

Development of the Traffic Offense Traits Scale (TOTS) for Recidivism Risk Assessment

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Repeated traffic offenses by a small proportion of drivers pose a significant road safety challenge. Remedial courses for license suspension offenders offer a critical re-education opportunity, yet current programs remain uniform regardless of individual risk profiles. This study developed and validated the Traffic Offense Traits Scale (TOTS), a multidimensional self-report measure assessing psychological traits underlying repeated traffic offenses.

In Study 1, an online survey ($N = 632$; 49.8% male) yielded a stable 7-factor, 24-item structure via exploratory and confirmatory factor analyses (CFI = .946, RMSEA = .049, $\alpha = .72-.87$; Table 1). A mediation analysis (84 pathways) revealed that Distracted Multitasking Behavior (F4) was the primary mediator linking risk traits to offense frequency across all 12 pathways. Attentive Safety-Checking Behavior (F2) and Lack of Prudence (F6) functioned as protective factors suppressing F4.

In Study 2, TOTS was administered to remedial course attendees ($N = 1,050$; 75.1% male). CFA replicated the 7-factor structure (Robust CFI = .951, RMSEA = .041). Six of 7 factors showed significant stepwise group differences by offense frequency ($p < .01$), supporting convergent and discriminant validity.

TOTS demonstrates foundational utility as a practical tool for identifying high-risk drivers and informing evidence-based, individualized traffic safety education. Future work will examine predictive validity through longitudinal research and objective offense records.

Table 1 Factor Analysis Results (Maximum Likelihood, Promax Rotation)

items	F1	F2	F3	F4	F5	F6	F7	h^2
F1: Reward Sensitivity (4 items) (Cronbach's $\alpha = .868$, McDonald's $\omega = .871$, Eigenvalue = 5.48)								
I seek out new and stimulating experiences.	.912	-.024	-.105	-.038	.083	.023	.024	.864
I want to feel excitement and experience new sensations.	.863	.040	-.055	.061	-.030	-.053	-.029	.757
I like thrilling experiences.	.747	-.050	-.120	-.062	.177	-.039	.075	.608
I leap at the opportunity to have fun.	.657	.043	.120	-.033	-.052	.118	-.070	.463
F2: Attentive Safety-Checking Behavior (4 items) (Cronbach's $\alpha = .851$, McDonald's $\omega = .853$, Eigenvalue=5.48)								
I always check my surroundings before acting.	-.026	.826	-.095	.089	-.008	-.033	.092	.703
I have good awareness of my surroundings.	-.048	.798	.023	.045	-.048	-.027	.106	.653
I never slack off when it comes to safety checks.	.032	.759	.030	-.001	-.009	.002	.008	.577
I believe following rules and regulations is important.	-.059	.656	.068	.036	.005	-.031	-.055	.441
F3: Lack of Perseverance and Planning (4items) (Cronbach's $\alpha = .801$, McDonald's $\omega = .804$, Eigenvalue = 3.92)								
I tend to procrastinate even when there are things I need to do.	-.087	-.063	.875	.002	-.018	-.144	-.033	.792
I tend to be too lenient with myself and am unable to act properly.	-.025	-.076	.737	-.063	.004	-.019	.093	.551
I find it difficult to plan ahead of time.	.043	.019	.626	-.112	.153	.056	.044	.433
I tend to be unable to focus on things like studying or working when my mind is elsewhere.	-.009	-.181	.596	.047	-.046	-.016	.068	.390
F4: Distracted Multitasking Behavior (4items) (Cronbach's $\alpha = .840$, McDonald's $\omega = .843$, Eigenvalue = 4.81)								
I look at my phone while walking.	-.054	.124	-.060	.911	.052	.043	-.045	.849
As a pedestrian, I watch videos and use my phone while walking and crossing the road.	-.036	.007	-.201	.868	.158	-.007	-.073	.810
I tend to use my phone while talking to other people.	-.046	.065	.047	.670	.095	.057	-.089	.468
I use my phone while driving.	.056	.043	-.084	.533	.252	.099	-.061	.365
F5: Antisocial Behavior (3items) (Cronbach's $\alpha = .775$, McDonald's $\omega = .779$, Eigenvalue = 3.86)								
I tend to break important promises.	.018	-.072	.181	-.044	.844	-.131	-.019	.764
I tend to be late for important things like meetings that have been set for a fixed time.	.093	-.081	.095	.041	.788	-.115	-.066	.662
I tend to fake illness.	.002	-.018	.201	.090	.602	-.091	.001	.412
F6: Lack of Prudence and Deliberation (3items) (Cronbach's $\alpha = .721$, McDonald's $\omega = .737$, Eigenvalue = 2.93)								
I think carefully before acting. (R)	.043	-.089	.041	-.079	-.104	.844	.043	.729
I think carefully before acting. (R)	.036	-.122	-.130	.026	-.105	.675	.043	.490
I am able to resist temptations. (R)	.027	.009	.033	.063	-.114	.537	.010	.308
F7: Gambling Orientation (2items) (Cronbach's $\alpha = .798$, McDonald's $\omega = .798$)								
I find gambling appealing.	.015	.034	.075	-.063	-.074	.035	1.027	1.066
I understand the feelings of people who spend large amounts of money gambling.	-.039	.024	.121	-.025	-.011	.024	.641	.427
Note.								
Question items provided by the translation company.	F2	-.185						
(R) indicates a reverse-scored item.	F3	.440	-.034					
Bold values indicate primary factor loadings ($\geq .40$).	F4	.280	-.212	.404				
Factor intercorrelations are reported below the loading matrix.	F5	.534	-.331	.461	.505			
	F6	.196	-.496	.043	.229	.258		
	F7	.440	-.185	.440	.280	.534	.196	