showed no significant difference between Deteriorated and Unchanged groups either at pretesting [ $M = 71, M = 70$ , respectively,  $t(70) = .90, p > .05$ ] or at Post Testing [ $M = 73, M = 72$ ,  $t(70) = .91, p > .05$ ].

## DISCUSSION AND CONCLUSIONS

The findings indicate that during a 2-year period, most individuals’ sleep quality remained unchanged, a finding consistent with others’ reports (e.g., Hoch, et al., 1994). Moreover, the rate of deterioration was similar to the improvement rate, with no overall change over a 2-year period in the proportion of good and poor sleepers. In addition, “young old” and “old old” individuals experienced similar outcomes. No significant differences were found between these two groups on any of the 11 sleep parameters examined. Our findings are consistent with other longitudinal investigations (e.g., Foley et al., 1995), as well as with the findings of some cross-sectional studies of older individuals (e.g., Frisoni et al., 1993; Gislason et al., 1993). Certainly these results suggest that sleep disorder does not necessarily develop as a consequence of increasing age in seniors. While it is likely that age is associated with deterioration in younger and middle-aged samples (Janson et al., 1995; McGhie & Russell, 1962; Weyerer & Dilling, 1991), it seems that this tendency may slow down after middle age (Hammond, 1964; McGhie & Russell, 1962; Mellinger et al, 1985).

Although others, too, have noted occasional improvement in the sleep of seniors (e.g., Mendelson, 1995; Morgan et al., 1989), few studies have investigated this possibility in a systematic manner. Our findings have demonstrated that even older people’s sleep can spontaneously improve with time. Indeed, our results show a substantial 31% improvement rate, and only a 26% deterioration rate. Our data on improvement underscore the need for longitudinal studies, as a cross-sectional analysis would have failed to detect cases of improvement as well as decline and would simply have indicated that similar percentages of participants were good, medium quality, and poor sleepers at both testing times.

Data on predictor variables indicate that the myriad predictors examined in this study, while capable of distinguishing the potential for improvement, could not significantly separate those who deteriorated from those who remained unchanged. Findings on improvement, although modest, do suggest that people who improved were characterized by somewhat better sleep and by substantially better psychological

adjustment, including less neuroticism, fewer negative and worrying thoughts and lower levels of anxious thoughts during nocturnal wake times at pretesting. Our findings support results reported by Morgan et al. (1989), who demonstrated that elevated neuroticism was associated with unchanged poor sleep over a 2-year period.

Our findings on sleep parameters suggest that with time, the "good get better." Such results are interesting because they are opposite to what would be expected from a "regression toward the mean" explanation—which would predict that the good sleepers would get worse while the poor sleepers would improve. This differs from results achieved in cognitive-behavioral insomnia therapies, where the data show greater improvement in people who have more severe insomnia than in those who have less severe problems (e.g., Creti, 1996). Before speculating on the meaning of these results, however, the findings need to be replicated in other laboratories; the possibility that such results are due to the measurement artifact of "easier" improvement in our medium quality sleepers group must first be ruled out.

Of the 18 *t*-test comparisons between lifestyle and sleep quality variables, it is noteworthy that none achieved significance even when liberal criteria were employed. These negative findings are consistent with previous data from our laboratory, which indicate that lifestyle factors are unrelated to self-reported sleep quality in older individuals (Fichten et al., 1995). While we have not been able to show an association between sleep problems and behavioral or environmental characteristics as some investigators have shown (e.g., Habte-Gabre et al., 1991), consistent with others' findings (e.g., Morgan et al., 1989), our results on psychological adaptation indicate a trend for people who improved to be characterized by a less "neurotic," anxious, and worrying personality style. This has both daytime and nocturnal components.

Important goals for future research include investigating how poor quality sleep may be improved, how good sleep in older adults may be preserved, and how distress related to the experience of continued impaired sleep may be reduced. Although the present results are correlational in nature, and do not imply causation, they do suggest that making changes in negative and anxious thoughts and behaviors during the presleep period merit therapeutic exploration. Research evaluating the impact of such interventions both on sleep quality and on distress related to insomnia are needed. The results also highlight the importance of conducting longitudinal investigations. Only by evaluating outcomes for the same individuals over time can research capture the dynamic aspects of change and shed light on etiological and maintenance factors in good and poor sleep patterns in older adults.

## REFERENCES

- Bliwise, D.L., King, A.C., Harris, R.B., & Haskell, W.L. (1992). Prevalence of self-reported poor sleep in a healthy population aged 50-65. *Social Science and Medicine*, 34, 49-55.
- Cook, M. A., & Lacks, P. (1984, November). *The effectiveness of booster sessions in the treatment of sleep onset insomnia*. Paper presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Philadelphia, PA.
- Creti, L. (1996). *An evaluation of a new cognitive-behavioral technique for the treatment of insomnia in older adults*. Unpublished doctoral thesis, Concordia University, Montreal, Canada.
- Derogatis, L.R., Rickels, K., & Rock, A.F. (1976). The SCL-90 and the MMPI: A step in the validation of a new self-report scale. *British Journal of Psychiatry*, 128, 280-289.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffen, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Eysenck, H. J., & Eysenck, S. B. G. (1968). *Manual: Eysenck Personality Inventory*. San Diego: Educational and Industrial Testing Service.
- Fichten, C.S., Creti, L., Amsel, R., Brender, W., Weinstein, N., & Libman, E. (1995). Poor sleepers who do not complain of insomnia: Myths and realities about psychological and lifestyle characteristics of older good and poor sleepers. *Journal of Behavioral Medicine*, 18 (2), 189-223.
- Fichten, C.S., Libman, E., Creti, L., Amsel, R., Tagalakis, V., & Brender, W. (1998). Thoughts during awake times in older good and poor sleepers—The Self-Statement Test: 60+. *Cognitive Therapy and Research*, 22, 1-20.
- Foley, D.J., Monjan, A.A., Brown, S.L., Simonsick, E.M., Wallace, R.B., & Blazer, D.G. (1995). Sleep complaints among elderly persons: An epidemiological study of three communities. *Sleep*, 18(6), 425-432.
- Frisoni, G.B., De Leo, D., Rozzini, R., Bernardi, M., Della Buono, M., & Trabucchi, M. (1993). Night sleep symptoms in an elderly population and their relation with age, gender, and education. *Clinical Gerontologist*, 13(1), 51-68.
- Gislason, T., Reynisdottir, H., Kristbjarnarson, H., & Benediktsson, B. (1993). Sleep habits and sleep disturbances among the elderly—An epidemiological survey. *Journal of Internal Medicine*, 234 (1), 31-39.
- Habte-Gabre, E., Wallace, R.B., Colsher, P.L., Hulbert, J.R., White, L.R., & Smith, I.M. (1991). Sleep patterns in rural elders: Demographic, health, and psychobehavioral correlates. *Journal of Clinical Epidemiology* 44 (1), 5-13.
- Hammond, E. (1964). Some preliminary findings on physical complaints from a prospective study of 1,604,004 men and women. *American Journal of Public Health*, 54, 11-23.
- Henderson, S., Jorm, A.F., Mackinnon, A.J., Christensen, H., & Korten, A.E. (1995). Insomnia in the elderly: Its prevalence and correlates in the general population. *The Medical Journal of Australia*, 162, 22-24.
- Hoch, C.C., Dew, M.A., Reynolds III, C.F., Monk, T.H., Buysse, D.J., Houck, P.R., Macher, M.A., & Kupfer, D.J. (1994). A longitudinal study of laboratory and diary-based sleep measures in healthy "old old" and "young old" volunteers. *Sleep*, 17(6), 489-496.
- Hoddes, E., Zarcone, V., Smythe, H., Phillips, R., & Dement, W.C. (1973). Quantification of sleepiness: A new approach. *Psychophysiology*, 10, 431-437.
- Janson, C., Gislason, T., DeBacker, W., Plashke, P., Bjornsson, E., Hetta, J., Kristbjarnason, H., Vermaire, P., & Boman, G. (1995). Prevalence of sleep disturbances among young adults in 3 European countries. *Sleep*, 18(7), 589-597.
- Kendall, P. C., & Hollon, S. D. (1989). Anxious self-talk: Development of the Anxious Self-Statements Questionnaire (ASSQ). *Cognitive Therapy and Research*, 13(1), 81-93.
- Kronholm, E., & Hyypya, M.T. (1985). Age-related sleep habits and retirement. *Annals of Clinical Research*, 17, 257-264.

- Lacks, P. (1987). *Behavioral treatment for persistent insomnia*. New York: Pergamon Press.
- Libman, E. (1988). *Daytime Activity Record Form*. Unpublished manuscript. Sir Mortimer B. Davis - Jewish General Hospital, Montréal, Canada.
- Libman, E., Creti, L., Amsel, R., Brender, W., & Fichten, C.S. (1997). What do older good and poor sleepers do during periods of nocturnal wakefulness? The Sleep Behaviors Scale: 60+. *Psychology and Aging, 12*, 170-182.
- McGhie, A., & Russell, S.M. (1962). The subjective assessment of normal sleep patterns. *The Journal of Mental Science, 108*(Suppl. 456), 642-654.
- Mellinger, G.D., Balter, M.B., & Uhlenhuth, E.H. (1985). Insomnia and its treatment. *Archives of General Psychiatry, 42*, 225-232.
- Mendelson, W.B. (1995). Long-term follow-up of chronic insomnia. *Sleep, 18*(8), 698-701.
- Meyer, T.J., Miller, M.L., Metzger, R.L., & Borkovec, T.D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy, 4*(6), 487-495.
- Monjan, A.A., & Foley, D.J. (1995). Longitudinal study of chronic insomnia in older people. *Proceedings: 9th Annual Meeting of the APSS*, Rochester, MN: APSS.
- Morgan, K., Dallosso, H., Ebrahim, S., Arie, T., & Fentem, P.H. (1988). Characteristics of subjective insomnia in the elderly living at home. *Age and Ageing, 17*, 1-7.
- Morgan, K., Healey, D. W., & Healey, P. J. (1989). Factors influencing persistent subjective insomnia in old age: A follow-up study of good and poor sleepers aged 65-74. *Age & Ageing, 18*, 117-122.
- NIH (1991). National Institutes of Health Consensus Development Conference statement: The treatment of sleep disorders of older people, March 26-28, 1990, *Sleep, 14*, 169-177.
- Nicassio, P.M., Mendlowitz, D.R., Fussel, G.G., & Petras, L.O. (1985). The phenomenology of the pre-sleep state: The development of the Pre-Sleep Arousal Scale. *Behaviour Research and Therapy, 23*, 263-271.
- Prinz, P.N., Vitiello, M.V., Raskind, M.A., & Thorpy, M.J. (1990). Geriatrics: Sleep disorders and aging. *New England Journal of Medicine, 323*, 520-526.
- Siegal, J. M. (1990). Stressful life events and use of physician services among the elderly: The moderating role of pet ownership. *Journal of Personality and Social Psychology, 58*(6), 1081-1086.
- Weyerer, S., & Dilling, H. (1991). Prevalence and treatment of insomnia in the community: Results from the Upper Bavarian Field Study. *Sleep, 14*(5), 392-398.
- White, L.R., Kohout, F., Evans, D.A., Cornoni-Huntley, J., & Ostfeld, A.M. (1990). Related health problems. In J. Cornoni-Huntley, D.B. Brock, A.M. Ostfeld, J.O. Taylor, & R.B. Wallace (Eds.), *Established populations for epidemiologic studies of the elderly, resource databook - National Institute on Aging*. Bethesda, MD: NIH publication no. 86-2443.

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**Offprints.** Requests for offprints should be directed to Eva Libman, PhD, ICFP, Behavior and Sex Therapy Service, Sir Mortimer B. Davis - Jewish General Hospital, 4333 Cote St. Catherine Rd., Montreal, Quebec, Canada H3T 1E4.

## Guidelines for Contributors

*Journal of Mental Health and Aging* is a peer-reviewed journal intended for a broad spectrum of mental health professionals. Those who are engaged in research, training, clinical care, social services, as well as law and policy will find the journal an important source of timely and state-of-the-art information. Dedicated to the dissemination of current research findings, aging studies, policy analysis, and innovations in mental health care, the *Journal of Mental Health and Aging* aims to bridge the gap between knowledge and practice.

The editor invites articles and research papers directed toward an interdisciplinary audience of professionals.

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