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Psychological Constructs Related to Belt Use

The national rate of seat belt use has increased over the past two decades and was estimated to be 90.7% in 2019. However, gains have plateaued in recent years, and traffic safety researchers seek to understand why approximately 10% of the U.S. population does not consistently wear a seat belt while driving, and a much larger portion admit to not consistently wearing belts when riding in rear seats or other situations (Richard et al., 2020; Spado et al., 2019). Prior research has shown that the likelihood of seat belt use is associated with various demographic (e.g., age, sex) and situational (e.g., time of date, trip length) factors. However, despite extensive research on how *psychological* factors—like impulsivity, perception of risk, and optimism—influence health behaviors like smoking and alcohol-impaired driving, few studies have investigated whether these factors influence seat belt use. In this study, the research team conducted a nationally representative survey to investigate associations between self-reported seat belt use and 18 different psychological constructs (Table 1).

Table 1. Psychological constructs examined

Anger	Optimism
Decision rule	Political orientation
Delay of gratification	Religiosity
Fatalism	Resistance to peer influence
Government intervention orientation	Risk aversion
Hostility	Risk perception
Impulsivity	Sensation-seeking
Life satisfaction	Social norms espousal
Loneliness	Social resistance orientation

Methods

Between June and July 2018, a survey was administered to a nationally representative sample of U.S. residents age 16 or older who reported driving or riding in a car in the past year. The survey contained questions about seat belt use in different situations, the psychological constructs of interest, and demographic characteristics. Survey participants were recruited through GfK's KnowledgePanel. The final data set included 5,833 adults (age 18 or older) and 205 teens (16-17 years old). NHTSA received clearance from the Office of Management and Budget to conduct this survey (Control No. 2127-0729).

The research team evaluated respondents' seat belt use in three different ways. First, based on responses to the survey screener questions about frequency of seat belt use, the research team created a *primary* measure of seat belt use: always vs. not-always. The team also created an *adjusted* measure of always vs. not-always seat belt use that additionally incorporated responses to survey questions about seat belt use in different situations, like at night or in the rear seat. Finally, the research team used a statistical analysis technique (multiple correspondence analysis) to assign each respondent a seat belt use *score* based on their patterns of responses across the seat belt use questions. All statistical analyses (logistic regression for the *primary* and *adjusted* measures and linear regression for the *score* measure) incorporated the complex sampling design.

Results

Reported seat belt use and reasons given. According to the *primary* measure of seat belt use, 76% reported full-time (i.e., always) seat belt use. By comparison, the *adjusted* measure—which accounted for reported seat belt use across several situations—suggested that only 52% were full-time seat belt users. The most frequently endorsed reasons for wearing a seat belt were avoiding injury, seat belt use as a habit, and compliance with the law. The most frequently endorsed reasons for *not* wearing a seat belt were driving a short distance, forgetting, and seat belt discomfort.

Belt use and demographics. The research team examined relationships between seat belt use and demographic and other individual characteristics, like age, sex, race/ethnicity, socioeconomic status (SES), crash history, vehicle year, and geographic region, for each of the three seat belt use measures. The results reported here detail predictors that were statistically significant in the hypothesized direction for at least two of the three measures of seat belt use. Being younger, male, and not married decreased the likelihood of reporting full-time seat belt use, while being non-Hispanic White increased this likelihood. Seat belt use differed significantly across geographic regions of the United States.

Belt use and psychological constructs. Using the same approach, the research team investigated the relationships between seat belt use and psychological constructs (Table 2). People with greater willingness to delay gratification, greater life satisfaction, more aversion to risks, and greater perception of risk in various driving situations were more likely to be full-time seat belt users. Although not hypothesized, people with greater loneliness and more resistance to peer influence were also more likely to be full-time seat belt users. People with greater impulsivity and inclination to engage in risky behaviors

as acts of "social resistance" were less likely to be full-time seat belt users.

Table 2. Psychological constructs' relationships with seat belt use

Negative ↓ Effects on Belt Use	Positive ↑ Effects on Belt Use
Impulsivity	Delay of gratification
Social resistance orientation	Life satisfaction
	Loneliness
	Resistance to peer influence
	Risk aversion
	Risk perception

Note: *Italics* = relationship not hypothesized or in opposite direction of hypothesis.

The research team also conducted mediation analyses to determine if the psychological constructs could explain observed differences in seat belt use across different demographic groups, e.g., people of different ages. The team found that the psychological constructs fully explained the effects of age, sex, and one regional difference on seat belt use. Religiosity, aversion to risks, greater perception of risk in various driving situations, the degree to which drivers believed others used seat belts (descriptive norms), inclination to engage in risky behaviors as acts of "social resistance, loneliness, and sensation-seeking each contributed to explaining the effects of these demographic factors on seat belt use. However, for marital status and the remaining two regional differences, the psychological constructs did not fully explain differences in seat belt use, i.e., between married and unmarried people or between people in different geographic regions.

Situational seat belt use. Finally, the research team examined whether seat belt use varied across different situations. In a model that also accounted for the influences of demographic and psychological factors, people were less likely to wear a belt in the rear seat, in a taxi or rideshare, or in a work vehicle relative to when driving; less likely in a taxi relative to a rideshare or work vehicle; and less likely in a rideshare relative to a work vehicle. There were no differences in seat belt use between riding as a front-seat passenger versus driving, or between driving or riding as a passenger at night versus during the day.

Discussion

This survey's results confirmed previously observed associations between demographic factors and seat belt use but also demonstrated that psychological constructs like impulsivity and risk aversion can be useful for predicting seat belt use. Additionally, the results showed that associations between demographic factors (like age) and seat belt use can be partly explained by differences on psychological constructs across individuals (e.g., across different ages). Many of these constructs have been linked to risky or protective health behaviors, more generally, and this study extends those findings to seat belt use.

This study had some limitations, like that respondents self-reported seat belt use and may have been inclined to respond in ways they believed would be acceptable to others (social desirability bias). Additionally, the survey only measured individual-level influences on seat belt use (e.g., personal and psychological constructs). However, one's family, community, State, and national laws and culture all influence seat belt use.

The results of this study may be useful for both identifying people at higher risk of seat belt non-use and for developing countermeasures targeted at high-risk occupants. For example, people who perceived various driving situations to be less risky were less likely to be full-time seat belt users, and reduced perception of risk explained part of the observed association between gender and seat belt use (i.e., males were less likely to be full-time seat belt users). Thus, education programs or messaging campaigns aimed at males may benefit from incorporating content designed to increase their perception of the risk of seat belt non-use. As such, they can aid the development of programs that use communications and outreach strategies for low-belt-use groups as described in *Countermeasures That Work* (Richard et al., 2018).

References

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How to Order

Download a copy of *Psychological Constructs Related to Seat Belt Use,* Volume 1: Methodology Report (DOT HS 813 032) and Volume 2: Results Report (DOT HS 813 029).

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