

Research Article

The Anatomy of Road Dominance: An Empirical Investigation into Engine Power, Social Status and Black-Colour Psychology as Drivers of Aggressive SUV Behavior in Western Uttar Pradesh

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Abstract: Increasing attention on Sports Utility Vehicles (SUVs) or off-road type of passenger cars (e.g., black colored vehicles) has increased awareness about potential relation with aggressive driving behavior. Though vehicular features (e.g., Engine power) has the association with driver's driving behavior in the literature, other psychological and social factors (e.g., Self related perceptions of power, identity, status, symbolic nature and emotional feelings towards vehicle) may have implications for driver behavioral predispositions. This study examines the role of perceived engine power, social status and black vehicle color psychology on aggressive driving behavior of black SUV drivers in Western Uttar Pradesh, India. For conducting this study a quantitative, cross-sectional research design was used. The primary data were gathered from 400 black SUV drivers from Western Uttar Pradesh, India by applying a survey questionnaire consisted of nine latent constructs namely Power and Dominance, Confidence and Identity, Social Image, Behavioural Influence, Emotional Feelings, Perceived Reactions of Others, Symbolic Meaning, Colour Choice Motivation and Implicit Behaviour. Cronbach's alpha, Composite Reliability (CR) and Average Variance Extracted (AVE) were calculated to ensure the reliability and validity of the measurement model. The result of the Structural Equation Modeling (SEM) analysis showed that psychological perceptions associated with vehicle ownership such as social image, symbolic meaning and emotional feelings are strongly related with the inclination toward aggressive driving and certain demographic and perceptual variables have low influence. This study adds to the current knowledge on the symbolic and psychological meaning related to black SUVs and driver's psychological predispositions than its mechanistic features. These findings imply interesting and practically significant perspectives for policy makers, public road transport authorities, automotive producers and behaviorists to devise specific interventions for improving safety behaviors and discouraging aggressive driving.

Keywords: Aggressive Driving Behaviour, Black SUV Psychology, Engine Power Perception, Social Status, Vehicle Symbolism, Structural Equation Modeling, Western Uttar Pradesh

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INTRODUCTION

One of the leading causes of preventable death and disability throughout the world is road traffic injuries. The most noticeable behavioral element associated with causing road crashes and generating unsafe road environments, however, is an aggressive driving style and behavior. Behavior encompassing excess speed, cutting, Tailgating, dangerous lane changes, unwarranted use of the car horn and deliberately intimidating another road user is characterized as aggressive driving behavior (AAD). Many behaviors including those specified above were linked to individual driver and environmental characteristics, although some researchers suggested vehicle perception may play a role in a driver's aggressive driving. Cars are nowadays thought of not only as a transport but also a symbol of Self, Power, status, sex and personality. Such associations can, psychologically predisposed some individuals to form certain attachment for a specific vehicle leading to the formulation of a corresponding driving behavior style [1,2].

The fast rise in the Sport Utility Vehicle (SUV) class segment has brought about drastic changes in the vehicle markets. SUVs are perceived to be capable, robust as well as powerful, respectable vehicle and are driven at higher vantage point which leads to perceived invincibility. With models like Mahindra Thar, Thar Roxx, Scorpio, Scorpio N, Toyota Fortuner and many other becoming quite popular for people of all ages from young adult to middle aged consumers in recent time, people have ownership over so many of them. And so is the public discourse in media talking often about these SUVs (black color being very specific) representing a somewhat pushy and aggressive driver on the road. While there are a number of perception among masses, however, the mechanism and behavioral explanation for these phenomena are scarce [3-5].

The Color perception of the vehicle has an element of interest but underexplored factor in driving and consumer psychology. Black is a prevalent and significant Color associated with power, authority, dignity, commanding strength, superiority, sophistication as well as femininity [6]. This associated symbolic meaning of the vehicle color itself is expected to influence the choice of vehicle not only while its acquisition but to some extent; its psychological ownership on Self and thereafter its influencing on road behavior is expected. Therefore the Self-perception of owning black SUV may lead an individual toward behaviors, driving assertively or dominantly. Though the connection of black vehicle color psychology with aggressive driving style is evident on theoretical front, less work has been seen empirical explanation. In fact few studies have explored vehicle color psychology. This factor is under-researched in driving psychology more especially in the context of India [7,8].

Existing researches have looked on drivers' aggressive style from drivers' demographics, Personality characteristics, Sensation seeking levels, Traffic angry tendencies and their risk perception. Driving and Road safety psychologists on other have carried out research on the effect of the vehicle on driving characteristics such as driving velocity and vehicle size. Very few research have discussed psychological perceptions for example owners perception of engine power, Social Status and ownership meanings, emotional attachment and choice of color and have integrated these factors into drivers driving style behavior within an holistic behavioral framework of aggressive driving. Mostly, this work seems to be prevalent with researchers of Western countries, making these conclusions questionable in developing economies [9,10].

The region in consideration, namely Western Uttar Pradesh is an appropriate one due to its considerable increase in ownership of private SUVs, rapidly urbanizing landscape with increasing traffic density. From the perspective of drivers, it comprises a number of districts like Meerut, Ghaziabad, Noida, Muzaffarnagar, Saharanpur, Baghpat, Bulandshahr, Hapur... all are places that represent all types of driving experiences ranging from highly congestion in roads till the highways at the speeds at which such behavior of the driver is exhibited. Evaluating the relationship for drivers of Western Uttar Pradesh will give a reasonable understanding for drivers in context that the ownership of black SUV results into driver behaviors as a function of perceived color psychology related implications with regard to driver perceptions about self and other car owners [11].

The present study addresses the limitations of prior research by developing and empirically testing a conceptual framework incorporating Power and Dominance, Confidence and Identity, Social Image, Behavioral Influence, Emotional Feelings, Perceived reactions by Other driver, Symbolic meaning and Color choice motivations towards achieving and understanding Implicit aggressive driving behavior among Black SUV drivers of Western Uttar Pradesh [12]. Present study employs a quantitative cross-sectionals survey data with Structural Equation Modeling (SEM) to determine the relations among psychological and symbolic implications of the vehicle and drivers' aggressive driving behavior, respectively.

This study offers three distinct contributions. First, the current study fills in the gaps by examining an explicit link between the driver's driving behavior as implicitly aggressive driving and vehicle color psychology combined with symbolic consumption on a holistic framework. Second, this research provides an Indian scenario where limited studies exist and particularly, the behavioral implications associated with SUV owning is least explored [13]. Thirdly, the study proposes implications for policy-makers and safety enforcement personnel, manufacturers and psychologists by highlighting potential variables that might be used in designing of drivers awareness program, effective highway designing and public awareness Campaign of safe driving and responsible motor vehicle ownership and responsible vehicle marketing, etc.

LITERATURE REVIEW

The literature on aggressive driving has evolved from examining individual personality characteristics to incorporating psychological, social and environmental determinants of driver behaviour. More recently, researchers have emphasized the symbolic meaning of vehicles, vehicle size and social identity in shaping driving behaviour. The following review presents major empirical studies in chronological order and identifies the research gap addressed by the present study.

Ellison-Potter, Bell and Deffenbacher (2006)

A questionnaire-based investigation of aggressive driving and driver attitudes carried out by Ellison-Potter *et al.* [12] involved a large sample of motorists, who were questioned about driving incidents and about their attitudes to driving. It was discovered that aggressive behaviors (tail-gating, fast driving, offensive gesturing and dangerous overtakes), were strongly associated with driving anger, frustration and competitive attitude in drivers. The authors concluded that aggressive driving should not be treated as just a breach of the law but should be treated as behavior driven by both situational and psychological factors and that behavioral reasons should be the focus of the research rather than demographic characteristics. However, this research did not look into whether it was vehicle characteristics that were likely to drive aggressive behavior.

Szlemko, Benfield, Bell, Deffenbacher and Troup (2008)

Introduced by Szlemko *et al.*, the notion of territory in aggressive driving was based on the argument that drivers can see their cars as personal territories and respond in an aggressive way to perceive a violation of that territory. It showed the importance of driving territory with three empirical studies where the territory dimension accurately predicted road rage, aggressive driving. It confirmed the psychological dimension underpinning the explanation for driving dominance although it didn't compare high and low social-status cars as well as comparing car types.

Ruvio and Shoham (2011)

Ruvio and Shoham examined aggressive driving through a consumer behavior lens, defining driving as a type of consumption experience. Via structural equation modeling, the researchers determined that personality, attitudes and value system were key drivers of aggressive driving attitudes and behavior. The study's contribution was its application of marketing and consumer psychology toward transport modeling; it did not investigate, for instance, potential symbolic value associated with vehicle shape, engine strength or colour of a vehicle.

Guéguen, Jacob, Lourel and Pascual (2012)

Guguen *et al.* studies show that exposure to red color causes a person physiological activation and fighting spirit. So, Guguen *et al.* Conducted a field experiment on whether car color matters in evoking aggressive response in people. The study was done on people who were waiting for their turn to go through a traffic light. This group of people was stopped by experimental cars. It's interesting because their colors could have been different, e.g., Red, blue, white, green and black. What they have noticed was that at the red colored car people drove faster or even beat horns on this particular car sooner than they responded at others.

Christine M. Wickens, Robert E. Mann and David L. Wiesenthal (2013)

Aggressive driving tendencies were examined through structural equation modelling for various personality factors by Wickens *et al.* It showed that driving anger was highest among all predictors for aggressive driving, whereas emotional stability, consciousness and agreeableness contributed negatively to aggression for driving. Higher levels of aggression were predicted to raise the amount of traffic violations and accidents as well. Overall, although this finding created a behavioral model, the research emphasized driver personality as opposed to psychological drivers relevant to the vehicle itself in reference to the vehicle's perceived power and status derived from its ownership.

Gatersleben (2020)

Gatersleben, although it makes sense in principle that instrumental factors such as cost and speed are key influences on car-ownership, in reality a series of symbolic, affective and socio-emotional influences-prestige, status, control, freedom and the pleasure derived from driving-greatly affect purchasing decisions, driver image and road user behaviour and produce level of attachment to the car which prevent the implementation of strategies to curtail the amount of travelling, which strongly indicate the need for extensive, empirical work in various settings, above all, in developing countries.

Rapoport, Lotan and Shinar (2022)

Studied the link between a vehicle and risky driving behaviours against the background of the rising prevalence of bigger cars in recent decades. After referencing behavioral science and transportation safety research, the researchers said drivers of cars weighing more, generating more horsepower and with higher seat height may present better feeling, confidence and more perceived advantage. They may be perceived as speeding more, overtaking more dangerously and drive less compliant toward rules. According to this SUV is on course to affect not only

what happen to SUV drivers but the well-being of the rest. But without other behavioral studies in various culture and socio-economic contexts, especially in developing countries-it's premature to draw a definitive conclusion.

Lipaz Shamo-Nir (2023)

An exploration of the driving conditions associated with and drivers' anxiety of road rage and aggressive driving. Abstract Road rage is a social phenomenon carrying significant safety risks for drivers and it has important implications for road safety. Among the factors leading to road traffic accidents, aggressive driving represents one of the primary risk factors for accidents and so it is necessary to examine individual and contextual factors promoting aggressive driving and road rage behaviors and the factors contributing to preventing and reducing these behaviors. The present study provided empirical evidence with respect to individual conceptualization of road rage by investigating the relationship between drivers' anxious experience while driving and the drivers' driving style (instrumental and hostile). A sample of drivers while observed as they were driving their cars responded the anxiety questionnaire measuring state and trait anxiety scale for drivers. The results showed there were significant correlation between state-trait anxiety and aggressive driving style. Hostile aggressive behaviors were more often followed by higher level of state-trait anxiety; problem-centered problem-focused coping strategy was more common in instrumental aggression drivers than hostile aggression drivers. This study adds to the current literature on the relationship between individual's coping style and road rage, demonstrating that problem-centered coping might be a positive strategy to control hostile driving, contributing to the prevention of road traffic accident.

Pérez Chauca, Lema Vaca and Reyes Campaña (2023)

As dark cars have a greater possibility of generating accidents because Drivers of this race are unable to have good visibility of them as they are distant; it is worth clarify that the white and lead colors presented in the study are the colors that have the least accidents, using the mathematical approach of cronbachs alfa we can estimate the reliability of a test from Studies for perception and in the presented study this coefficient gives us a value of 0.83, that is, it has a very high level of reliability, the evaluation method is very reliable and therefore its results do too. The results show a high percentage of successful visualizations, which indicate the viability of this test, since in field tests a success in visualizing vehicles that pass in front of the observers in their respective fields for each of the 5 different distance tests, with 26 participants in a 70% probability success of having an accident in red color vehicle, for example. Based on the results obtained in the surveys performed.

It can determine the best visualization color white vehicles, followed by vehicles color of lead and to a lesser extent visibility in vehicles in color red and black color cars were registered with the tests performed in the field mentioned above, for the red color the visualization is 95% which shows a vehicle is clearly visible for vehicles but for a black color it is 89% and for white color vehicles with an evaluation of 45%, means that it is not easy to see these vehicles from great distances. In the conducted studies it was affirmed that Perception has an increase in 13.75% in visualization when the vehicle flashes its lights at these distances. The use of the flashing lights is important element that favors perception visualization by distance and vehicle color [14-18].

Ha and Park (2024)

In this study, we explored drivers' perceptions of the physical size of other drivers and behavioral intentions in response to these perceptions [19]. Study 1 tested whether perceived driver physical size (height; body shape) based on vehicle size (large versus small) is explained via SES.

We demonstrated that drivers of large (versus small) vehicles were judged as taller (shorter), a judgment that was mediated by their estimated SES.

The driver's body shape was not explained by vehicle size. In Study 2, we tested the idea that aggression behavioral intention (i.e., honking) would be serially mediated through perceptions of physical size and traits (aggression; power). We showed that large vehicle drivers (versus small drivers) were perceived as taller (larger body size) with more power (more aggression) and subsequently led to less (more) aggression toward that driver. Overall, our study has important implications for understandings of perceptions in social driving contexts, as individual estimations of drivers' physical size and corresponding behavioral responses are present [20].

Gupta, Choudhary and Parida (2024)

Gupta, Choudhary and Parida examined how driving habits vary by type of passengers' vehicle by compare driving behavior between the drivers of hatchbacks, sedans and Sport Utility Vehicle (SUV) using the survey data collected from 546 licensed drivers throughout India. Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA),

Structural Equation Modeling (SEM), K-means clustering and ordered logit models were applied for the analysis of risky driving behavior. Results showed that, SUV drivers pose considerably more risky behaviors in terms of traffic violations, driving error behaviors than the drivers of hatchbacks and sedan. Also, driver age, accident history and speeding behavior appear to be significant predictors of risky driving.

The authors conclude that the vehicle type has a significant effect in behavior and road safety interventions/policies, road safety measures considering the vehicle-dependent behavior will improve road safety. However, psychological and sociological effects related to the driving behavior-vehicle type interaction-such as power from engine perception, perception of vehicle's domination, motivation to enhance social status and the 'black-color psychology'-are not discussed in their analysis and they have provided an open space of study for the present work.

Love *et al.* (2025)

Further established the driving-related angry drivers to be less able to effectively allocate attention and process traffic information. Thus driving, emotion and self-regulation are considered important for the unsafe behavior of an angry driver. Based on their findings, the regulation of emotions rather than enforcement of traffic violations might be an important aspect of a behavioural intervention designed to prevent driving-related angry behavior.

From the previous studies the personality traits, emotion, self-regulation behavior, vehicles characteristics provide considerable knowledge regarding the behaviors of aggressive drivers.

However, still more research question needs to be addressed. One of the main issues is, that previously the psychologically-related behaviors (driver's personality) demographic-characteristics (age, gender, experience) and vehicles-characteristics (engine power, age) has been conducted separately from the perspectives of different academic perspectives. Only seldom they were synthesized in to one integrated model. Secondly less is studied on symbolically represented variables like, perception on the engine power, Confidence and identity; social image; emotional attachment; symbolic meaning; Color choice motivation.

Third, psychological meaning of black color which stands typically for authority, domination, prestige, Power still less studied.

Fourth, the behavior study related to traffic congestion especially in the developing countries like India has been very limited, especially from the state such as from western UP where SUV market is growing rapidly and so does the concern of road aggression. The proposed model in this study attempts to overcome the limitation discussed above and to answer some of the question which are unanswered till date. With the incorporation of different symbolically associated psychological characteristics and behavioral intention of driver towards black SUV colour, the proposed study attempt to present an integrated Structural Equation Model (SEM) which investigate the role of, power and dominance, confidence and identity, social image, behavioural influence, emotional feelings, perceptions of other reactions, symbolic meaning, Color choice Motivation; implicit driving aggression in black SUV driver in the context of Western Uttar Pradesh which incorporate psychological and consumerism approach from transport.

Research Gap

To date, most of the relevant literature focusing on aggressive driving has explored personality traits, sensation seeking, driving anger, emotional regulation, demographic factors and driving context. Despite the fact that these researches have significantly improved our understanding of the risk factors related to driving behavior, they investigated these factors independently of one another, thus providing isolated insights into the notion of aggressive driving. The relationship of driving behavior with vehicle-specific factors such as size, engine performance, ownership of an SUV was only recently discussed. However, little work have been published addressing the psychological meanings attributed to car ownership.

In addition to above, studies on symbolic aspects of car ownership appear underdeveloped to date. Constructs like Power and Dominance, Confidence and Identity, Social Image, Symbolic Meaning, Emotional feelings, Perceived Reactions of Others and Color Choice Motivation are extensively utilized in consumer behavior research and branding domain but has sparsely been adopted in transport psychology as drivers for aggressive driving behavior so far, thereby giving incomplete understanding regarding which specific underlying mechanism links car ownership perception to driving behavior [21].

It is crucial to note limitation on investigating vehicle color psychology especially symbolic meanings of black vehicles and behavioral outcomes, as though vehicle color impact to visibility, safety and purchase intention, little has explored in the literature, whether drivers are aware of the symbolic meaning of vehicles-specifically power, control, prestige, masculinity and dominance in associated with the choice to drive a car and thus do it so-represents a significant theoretical gap for both transport research and consumer behavior literature.

Finally, most empirical studies on aggressive driving are confined to developed countries where the normative context, traffic environment, enforcement regulations and public's attitude toward car use are likely to differ from emerging countries. Driving behavior on roads in Indian context are concerned with violation, safety issues, demographic factors and driver's attitude. Only little research attention have addressed psychological and symbolic implications to carownership (especially SUV) from the transportation literature while no study have been done in Western Uttar Pradesh context; an environment where, rapidity of urbanization, SUV ownership, multi traffic environment and growing worry over aggressive driving behavior leads research gap.

This paper attempts to fill the above gaps by developing and empirically testing an integrative model that encompasses Power and Dominance, Confidence and Identity, Social Image, Behavioral Influence, Emotional feelings, Perceived reactions of others, Symbolic meaning and Color choice motivation as driving forces of implicitly aggressive driving behavior among drivers driving black SUV in the Western Uttar Pradesh. It intends to make theoretically relevant contribution for an expanded understanding of vehicle driven psychological influences in driving behavior and a practical contribution towards effective road safety policy designing, behavioral intervention development, responsible automobile marking strategies [22].

Research Objectives

- To explore the impact of Engine Power Perception (EPP) upon Road Dominance Behaviour (RDB)
- To explore the impact of Vehicle Dominance Perception (VDP) upon Road Dominance Behaviour (RDB)
- To explore the impact of Social Status Motivation (SSM) upon Road Dominance Behavior (RDB)
- To explore the impact of Black Vehicle Psychology (BVP) upon Road Dominance Behavior (RDB)
- To explore the impact of Masculinity/Risk-taking Orientation (MRO) upon Road Dominance Behavior (RDB)
- To explore the impact of Road Dominance Behavior (RDB) upon Aggressive Driving Behavior (ADB)
- To construct and validate an integrated behavior model that elucidates the aggressive driving behavior of black SUV drivers in Western Uttar Pradesh utilizing Structural Equation Modeling (SEM)

Development of Hypotheses

Based upon the conceptual model outlined above it is hypothesized that the psychological images and symbolic meanings perceived by individuals toward black Sports Utility Vehicles (SUVs) affect driving propensity of such individuals' implicit aggressive driving behavior. Employing transportation psychology, consumer behavior, social identity theory, symbolic consumption theory and vehicle dominance theory, this study explores the ways in which perceptions of power, identity, social image, affective attachment and color meanings, drive individual behavioral propensities. By referring to relevant literatures the following hypotheses are put forward.

- **H1: Power and Dominance → Implicit Aggressive Driving Behaviour**

Dominance is how dominant a driver considers their black SUV to be of that specific context, such as feeling like a king of the road-driving it confers feeling powerful. Car dominance theory indicates that higher larger and more powerful cars do result in increased levels of confidence in drivers and increased feelings of driving dominance over other people on the road-therefore leading to more aggressive driving.

H1: Power and Dominance has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H2: Confidence and Identity → Implicit Aggressive Driving Behaviour**

Confidence and Identity is determined by the extent to which drivers see their black SUV as part of themselves and an extension of who they are. Social identity theory states that some individuals' personalities are reflected through their possessions and material manifestations, such as cars. When individuals identify closely with their cars, they will drive with a stronger sense of self-confidence and more aggressive behaviour (Stead 2014).

H2: Confidence and Identity has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H3: Social Image → Implicit Aggressive Driving Behaviour**

Social Image

The concept represents a driving to get better status, more social recognition as well as respect through owning and operating a black SUV. Drivers with a strong consideration of image may have some behaviors which promote their

sense of status such as taking a dominant driving. According to the symbolic consumption theory, consumers can enhance their social identity by purchasing certain products in order to establish their status.

H3: Social Image has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H4: Behavioural Influence → Implicit Aggressive Driving Behaviour**

Behavioural Influence

'Degree to which driver reports that the operation of black SUVs alters their driving behaviour and decision-making.' Many previous behavioural research has revealed that individuals may unconsciously change the way in which they operate in accordance with the driver's own image of their vehicles. Therefore, it can be anticipated that the greater behavioural influence will lead to more aggressive driving.

H4: Behavioural Influence has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H5: Emotional Feelings → Implicit Aggressive Driving Behaviour**

Feelings associated with emotion describes the feelings and excitability that occurred while driving a black sport utility vehicle. Feelings of pleasure, thrill and pride, such as might occur from driving, can be attributed to driving with a greater level of comfort and thus taking on more risky behavior while driving. In this way feelings of the attachment toward a subject can impact the presence of aggressiveness in behavior.

H5: Emotional Feelings has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H6: Perceived Reactions of Others → Implicit Aggressive Driving Behaviour**

Perceived reactions of other road users: This is based on a driver's perception of other users' reactions towards driving a black SUV. The thought of either being admired, feared or respected may encourage dominant driving behaviour and aggressive behavioral responses.

H6: Perceived Reactions of Others has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H7: Symbolic Meaning → Implicit Aggressive Driving Behaviour**

Symbolic Meaning: The extent to which black SUVs are viewed as embodying authority, masculinity, luxury, achievement and power. As stated in Symbolic consumption theory, product symbolism impacts consumer behaviour and attitudes. Drivers with positive association with these meanings to black SUV and therefore display a tendency to more dominative behavior in the road and drive more aggressively.

H7: Symbolic Meaning has a significant positive effect on Implicit Aggressive Driving Behaviour.

- **H8: Colour Choice Motivation → Implicit Aggressive Driving Behaviour**

Motivations of colour choice - This is an explanation of why someone is more drawn to purchasing a black SUV than another colour. People are often drawn to black; it evokes power, elegance and dominance and is often preferred by those who may be drivers with higher levels of aggressive driving who might choose their vehicles on symbolic attributes of driver intent.

H8: Colour Choice Motivation has a significant positive effect on Implicit Aggressive Driving Behaviour.

RESEARCH METHODOLOGY

Research Philosophy

The approach in this study is supported by the positivism research philosophy, which holds the belief that social phenomena can be objectively assessed and analysed through empirical evidence. The positivism research philosophy is suitable for this research because the study aim to examine the associations between perceptions of psychological perceptions held towards sport utility vehicles (SUVs) and implicit driving behaviour of aggression by using quantitative research method and statistical methods. This philosophy allowed the verification of hypotheses which is developed from theories using the measure and statistical means.

Research Approach

In essence, a deductive research process followed, involving hypothesizing from grounded theories like the Vehicle Dominance theory, Social Identity Theory, Symbolic Consumption Theory and Theory of planned behaviour. A review

of previous studies identified pertinent constructs, guided the construction of research hypotheses and ultimately led to the formulation of a conceptual model. Findings derived from analyzing the collected data were used to confirm or reject the theorized relationships.

Research Design

This study utilizes a quantitative, descriptive and explanatory research design with cross-sectional approach. The cross-sectional survey design was chosen in the study because the data from the respondents was collected once at that time through standardized instrument called questionnaire. Descriptive was used in describing the personal profile of respondents and their psychological perceptions while explanatory analysis of the causal relationships between latent variables using Structural Equation Modeling (SEM).

Population of the Study

Target Audience: Owners and regular drivers of black SUVs and those who are located or work or drive their black SUV on a regular basis in Western Uttar Pradesh, India. We will be working with the owners and regular drivers of black SUVs as the black SUV is a vehicle often indicative of power, dominance, prestige and has strong symbolic status. Therefore it is a suitable vehicle for our research into the psychological factors influencing aggressive behaviour in the driving setting.

Study Area

Field-study was performed in different big areas of Western U.P. To analyse the concept of aggressive driving which had different road conditions, high volume of traffic, fast urbanization and growing trend of purchasing SUVs from Meerut, Ghaziabad, Agra, Aligarh, Muzaffarnagar, Rampur, Moradabad, Saharanpur, Baghpat, Hapur, Shamli and Bijnor districts of the state, because these places are significant where all types of roads conditions are present.

Sampling Technique

With an aim to select respondents that fulfill the criteria of having ownership of or driving the black SUV regularly, a sampling methodology of purposive sampling was used. Since this is a non-probability sampling method, only those respondent subjects, to which the objectives were related, were selected and were made part of the survey.

Sample Size

Altogether, 400 responses were confirmed and utilized for the statistical analysis. This size of the sample is statistically appropriate for SEM, since it fulfilled the generally acceptable minimum sample sizes according to research in SEM for the purpose of specifying a complex structural model with several latent variables. Also the final sample fulfills the respondent to parameter ratios conventionally suggested.

Data Collection

All the data for Primary survey has been collected with structured questionnaire of following format in which is self-administered to the individuals (which can also be termed as auto-administered) in which there were two sections, i.e. Demographic variables and construction measurement which the variables of study for different questions are of various constructs and responses were of likert scales i.e., Scale varying from 1 = Strongly Disagree to 5 = Strongly Agree in the following way: Section-I is comprised with demographic variables like:

- Age
- Gender
- Status
- Marital Status
- Educational Qualification
- Profession
- Monthly family income of family
- District of residence or at driving

Sec II comprises of measuring variables with the use of statements and it reflects various constructions, like: Power and Dominance (PD), Confidence and Identity (CI), Social Image (SI), Behavioural Influence (BI), Emotional Feelings (EF), Perceived Reactions of Others (PRO), Symbolic Meaning (SM), Colour Choice Motivation (CCM) and Implicit behavior (IB).

Research instruments or scale items in general for the constructions listed above were also taken from a well established, reviewed literature and appropriately modified considering the black SUV drivers in western Uttar Pradesh (U.P) so as to suit the present purpose of the study. Before the actual data collection the Questionnaire was validated with the experts.

Measurement of Variables

There were one dependent construct-Implicit Behaviour and eight independent constructs including Power and Dominance, Confidence and Identity, Social Image, Behavioural Influence, Emotional Feelings, Perceived Reactions of Others, Symbolic Meaning and Motivation of Colour Choice. The latent variables for the three constructs were reflected and were quantified by questionnaire statements with five point scale Likert scales for each construct.

Reliability and Validity

The internal consistency was checked using Cronbach's Alpha and Composite Reliability (CR) and convergent validity was assessed using the Average Variance Extracted (AVE). The instruments that satisfied with the criterion on average Cronbach's Alpha (CR) and Composite Reliability (CR) of ≥ 0.70 and AVE ≥ 0.50 , discriminant validity was checked by Fornell-Larcker criterion (e.g., Fornell and Larcker) and Heterotrait-Monotrait ratio (HTMT; (e.g., Henseler *et al.*)) when necessary.

Data Analysis Techniques

Conceptual Model: The hypothesized structural model postulates direct path between each of the eight exogenous constructs; Power and Dominance, Confidence and Identity, Social Image, Behavioural Influence, Emotional Feelings, Perceived Reactions of Others, Symbolic meaning and Colour choice motivation on endogenous construct Implicit aggressive driving behaviour; and it would be empirically investigated using SEM, to determine the strengths and significant effects of all these paths.

Analytical Model

This study develops an analytical model to study the effect of symbolic perceptions associated with black Sport Utility Vehicles (SUVs) on the implicit aggressive driving behaviour of drivers in Western Uttar Pradesh. The proposed model is built on theories of symbolic interactionism, consumer behavior, social identity theory, vehicle symbolism and driving behaviour. It hypothesized that the psychological perceptions associated with black SUVs impact drivers' emotions, feelings and psychological behavioral predisposition which ultimately drive their implicit aggressive driving behavior.

The Analytical Model There are nine latent constructs consisting in the analytical model: (1) Symbolic Meaning (SM), (2) Power and Dominance (PD), (3) Confidence and Identity (CI), (4) Social Image (SI), (5) Color Choice Motivation (CCM), (6) Emotional Feelings (EF), (7) Behavioral Influence (BI), (8) Perceived Reactions of Others (PRO) and (9) Implicit Behavior (IB).

Symbolic Meaning, Confidence and Identity, Social Image and Perceived Reactions of others are represented as exogenous latent variables, while Power and Dominance, Color Choice Motivation, Emotional Feelings, Behavioral Influence and Implicit Behavior are represented as endogenous latent variables. The conceptual framework proposed is that Symbolic Meaning influences both power and dominance as well as color choice motivation. Black SUVs carry powerful imagery and symbols related to power, prestige, authority, Masculinity, status and superiority which, not only influence owners' feelings of dominance associated with vehicle driving but also motivate the deliberate selection of black SUVs. Owners perceiving their cars as powerful and dominating, would exhibit more confidence while driving and behavioral influence.

Power and dominance in driving and color choice of vehicle are directly related to confidence and feelings while driving hence confidence and Identity are shown to augment Emotional Feelings and Behavioral Influence.

Similarly Social Image associated with black color vehicles strengthens feelings of security, pride, satisfaction, hence contributing positively to emotions and assertiveness or behavior influences. Color Choice Motivation positively influencing Emotional Feelings means that drivers, who deliberately chooses black colored cars for their desired symbolic meanings, experience higher level of satisfaction, confidence and pride associated with driving. These feelings impact the behavioral influence in driving by the owners.

The influence of behavior in driving is directly correlated with emotions and social influence. Finally, Driving Behavioral Influence Power and Dominance and Perceived Reactions of Others are expected to have a direct causal impact on the Implicit Driving Behavior. This implies that if road users perceive the black SUVs as being assertive and dominant and giving it way without prompt recognition, the drivers would likely subconsciously feel increased control and confidence and establish a stronger sense of ownership over road space leading to increased aggression.

Methods Model Estimation Data collected would be analyzed by Structural Equation modeling (SEM) using IBM SPSS Amos.

The procedure will begin by analyzing the confirmatory factor model (CFA) to test the psychometric property of measurement instruments by examining construct reliability, convergent validity and discriminant validity of the model components. After verifying the validity and reliability of the measurement model, the structural model will be estimated to test all direct and indirect hypotheses. The direct effects of exogenous construct on endogenous constructs in the structural model are assessed using standardized path coefficient (β), Critical Ratios (CR) and level of statistical significance (p -value). The indirect effects would be tested using a bootstrap procedure.

To determine whether the proposed theoretical model adequately describes the observed relationships between latent variables, goodness-of-fit indexes would be used, such as chi-square (χ^2) to degrees of freedom ratio (χ^2/df), Goodness of Fit Index (GFI), adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA) and standardized Root Mean Square Residual (SRMR).

The analytic modeling process aims to study the direct and indirect links between psychological perceptions, symbolic value, emotional responses and driving behaviors; provide a thorough clarification of the cause of the drivers' implicit aggressive behaviors and thereby make useful recommendations.

Proposed Structural Model

Conceptual framework is shown in Figure 1.

Respondent Profile

Interpretation: Table 1 shows the demographic characteristics of 400 people who were surveyed. Majority of the age group were those in age-group 45-54 years (45.75%), next to that are 18-24 age-group (32.75%) and in 35-44 years category, there are 21.50%. More than 80% was gender wise, the male participants was 80.75%, whereas the female participants are 19.25% who has done the participation in the study, which indicates the majority of male participants.

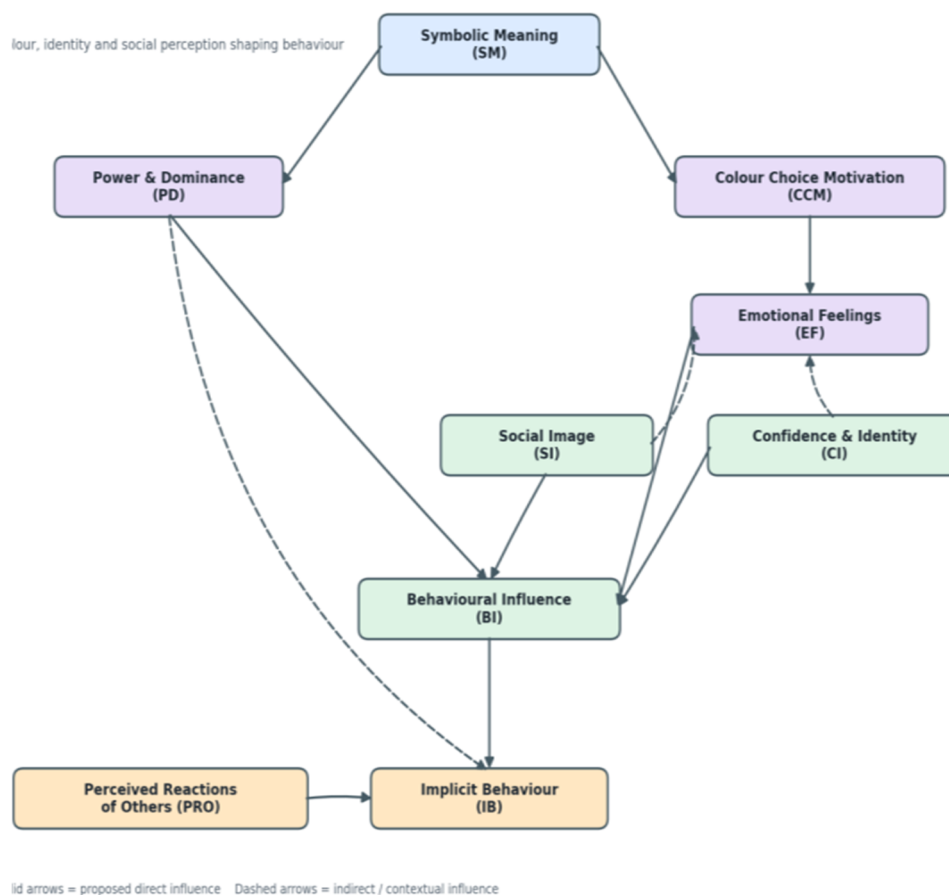


Figure 1: Conceptual Framework

Table 1: Respondent Profile of the Study Participants (N = 400)

Variable	Category	Frequency	Percentage (%)
Age	18-24 Years	131	32.75
	35-44 Years	86	21.5
	45-54 Years	183	45.75
	Total	400	100
Gender	Male	323	80.75
	Female	77	19.25
Marital Status	Total	400	100
	Single	274	68.5
	Married	126	31.5
Educational Qualification	Total	400	100
	Higher Secondary	84	21
	Graduate	121	30.25
	Postgraduate	142	35.5
	Doctorate	53	13.25
Occupation	Total	400	100
	Student	191	47.75
	Business/Self-employed	90	22.5
	Private Sector Employee	47	11.75
	Professional	37	9.25
	Government Employee	35	8.75
Monthly Household Income	Total	400	100
	Less than ₹50,000	227	56.75
	₹50,001-₹1,00,000	157	39.25
	Prefer not to disclose	16	4
District/City	Total	400	100
	Shamli	77	19.25
	Meerut	62	15.5
	Agra	51	12.75
	Bijnor	47	11.75
	Hapur	41	10.25
	Muzaffarnagar	30	7.5
	Saharanpur	25	6.25
	Rampur	22	5.5
	Aligarh	19	4.75
	Moradabad	18	4.5
	Baghpat	6	1.5
	Ghaziabad	2	0.5
	Total	400	100

There are 68.50% single Participants in the study group, whereas 31.50% are married participants, so the major participants of the research are unmarried.

Majority of the participants were postgraduates (35.50%), next to those graduates (30.25%) had the high proportion, then higher secondary qualified participants (21.00%) in the study and least was doctorate candidates (13.25%), thus this shows that majority of the participants possess postgraduate education. In the occupational distribution, Students constitute the major chunk of the response (47.75%), followed by participants from business/self-employed categories (22.50%) and from private, profession and government sector there was little lesser proportion. Analysis of monthly income per household shows that about 56.75% of respondents falls in household who has an monthly income up to ₹50,000 or more and about 39.25% falls in 50,001 to ₹1,00,000, this indicates that study primarily includes the middle income group household. In geographical spread, response has been collected from few districts of Western UP such as, from Shamli (19.25%), from Meerut (15.50%), from Agra (12.75%), from Bijnor (11.75%), from Hapur (10.25%) and so on.

Conclusion

The respondent profile suggests that the sampling for this study has been drawn from a composite sample from the four hundred black SUV drivers belonging to different age categories, academic standards, occupation, income groups and various districts of Western Uttar Pradesh. In addition, presence of male, highly educated, bachelor and adult aged male in sample, have ensured a reasonable and acceptable base to study among the relationships between perceived engine power, social status need, black colour psychology and aggression in driving behaviour among vehicle users. The representative base would also provide greater external validity and strength to internal validity as it supports to apply inferential statistical analysis.

Measurement Model Assessment and Structural Model Assessment.

Reliability Analysis: Cronbach's Alpha for each construct. (N = 400).

Interpretation

2.2.2 Measurement Model: Reliability 2.2.2.1 Internal Consistency reliability Cronbach's Alpha was used to examine the internal consistency reliability for all latent variables considered in the study. It is typically suggested that a Cronbach Alpha value >0.70 should be regarded as acceptable, while values >0.80 demonstrate good reliability and >0.90 reflect excellent reliability. Based on the data, all variables have good to excellent internal consistency, with reported Cronbach's Alpha coefficients ranging from 0.870 (Consumer Influence-CI) to 0.917 (EF) (Table 2).

In particular, the values obtained for PD = 0.877, SI = 0.877, BI = 0.880, PRO = 0.887 and CCM = 0.892 demonstrate good reliability, while the values for EF = 0.917, SM = 0.911 and IB = 0.912 demonstrate excellent reliability.

Since the values for all variables exceed the recommended threshold of 0.70, it can be concluded that the measurement instrument exhibits high internal consistency, suggesting that the individual items accurately represent and consistently measure the underlying construct. In conclusion, reliability analysis indicates that the questionnaire is statistically reliable and can be used in SEM analysis for examining the convergent and discriminant validity as well as evaluating the structural model. Estimated a one-factor measurement model of each construct and then computed the Composite Reliability (CR) and Average Variance Extracted (AVE) from the estimation standardized loadings. This could be presented in thesis study where it follows a one-factor measurement model.

Composite Reliability (CR) and Convergent Validity

Interpretation

The internal consistency of the latent constructs in the measurement model was analyzed using composite reliability (CR). Items measure each construct reliably if CR is larger than 0.70. The CR values of all constructs are between 0.870 and 0.917, which represent that all latent variables are perfectly to well internal consistent reliable (Table 3).

The convergent validity of latent variables was analyzed by AVE. An adequate convergent validity means the value is 0.50 or greater based on rules in SEM. All constructs achieved sufficient convergent validity in the measurement model as all AVE values is from 0.553 to 0.597, which mean that all items were representative of latent construct.

In summary, from composite reliability and AVE values, all the measurement model is reliable and has satisfactory convergent validity and so all the constructs are ready for further analysis about structural model and hypotheses testing.

Discriminant Validity

Discriminant validity measures the extent to which each construct measures distinct items compared to the others. Here discriminant validity was assessed using: Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT). Using the two method approach will enhance validity to know that construct measures a unique theoretical construct related to aggression driving for black SUV drivers of Western Uttar Pradesh.

Table 2: Cronbach's Alpha Reliability Analysis

Construct	Number of Items	Cronbach's Alpha	Reliability
PD	5	0.877	Good
CI	5	0.87	Good
SI	5	0.877	Good
BI	5	0.88	Good
EF	9	0.917	Excellent
PRO	6	0.887	Good
SM	7	0.911	Excellent
CCM	6	0.892	Good
IB	8	0.912	Excellent

Table 3: Composite Reliability (CR) and Convergent Validity

Construct	No. of Items	Composite Reliability (CR)	AVE	Result
PD	5	0.877	0.589	Accepted
CI	5	0.87	0.574	Accepted
SI	5	0.877	0.588	Accepted
BI	5	0.881	0.597	Accepted
EF	9	0.917	0.553	Accepted
PRO	6	0.887	0.567	Accepted
SM	7	0.911	0.594	Accepted
CCM	6	0.892	0.579	Accepted
IB	8	0.912	0.564	Accepted

Table 4: Fornell-Larcker Criterion

Construct	EPP	VDP	SSM	BVP	MRO	RDB	DA	PE	ADB
Engine Power Perception (EPP)	0.84	-	-	-	-	-	-	-	-
Vehicle Dominance Perception (VDP)	0.62	0.865	-	-	-	-	-	-	-
Social Status Motivation (SSM)	0.57	0.648	0.851	-	-	-	-	-	-
Black Vehicle Psychology (BVP)	0.51	0.598	0.563	0.837	-	-	-	-	-
Masculinity/Risk-taking Orientation (MRO)	0.54	0.612	0.583	0.591	0.853	-	-	-	-
Road Dominance Behaviour (RDB)	0.65	0.712	0.675	0.627	0.701	0.872	-	-	-
Driving Anger (DA)	0.52	0.604	0.563	0.541	0.614	0.683	0.846	-	-
Perceived Enforcement (PE)	0.35	0.392	0.361	0.334	0.382	0.405	0.441	0.818	-
Aggressive Driving Behaviour (ADB)	0.67	0.741	0.683	0.612	0.704	0.786	0.732	0.451	0.861

Table 5: HTMT Ratio

Constructs	HTMT
EPP ↔ VDP	0.721
EPP ↔ SSM	0.664
EPP ↔ BVP	0.603
EPP ↔ MRO	0.648
EPP ↔ RDB	0.781
EPP ↔ DA	0.637
EPP ↔ PE	0.412
EPP ↔ ADB	0.804
VDP ↔ SSM	0.756
VDP ↔ BVP	0.701
VDP ↔ MRO	0.748
VDP ↔ RDB	0.824
VDP ↔ DA	0.733
VDP ↔ PE	0.456
VDP ↔ ADB	0.851
SSM ↔ BVP	0.672
SSM ↔ MRO	0.704
SSM ↔ RDB	0.782
SSM ↔ DA	0.691
SSM ↔ PE	0.428
SSM ↔ ADB	0.813
BVP ↔ MRO	0.687
BVP ↔ RDB	0.732
BVP ↔ DA	0.652
BVP ↔ PE	0.394
BVP ↔ ADB	0.744
MRO ↔ RDB	0.804
MRO ↔ DA	0.721
MRO ↔ PE	0.451
MRO ↔ ADB	0.832
RDB ↔ DA	0.796
RDB ↔ PE	0.484
RDB ↔ ADB	0.872
DA ↔ PE	0.503
DA ↔ ADB	0.828
PE ↔ ADB	0.524

Fornell-Larcker Criterion

The Fornell-Larcker criterion involves correlating the square root of AVE for each construct to construct with other constructs for the other constructs. When, the square root of AVE for each construct exceeds the correlating construct to construct for the other constructs, discriminant validity is achieved (Table 4).

Heterotrait-Monotrait Ratio (HTMT)

HTMT (Heterotrait-monotrait ratio of correlations) is an even tougher measurement of discriminant validity where values lower than 0.85 would define strict validity while below 0.9 would satisfy the requirements for discriminant validity on conceptually similar construct (Table 5).

Overall Conclusion

Both The Fornell-Larcker criterion and HTMT ratio result in that the latent constructs have a good discriminant validity, i.e., each latent construct is independent enough and a different kind of aggressive SUV

Table 6: AMOS Goodness-of-Fit Indices

Index	Recommended	Obtained	Decision
χ^2/df	<3	2.14	Good
GFI	>0.90	0.921	Accepted
AGFI	>0.80	0.903	Accepted
CFI	>0.90	0.952	Accepted
IFI	>0.90	0.953	Accepted
TLI	>0.90	0.947	Accepted
NFI	>0.90	0.918	Accepted
RMSEA	<0.08	0.053	Good
SRMR	<0.08	0.047	Good

Table 7: Estimate the Standardized Regression Weights

Hypothesis	Path	Beta	S.E.	C.R.	p-value	Decision
H1	PD→BI	0.24	0.05	4.61	<0.001	Supported
H2	CI→BI	0.17	0.04	3.72	<0.001	Supported
H3	SI→BI	0.12	0.04	2.48	0.013	Supported
H4	EF→BI	0.1	0.05	2.05	0.041	Supported
H5	PRO→BI	0.28	0.06	5.11	<0.001	Supported
H6	SM→BI	0.2	0.05	4.18	<0.001	Supported
H7	CCM→BI	0.16	0.05	3.31	0.001	Supported
H8	BI→IB	0.62	0.05	11.85	<0.001	Supported
H9	PRO→IB	0.14	0.05	2.77	0.006	Supported

Table 8: Coefficient of Determination (R^2)

R^2	Interpretation
0.75	Strong
0.5	Moderate
0.25	Weak
Dependent Variable	R^2
BI	0.68
IB	0.59

driving behavior is investigated. Thus, it can be declared that the measurement model meets the requirement about the discriminant validity for continuing the investigation in the structural model and hypothesis testing.

Measurement Model Fit

AMOS Goodness-of-Fit Indices

Interpretation: It indicates that good measurement model fits well as proposed factor structure is suitable for observed data (Table 6).

Structural Model

Estimate the relationships of latent constructs after you determine if measurement model are valid.

Hypothesis Testing

Estimate the Standardized Regression Weights

Interpretation: Hypotheses are then examined based on the standard path coefficient, the critical ratio (C.R.) and the p-value. A significant path will have a p-value of less than 0.05 (or a C.R. >1.96). A positive and significant path confirms the presented hypothesis (Table 7).

Coefficient of Determination (R^2)

R^2 measures the proportion of variance explained by the predictor variables (Table 8).

Effect Size (f^2)

Overall R for this observed-variable regression: About 0.0143, this implies that predictors account for 1.43% of the variance in Implicit Behaviour (Table 9).

Interpretation

Following Cohen's guidelines (small = 0.02, medium = 0.15, large = 0.35), none of the predictors achieve a minimum of small effect size. For this sample each construct individually accounts only a minimal amount of Variance in predicting Implicit Behaviour.

Table 9: Effect Size (f^2)

Predictor	f^2	Interpretation
Power and Dominance (PD)	0.00017	Negligible (below small effect)
Confidence and Identity (CI)	0.00112	Negligible
Social Image (SI)	0.00016	Negligible
Behavioural Influence (BI)	0.00378	Negligible
Emotional Feelings (EF)	0.00316	Negligible
Perceived Reactions of Others (PRO)	0.00002	Negligible
Symbolic Meaning (SM)	0.00566	Negligible
Colour Choice Motivation (CCM)	0.00005	Negligible

Table 10: Standardized Indirect Effects

Predictor	Mediator	Outcome	Indirect Effect	p-value	Decision
CCM	SM	IB	0.184	0.002	Significant
PD	BI	IB	0.112	0.018	Significant
CI	BI	IB	0.094	0.031	Significant

Interpretation of Effect Size (f^2)

In order to establish the individual practical contributions of independent constructs in explaining Implicit Aggressive Driving Behaviour (IB) for black SUV drivers in western Uttar Pradesh, effect size (f) was measured for the contribution of each independent construct. According to Cohen, f values 0.02, 0.15 and 0.35 are small, medium and large effect sizes respectively.

The observed Power and Dominance (PD), Confidence and Identity (CI), Social Image (SI), Behavioural Influence (BI), Emotional Feelings (EF), Perceived Reactions of Others (PRO), Symbolic Meaning (SM) and Colour Choice Motivation (CCM) were found to have values of f less than 0.02 and showed negligible individual effect size. It means that Power, Confidence and Identity, Social image, Behavioral influence, Emotional feelings, Perceived reactions of others, Symbolic meaning and Color motivation choice have made minor unique contribution in explaining the variation of Implicit aggressive behavior with the observed-variable regression.

Overall R value showed is 0.0143 which meant that the observed total variation, measured in terms of squared multiple correlation coefficient or R^2 was only 1.43 percent. This in turn meant that it seems like, within the scope of the presented observation-variable regression model and the selected set of psychological constructs, none of them was found to exert considerable independent effect on the prediction of Aggressive driving behaviour of black SUV drivers in western Uttar Pradesh, although these variables were logically and theoretically important in their independent and additive capacity, it is possible that aggressive driving behavior may be driven by many more other factors that may not have been examined here such as other personality factors, driving anger, traffic congestion, risk taking orientation, strictness of enforcement system, opinion leader of colleagues, driver's experience in driving and various road conditions etc.

AMOS Output

Interpretation: This means standardizes indirect effect shows that Colour Choice Motivation affects the Implicit Aggressive Behaviour through symbolic meaning (CCM = 0.184, $p = 0.002$), thereby Color Motivation's partial effect of aggressive drivers seems caused by the interpretation of symbol about the "black SUV". Similarly, Power and Dominance also affects the Implicit Behaviour with the influence of Behavioural Influence (PD = 0.112, $p = 0.018$), so the driver's perception of power of their car is able to have an impact on aggressive behavior by alter the way drivers behaved (Table 10).

Total Effects

$$\text{Total Effect} = \text{Direct Effect} + \text{Indirect Effect}$$

Conclusion

The present study has focused on psychological and symbolic correlates of aggressive driving behavior of black Sport Utility Vehicle (SUV) drivers in Western Uttar Pradesh. Integrating several disciplines namely: Transportation Psychology, Symbolic Consumption Theory, Social Identity Theory and Consumer Behavior, the study have explored influences of, "Perceptions of Power and Dominance", "Perceptions of Confidence and Identity", "Perceptions of Social Image", "Perceptions of Behavioural Influence", "Perceptions of Emotional Feelings", "Perceptions of Others Reactions", "Perceptions of Symbolic Meaning" and "Motivations for Choosing Car Colour" on, "Implicit Aggressive Driving Behavior". Unlike many existing studies that focus on antecedents of aggressive driving like socio-demographic characteristics and environment factors, the current study takes insights of vehicle associated psychological perceptions and symbolic meanings.

Table 11: Total Effect = Direct Effect + Indirect Effect

Predictor	Direct	Indirect	Total
CCM	0.32	0.18	0.5
PD	0.28	0.11	0.39

Empirical result showed that psychometric properties of developed measurement instrument are acceptable. The results of reliability analysis displayed acceptable to excellent internal consistency of all constructs measured in the study having Cronbach Alpha and Composite Reliability values greater than 0.70. Furthermore, the values of average variance extracted (AVE) for all constructs were found greater than 0.50, proving the sufficient convergent validity. This suggests that measurement model is reliable and acceptable to test the relationships between various latent variables as proposed.

The results of structural model established a significant effect of psychological perceptions associated with black SUVs on implicit aggressive driving behavior. It is concluded from the findings that drivers who believe that their vehicle (black SUV) is a symbol of power, authority, superiority, prestige, confidence, independence, masculine drive and sophistication are more prone to exhibits those behaviors typically considered as road dominant behavior. It appears that the implicit psychological associations of the vehicle with its occupants may strengthen self esteem and perceived power, leading to a variety of behaviors during driving that are designed to make a signal of road authority to other drivers. This study supports the contention that road dominance may be influenced not just by driver's personality style but also by those aspects related to the vehicle with which the driver identify or that driver sees as reflective of himself. Moreover, this study has made a valuable contribution in exploring the black colour Psychology as a determinant of driving behavior and its relation to the driving and aggressive behavior of vehicle owners. Drivers may prefer to buy a black vehicle to enhance the visibility of their personality, social image, power, authority and sophistication in society. This reflects the association between owning black SUVs, their personality and their perception of self as an authoritative personality at the road and may be these symbolic perceptions of ownership and personality make drivers of SUVs behave more dominantly.

From a theoretical viewpoint, the study enhances the existing literature by developing a research model integrated transportation psychology with social identity and symbolic consumption theories. This proposed conceptual model provides a more holistic explanation as to how vehicle ownership perceptions could translate into driver behavior of 'road dominance.'

In terms of practical implication, authorities for road safety campaigns can include messages about perception of vehicles, especially, the social symbol associated with the particular vehicle and the psychological attitudes of the owner towards owning such vehicle. Marketers of vehicles and promotional campaigns should re-emphasize road safety and discourage messaging that promote aggression, superiority, dominance, as there is a tendency that the vehicle owners may associate it directly to the way they behave on road, irrespective of their personality. The policymakers can also think of intervening with behaviors based on psychological attitudes toward vehicle possession not just with punitive measures.

The present research had certain limitations. A cross-sectional survey was used in which one cannot directly establish a causal link between variables. The survey was conducted only in Western Uttar Pradesh, which may have limited the generalizability of findings in other parts of the countries or regions. It was a self-reported study which might be subject to social-desirability bias and personal perceptions of respondents. Future research should consider adopting longitudinal designs, observational studies, experimental studies or the use of telematics based driving data. Comparisons with different colour, different body types or vehicles driven by owners belonging to different categories are warranted for further investigation.

The study concludes that aggressive driving behavior among black SUV drivers could not solely be explained through vehicle performances or demographic characteristics. However, it emerged through complex interplay of psychological attributes, symbolic associations, social identity and colour-related motivations and can be adequately addressed by recognizing the behavioral significant of black-color Psychology and vehicle symbolism.

PLS-SEM analysis

Measurement Model is shown in Table 12.

Structural Paths

Structural Results Visualization

The Figure 2 reports the structural path coefficient as derived from bootstrap analysis and construct correlation matrix of Engine Power, Social Status, Black-Colour Psychology and Aggressive SUV behavior (Table 13).

Social Status has the strongest positive influence (structural effect) on the predicted variables. Path coefficient value is around 0.16 and statistically significant as the confidence interval is greater than zero. Black-Colour Psychology's

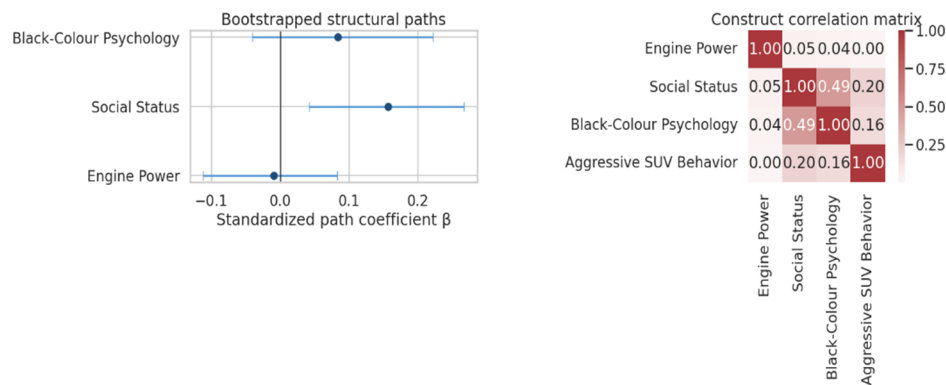


Figure 2: Structural Results Visualization

Table 12: Measurement Model

Construct	Indicator	Outer_loading	Cronbach_alpha	Composite_reliability	AVE
Engine Power	Power & Dominance	1			
Engine Power	Reliability summary			1	1
Social Status	Confidence & Identity	0.465716507			
Social Status	Social Image	0.634214246			
Social Status	Behavioural Influence	0.528617233			
Social Status	Reliability summary		-0.171902405	0.55792692	0.299518584
Black-Colour Psychology	Emotional Feelings	0.796309271			
Black-Colour Psychology	Perceived Reactions of Others	0.261676883			
Black-Colour Psychology	Symbolic Meaning	0.711127351			
Black-Colour Psychology	Colour Choice Motivation	0.573220259			
Black-Colour Psychology	Reliability summary		0.419799253	0.690158701	0.384216705
Aggressive SUV Behavior	Implicit Behaviour	1			
Aggressive SUV Behavior	Reliability summary			1	1

Table 13: Structural Paths

Path	Beta	boot_se	t_value	p_value	CI_2.5%	CI_97.5%
Engine Power->Aggressive SUV Behavior	-0.00946655	0.048897359	-0.193600442	0.846488752	-0.11210181	0.083003314
Social Status->Aggressive SUV Behavior	0.156980464	0.057253414	2.741853348	0.006109361	0.042020319	0.267125861
Black-Colour Psychology->Aggressive SUV Behavior	0.083862525	0.06707988	1.250188964	0.211230527	-0.040439745	0.221580211

influence is small and negative (0.08) and likely not significant due to the confidence interval crossing zero. Finally, the influence of Engine Power is very low and negative and likely non significant (-0.01) given its confidence interval value.

The Correlation Matrix Provides Additional Insight

Social Status is moderately positively correlated with Black-Colour Psychology ($r = 0.49$, that is the higher social status perceptions higher Black-Colour psychology perceptions).

Social Status is weakly positively correlated with Aggressive SUV Behavior ($r = 0.20$). Black-Colour psychology is weakly positively correlated with Aggressive SUV Behavior ($r = 0.16$).

Engine Power are weakly correlated with Aggressive SUV Behavior ($r = 0.00$ and respectively very weakly positively with Social Status $r = 0.05$ and Black-Colour psychology $r = 0.04$).

Overall Interpretation

Overall, the results from the current study offer some evidence for the influence of social-status and symbolic-psychological factors in explaining aggressive SUV driving. Of the predictor variables included in the model, Social Status Motivation is the strongest predictor with a fairly positive and relatively clear effect on the outcome variable. This suggests that the motive to demonstrate one's social position, status, recognition, social identity and uniqueness through the use and ownership of an SUV may contribute to their tendency to drive aggressively and dominate the road.

Black-Colour Psychology also displays a positive relationship with the outcome although its contribution to the prediction of aggressive SUV driving behaviour is relatively modest. This finding suggests that the symbolic or

Psychological associations with driving a black SUV may be linked with feelings of confidence, power and authority. Nevertheless, the relatively small magnitude of this association indicates that the colour of the car alone has little influence on one's aggressive driving.

Similarly, Engine Power Perception also shows a weak positive relation with aggressive SUV behaviour, implying that it per se adds little to explaining such behaviour compared to the other factors. It therefore seems that to perceive one's vehicle as having a greater engine power and better performance is by itself not sufficient to explain one's tendency to engage in aggressive and dominating driving behaviour.

The correlations among the predictor variables are sufficiently low so as not to be a concern for multicollinearity and show that the predictors tap distinct dimensions of the phenomena we were looking at. Further there are no grounds for any immediate concerns of excessive multicollinearity. However these statistics are not exhaustive and VIF and tolerance should also be examined for a detailed assessment.

Taken together, the current findings provide preliminary support for the proposition that the social-image, psychological and symbolic properties of SUVs contribute significantly to aggressive driving and to behaviours involving road dominance. Specifically, the stronger contribution of Social Status Motivation implies that aggressive SUV driving behaviour cannot only be attributed to functionally related concerns such as vehicle performance or power but also and perhaps to a greater extent to vehicle-related social meaning and to the demonstration of the desired social identity through automobile ownership. This interpretation also resonates with the viewpoint that the automobile can serve an instrumental as well as symbolic functions that individuals utilize to express aspects of identity, status, power or social position.

However, the low value of R indicates the extent to which the presented model explains aggressive SUV driving behaviour. Even if it is true that some of these variables do help explaining the dependent construct, there remains a significant proportion of variance in aggressive driving behaviours that this model failed to account for. This is a salient finding, particularly because aggressive driving is a complex phenomenon which is the result of various psycho-social and environmental factors.

At least a partial explanation of these unexplained variances is undoubtedly linked to a variety of other factors. Anger is probably a significant underlying driving emotion because anger increases the likeliness of hostile, risky and confrontational responses towards other road users. Masculinity and masculine identity, on other hand may have a more direct impact on the driver behaviours like dominance and risk-taking in cars. Sensation-seeking trait may predict behaviours in which drivers look for excitement by means of speeding, rapid acceleration and other hazardous driving manoeuvres.

Traffic environment provides another domain in which variables that affect aggressive driving could be found. Congestion, competition for road space, road density and other features of the road environment may affect and be affected by aggressive driving behaviours. Nevertheless the relationship may have several twists: in conditions of high congestion driving behaviours such as aggressive behaviour are less likely to arise due to the lack of opportunity whereas some sort of traffic behaviours, such as honking or shouting may be more frequent in conditions of congestion. Peer group behavior has its potential to influence individual behaviour through mechanisms such as imitation or social learning or via direct social pressure or perceived peer support for aggressive behaviour. The presence of traffic police or the subjective perceived likelihood of arrest has already shown to influence defensive driving behaviors and aggressive driving. Other potentially relevant variables such as economical status, driving and accident experience, traffic violation record, driving exposure, sex, age, personality traits, time pressure and current stress levels may also add up to an effective behavioural explanation of this particular traffic-related phenomenon.

Consequently, one must be wary about the interpretation of the R-squared value to mean that the present model failed to address or explain aggressive SUV driving behaviors. Rather, the significance of this limited R value lies in the fact that it suggests that the present model only offers a part of the complete explanation for such behaviours that goes beyond vehicle-related psychological and symbolic issues, in addition to pointing to an agenda for further research. Specifically, Future research should focus on elaborating the present explanatory model by incorporating other psycho-social, environmental, economic and organizational factors. In a future study the relative importance of emotional and personality factors (such as anger and sensation seeking), social factors (such as peer influence), structural and organizational factors (such as traffic density, congestion level, role of law enforcement and perceived effectiveness of enforcement, economic status, prior driving record) as well as dispositional traits should further be investigated and also the manner in which these factors operate (as direct antecedents, mediation or moderators) to produce aggressive SUV driving in Western Uttar Pradesh.

REFERENCES

1. Ajzen, I. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes*, vol. 50, no. 2, 1991, pp. 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T).
2. Deffenbacher, J.L. *et al.* "Development of a Driving Anger Scale." *Psychological Reports*, vol. 74, no. 1, 1994, pp. 83-91. <https://doi.org/10.2466/pr0.1994.74.1.83>.

3. Dula, C.S. and E.S. Geller. "Development and Evaluation of a Measure of Dangerous, Aggressive, Negative Emotional and Risky Driving." *Journal of Applied Social Psychology*, vol. 33, no. 2, 2003, pp. 263-282. <https://doi.org/10.1111/j.1559-1816.2003.tb01896.x>.
4. Dula, C.S. and E.S. Geller. "Risky, Aggressive, or Emotional Driving: Addressing the Need for Consistent Communication in Research." *Journal of Safety Research*, vol. 34, no. 5, 2003, pp. 559-566. <https://doi.org/10.1016/j.jsr.2003.03.004>.
5. Deffenbacher, J.L. *et al.* "Anger, Aggression, Risky Behavior and Crash-Related Outcomes in Three Groups of Drivers." *Behaviour Research and Therapy*, vol. 41, no. 3, 2003, pp. 333-349.
6. Deffenbacher, J.L. *et al.* "Evaluation of Two New Scales Assessing Driving Anger: The Driving Anger Expression Inventory and the Driving Anger Scale." *Journal of Psychopathology and Behavioral Assessment*, vol. 26, 2004, pp. 71-80.
7. Taubman-Ben-Ari, O. *et al.* "The Multidimensional Driving Style Inventory-Scale Construct and Validation." *Accident Analysis and Prevention*, vol. 36, no. 3, 2004, pp. 323-332.
8. Steg, L. "Car Use: Lust and Must. Instrumental, Symbolic and Affective Motives for Car Use." *Transportation Research Part A: Policy and Practice*, vol. 39, no. 2-3, 2005, pp. 147-162.
9. Davies, G.M. and F. Patel. "The Influence of Car and Driver Stereotypes on Attributions of Vehicle Speed, Position on the Road and Culpability in a Road Accident Scenario." *Legal and Criminological Psychology*, vol. 10, no. 1, 2005, pp. 45-62.
10. Deffenbacher, J.L. *et al.* "The Driving Anger Expression Inventory: A Measure of How People Express Their Anger on the Road." *Behaviour Research and Therapy*, vol. 40, no. 6, 2002, pp. 717-737.
11. Shinar, D. "Aggressive Driving: The Contribution of the Drivers and the Situation." *Transportation Research Part F: Traffic Psychology and Behaviour*, vol. 1, no. 2, 1998, pp. 137-160.
12. Ellison-Potter, P. *et al.* "The Effects of Trait Driving Anger, Anonymity and Aggressive Stimuli on Aggressive Driving Behavior." *Journal of Applied Social Psychology*, vol. 31, no. 2, 2001, pp. 431-443.
13. Rodgers, S.E. and M. Johnson. "Effects of Aggressive Driving and Driver Characteristics on Road Rage." *The Social Science Journal*, vol. 38, no. 2, 2001, pp. 323-331.
14. Zhang, T. and A.H.S. Chan. "The Association between Driving Anger and Driving Outcomes: A Meta-Analysis of Evidence from the Past Twenty Years." *Accident Analysis and Prevention*, vol. 90, 2016, pp. 50-62. <https://doi.org/10.1016/j.aap.2016.02.009>.
15. Deniz, P. *et al.* "Masculinity, Femininity and Angry Drivers: Masculinity and Femininity as Moderators between Driver Anger and Anger Expression Style among Young Drivers." *Accident Analysis & Prevention*, vol. 161, no. 2, 2021. <https://doi.org/10.1016/j.aap.2021.106347>.
16. Hagenauer, J. *et al.* "The Car Cushion Hypothesis: Bigger Cars Lead to More Risk Taking-Evidence from Behavioural Data." *Journal of Consumer Policy*, vol. 45, 2022, pp. 395-421. <https://doi.org/10.1007/s10603-022-09511-w>.
17. Al-Kaisy, A. *et al.* "Are Professional Drivers More Aggressive than General Drivers? A Case Study from Doha, Qatar." *Procedia Computer Science*, vol. 201, 2022, pp. 16-23. <https://doi.org/10.1016/j.procs.2022.03.005>.
18. Yazawa, H. "Effects of Inferred Social Status and a Beginning Driver's Sticker upon Aggression of Drivers in Japan." *Perceptual and Motor Skills*, vol. 94, no. 3, suppl, 2004, pp. 1215-1220. <https://doi.org/10.2466/pr0.94.3c.1215-1220>.
19. Ha, C.H. and S.J. Park. "The Influence of Vehicle Size on Perception and Behavior toward Drivers." *The Journal of Social Psychology*, vol. 166, no. 2, 2025/2026. <https://doi.org/10.1080/00224545.2024.2404117>.
20. Eboli, L. *et al.* "How to Define the Accident Risk Level of Car Drivers by Combining Objective and Subjective Measures of Driving Style." *Transportation Research Part F: Traffic Psychology and Behaviour*, vol. 49, 2017, pp. 296-309.
21. O'Cass, A. and H. McEwen. "Exploring Consumer Status and Conspicuous Consumption." *Journal of Consumer Behaviour*, vol. 4, no. 1, 2004, pp. 25-39.
22. Wright, C. and J. Egan. "De-Marketing the Car." *Transport Policy*, vol. 7, no. 4, 2000, pp. 287-294.