

Driver Perception of Vehicle Performance

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Project outline

The need to reduce transport CO₂ emissions implies substantial changes to vehicle and fuel design in the near future. To ensure sufficiently rapid uptake of lower carbon vehicles and fuels, they will have to meet consumer needs - including performance. This project aims to understand how consumer drivers construe and perceive vehicle performance, so that lower carbon fuels can be designed in ways that continue to meet drivers' needs. The project is in three parts:

1. How consumer drivers construe vehicle performance: Developing a model using qualitative methods (discussion groups, accompanied drives), repertory grid methods and quantitative conjoint surveys, to identify which aspects of performance are most salient to drivers
2. Driving simulation: measuring drivers' ability to perceive differences in specific salient aspects of vehicle performance, as a function of magnitude of the difference
3. Laboratory experiments to explore in more depth relevant aspects of the construal of performance, and perceptual experience (for example, how visual and auditory cues to accelerating motion are combined)



Driving simulation to measure perception of differences in vehicle performance: in naturalistic driving and in specific controlled action sequences

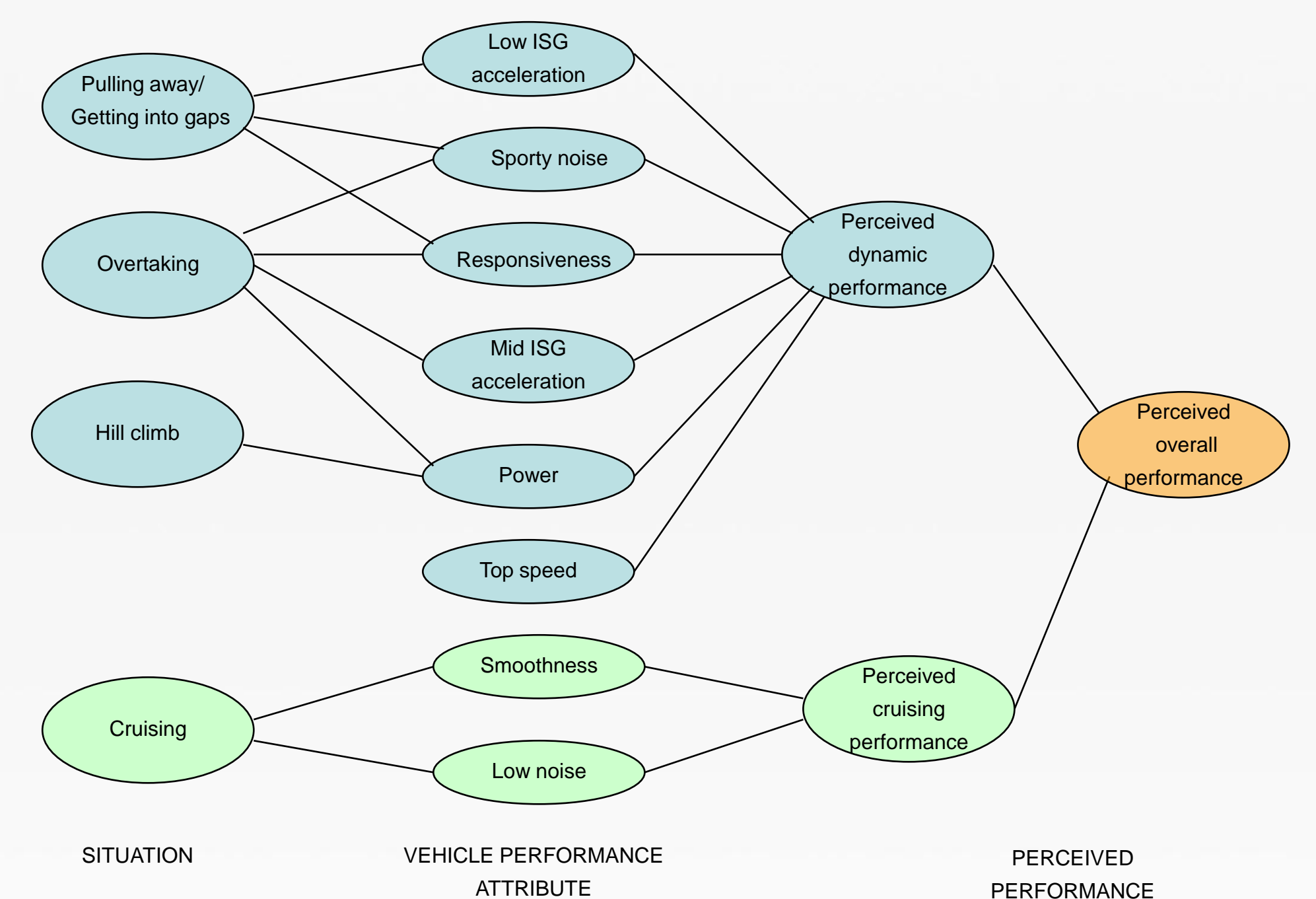
How drivers construe performance

Based on multiple studies:

1. Thematic analysis of qualitative data from fuels preference trials, accompanied drives and discussion groups with high involvement and high mileage drivers
2. Repertory Grids constructed by triads of performance-oriented drivers
3. Large scale quantitative survey of US, German and Malaysian drivers (3200 participants) using conjoint and factor analytic methods to quantify importance of distinct aspects of performance

Key findings:

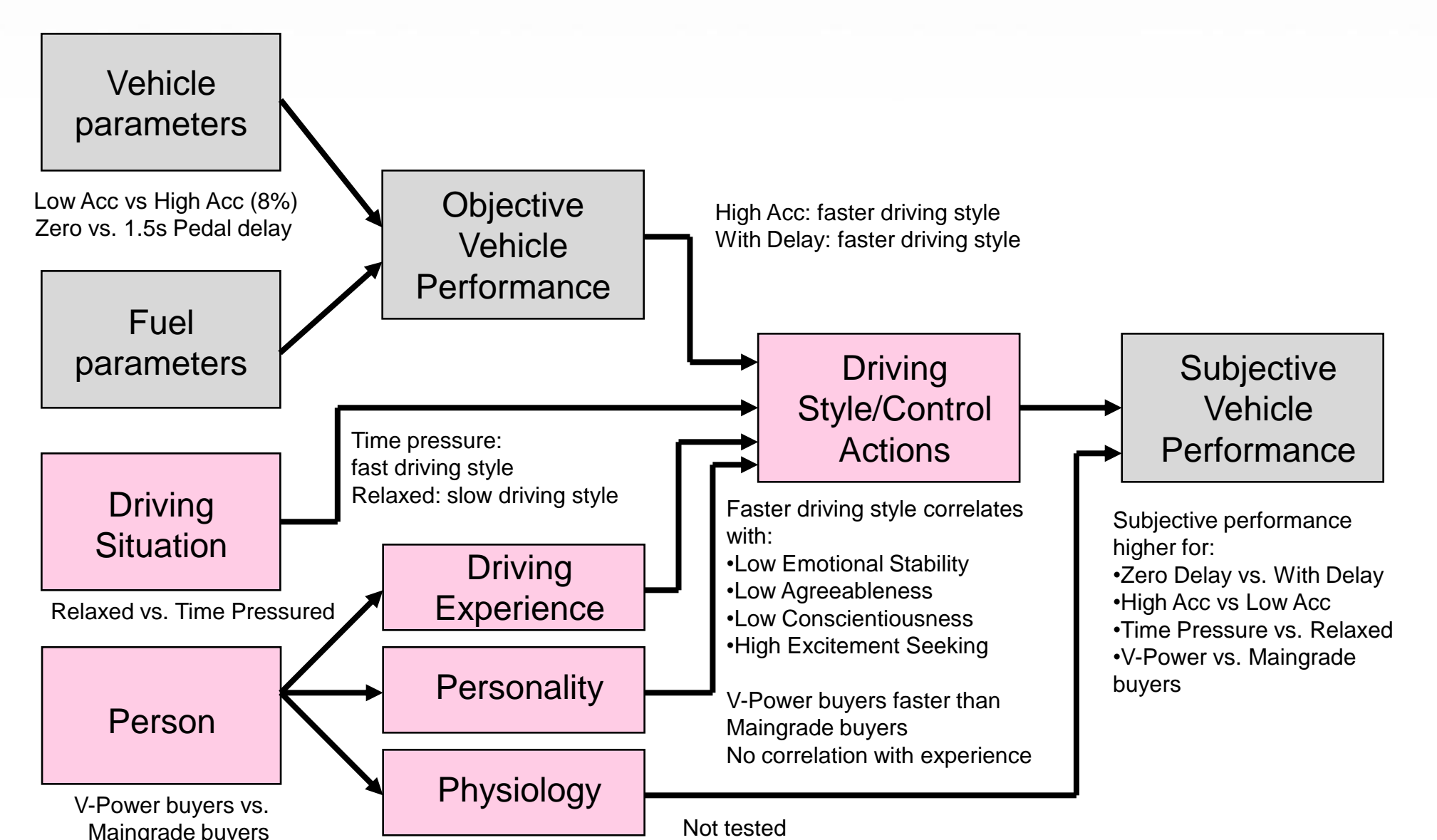
- Performance is construed in situationally-specific ways
- Two independent dimensions: Dynamic Performance and Cruising Performance



How drivers construe vehicle performance: conceptual model developed from qualitative and repertory grid studies

Simulator studies

- Naturalistic studies using realistic simulated rural road driving: effects of vehicle performance, driving situation, and individual differences between drivers, on perceptions of vehicle performance
- Relationships between personality, self-reported driving behaviour and driving style
- Measurement of psychological scales for vehicle acceleration using paired comparison paradigm and controlled acceleration conditions
- Investigation of the contributions of visual, auditory and motion sensing modalities to integrated perception of acceleration
- Validation of simulator studies using test track experiments



Model of factors that mediate subjective perception of vehicle performance, and outline of initial findings on their effects

