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**Driving-related adaptation patterns among elderly
drivers in Israel:
Description, antecedents and well-being outcomes**

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Abstract

Objectives: The purposes of the study were: a) Identifying various patterns of adaptation to decline in driving-related capabilities (DRC), including self-imposed limitations, and voluntary or compulsory cessation of driving, b) Assessing the factors that correlate with the driving-related patterns of adaptation (DPA), c) Determining the associations between the various DPA's and perceived well-being, in terms of self-esteem and life-satisfaction. We hypothesized that in addition to socio-demographic characteristics, health and functioning, and social support, personal history with driving and car accidents, needs, accessible alternatives, importance and love of driving and self-evaluation of DRC will be associated with DPA. We further hypothesized that DPA will be associated with well-being.

Methodology: A national random stratified sample of 860 licensed drivers, aged 70+, was drawn from the lists of the Israeli Ministry of Transportation. The participants were interviewed at their homes, based on a structured questionnaire.

Findings: The cessation of driving is mostly a voluntary and gradual process. Significant differences in socio-demographic, psychosocial, and driving-related factors were found among the various DPA's. Still driving, relating importance to the license and love of driving were the best predictors of well-being when controlling for all the study variables. Women significantly differed from men, in having less driving experience, less confidence in DRC, starting to drive later and stopping to drive earlier and voluntarily. Furthermore, driving plays an important role in elders' well-being.

Conclusions: We recommend establishing programs for better diagnosing elders' DRC, based on which, improvements to driving skills and confidence will be introduced, or, alternatively, recommendations for driving with limitations or cessation will be delivered. In addition, we recommend the implementation of driving education in high schools, for developing early the appropriate attitudes and behaviors, hence, prolonging driving experience and extending the years of safe driving at old age.

Executive Summary

Objectives: The main objective of the study was enhancing knowledge about and understanding of the phenomena of driving in old age in Israel in order to develop recommendations for effective intervention policies and intervention programs intended to extend the years of safe driving and quality of life for elderly persons. More specifically, the objectives were:

(1) To identify various patterns of driving, including complete cessation of driving, holding a driver's license and the extent of actually using it, and no longer holding a driver's license; (2) To assess the factors that correlate with driving-related patterns of adaptation (driving-related needs, importance of driver's license, driving-related self-efficacy, self-imposed limitations, use of alternative means, psychosocial and socio-demographic characteristics); (3) To determine the associations between the different driving-related patterns of adaptations and general well-being, in terms of self-esteem and satisfaction with life.

Methodology: A stratified random sample was drawn from the Israel Ministry of Transportation. The sample included 50% men and 50% women, aged 70+. Two thirds of them had a driving license and one third of them were persons whose license had not been renewed up to, but no more than, three years before the sampling process. Names from this list were randomly selected and telephone numbers were located. Participants were contacted by telephone and asked to take part in a study on driving behaviors. People who agreed to participate in the study were further screened by telephone according to three criteria: Speaking Hebrew or Russian; holding a driver's license or had one at least three years prior to the study; and mental competence, based on a short telephone test. Persons, who were found to fit, were further interviewed at their homes based on structured questionnaires. Altogether, 860 persons were interviewed (a response rate of 49.2% of those whose telephone numbers were located).

Findings: The sample was divided into three groups according to status of license and actual driving: Licensed drivers (n=670), licensed non-drivers (n=36), and no-longer licensed (n=154). Most of the non-

licensed did not renew their license voluntarily. The group of drivers was comprised of more men, Israeli born, younger and better educated people than the two groups of non-drivers. The level of education, percent of persons living with a partner and working decreased along the license/driving status groups from the licensed drivers to the no-longer licensed. The group of drivers also ranked higher on economic status than the group of those without a license. The three groups did not differ in their place of residence, years living in Israel, and volunteering. The drivers systematically reported being healthier than the other two groups as based on self-evaluation of health, visual acuity, number of chronic diseases and number of drugs taken. Regarding psychosocial factors, the drivers reported being less often lonely than the no-longer licensed, related more importance to their driver's license, and reported higher confidence in driving abilities than the two other groups. Need for a car due to physical disability was ranked lower by the drivers than the non-drivers, but no differences were detected regarding other needs for which a car is essential. The drivers drove more often, were less likely to avoid driving under difficult conditions, and used less public transportation than the non-licensed. They were also involved in more car accidents as drivers than the other two groups, but in fewer car accidents with injuries. The drivers started to drive about five years earlier than the no-longer licensed. The significant differences between the three groups indicate a general trend of gradual decrease in personal resources from the licensed drivers through the licensed non-drivers group to the no longer licensed persons. Results of a multivariate analysis indicate that the best predictors of stopping to drive in old age are vision problems, relating less importance to a driving license, worse health, and older age. In general, our findings indicate that the cessation of driving is a progressive process. When facing deterioration in driving capabilities, many elders avoid driving under difficult conditions until they stop driving. This is a difficult process of self-adaptation. One of its expressions in the study is our finding which showed that the licensed drivers ranked themselves higher on satisfaction with life and self-esteem than each of the two non-driving groups. The contribution of driving to elders' well-being is also expressed in the best predictors of each of both indicators of well-being, when controlling for socio-demographic, health, psychosocial, and driving-related factors, which

were: owning a license and driving, relating importance to driving or loving to drive. These findings clearly indicate that driving plays an important role in older persons' well-being. We also found significant gender differences. Women reported less driving experience, and less confidence in their driving abilities than men. Women were also more likely to avoid driving under difficult conditions. In addition, more of the women voluntarily did not renew their driver's license, and ranked lower on well-being.

Recommendations for policy and implementation arising from the study: Considering the importance of driving in old persons' well-being, we suggest investing in policies and programs that will extend the years of safe driving in young and old age, as well as independence and well-being. This can be implemented in a number of ways:

1. Currently Israeli authorities either renew or revoke driving licenses as based on a rapid eye examination and a physician's short report. In order to maintain driving capabilities and prepare old drivers for changes in their driving habits compulsory educational programs for old drivers should be developed and implemented. Such programs will provide more comprehensive assessment than the current diagnoses of driving capabilities, and the recommendations for either cessation or further driving behavior, as well as education for careful driving and self-limitations.
2. In such programs, special attention and reinforcement through education and encouragement should be provided to women or other groups of drivers, who objectively can continue driving but underestimate their driving capabilities.
3. The first step in building such programs should be an evaluation of existing programs and adaptation of the successful ones to Israeli drivers and the various subgroups within it.
4. The Ministry of education should consider driving as one of the basic skills needed to function properly in adult life. Considering this, driving education programs should be included in high school curricula. Developing attitudes and skills in safe driving should be the major issue in these programs. This will

allow all adolescents to start driving with certain restrictions at a relatively young age, ensure safe driving throughout their lifespan, and extend the years of safe driving in old age. Such programs exist in many of the states of the USA.

5. The limitation of this study is its cross sectional design, which limits our ability to assess causality among the various factors. Considering this, and the prospect that new cohorts of elders will be comprised of people with higher education and economic status and with higher percents of drivers, especially among women, lead us to suggest conducting longitudinal studies of old drivers on a regular basis, in order to accumulate updated data on driving-related issues and adjust the policies and programs to the changes in the drivers' characteristics and needs.

6. Inexpensive and comfortable public transportation should be further developed in order to enable frail and physically handicapped people, who cannot drive, or lack financial resources to maintain mobility, independence, and well-being for longer years.