

The First Year of Driving

Can an In-Vehicle Data Recorder and Parental Involvement Make It Safer?

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This study examines the impact of the provision of feedback and guidance about parental monitoring on the safety performance of young male drivers during their first year of driving. The research used an in-vehicle data recorder (IVDR), which documented events of extreme gravitational forces measured in the vehicles that participated in the experiment. Two hundred forty-two families of young male drivers participated in the research. Participants were randomly allocated into four groups: (a) family feedback, no guidance, in which all members of a family were exposed to feedback on their own driving and on that of other family members; (b) family feedback, parental guidance, in which, in addition to the family feedback, parents received personal guidance on ways to enhance their involvement with and monitor their sons' driving; (c) individual feedback, no guidance, in which family members received feedback only on their own driving behavior and not that of other family members; and (d) a control group, which received no feedback at all. IVDRs were installed in family cars for 12 months, starting from the time that the young driver received his driver's license. This period included the initial 3 months of the accompanied driving phase and 9 months of independent driving. The driving exposure of young drivers increased significantly during the solo period compared with that during the accompanied period. The results indicate substantial differences in behavior between young drivers in the control group and the group that received both feedback and guidance on parental involvement.

Young drivers in Israel, as in many other countries all over the world, experience higher road crash rates than any other age group. Their overrepresentation in crashes is especially substantial in severe and fatal crashes (1). This problem has received considerable public and media attention, which has led, among other efforts, to modifications in the process of licensing Israeli drivers. Starting in November 2004, new young drivers were required to drive only when accompanied by an experienced driver for the first 3 months after licensure. The accompanying driver must be older than age 24 years and have had a driver's license for at least 5 years or be over the age of

30 years with at least 3 years of driving experience. During the first 2 years of driving, the new driver is limited to driving with no more than two passengers, unless when he or she is accompanied by an experienced driver. Another limitation that was introduced in 2011 is a lower tolerance for the blood alcohol content, which is 0.01% for novice drivers and those who are under 24 years old and 0.05% for other drivers. The law does not mandate a minimal amount of driving during the driving period when the novice driver must be accompanied by an experienced driver, nor does it include any limitations on nighttime driving.

A previous study showed that throughout the period when the novice driver must be accompanied by an experienced driver, the involvement of novice drivers in crashes is extremely low (2). However, immediately after it ends and the solo unsupervised driving phase begins, crash rates rise drastically. Afterward, the crash rate gradually declines with time. Similar trends in crash involvement statistics have been observed in other countries around the world (3, 4). At the individual level, Simons-Morton et al. equipped vehicles driven by teens with an advanced data acquisition system (5). They observed a general decrease in crash and near-crash involvement during the first 18 months of driving. They also found changes in specific behaviors over time (a decline in rapid starts and an increase in hard turns). The results of these studies indicate that the problem of crash involvement by novice drivers is most acute during the transition from supervised to independent driving.

The literature also shows substantial differences in the rates of involvement in road crashes between young males and females. Male drivers and drivers in the group from 16 to 18 years of age are more often involved in fatal crashes per number of miles driven (4, 6). This difference may be partly explained by more aggressive driving behaviors; a stronger inclination toward risk taking, sensation seeking, and antisocial behaviors; a greater tendency to overestimate their driving abilities; and the higher susceptibility of young male drivers than young female drivers to the influence of peers (6–8).

Significant advances in sensing and communication technologies have been made in recent years. These have led to considerable growth in the development and use of in-vehicle data recorders (IVDRs) to monitor and influence drivers' behavior not only in the context of postcrash analyses but also as a tool to assist with crash prevention. As a measurement tool, IVDRs facilitate the observation of natural driving behavior. As a tool for intervention, they support reductions in risky behaviors through the provision of feedback to drivers or those who are responsible for their driving. The 100-Car Naturalistic Driving Study was a major research effort in this direction that used elaborate and expensive monitoring equipment (9, 10). It

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