

Study of Effect of Cognitive Behavioural Therapy for Drivers Improvement

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Abstract

This experimental research is to study effect of Cognitive Behaviour therapy for drivers' improvement. Cognitive Behaviour Modification based on the premises that negative thoughts, images or beliefs produce undesired or maladaptive behaviors and that clients can taught to modify these private events. Aggressive drivers tend to maintain negative dysfunctional beliefs with one or more biases in logical thinking that leads to increased risk taking.

Two hundred bus drivers selected randomly from five stations across the state. Tested with questionnaires, pre training and half of them assigned to special training, tested post training for their improvement. Next half assigned to control group without training and tested post training to asses the changes if any due to practice or any other factors in the same duration and compared. Result shows highly significant change in experimental group's attitude and behaviour in expected direction and hence this method is relevant for drivers' improvement.

Keywords

Cognitive behaviour therapy, Core belief, Drivers Improvement.

CHAPTER I

INTRODUCTION

Every year, around 1,200,000 people die and around 50,000,000 are injured or disabled in road traffic collisions worldwide (Pedden et al, 2004). In India, in 1970, 14,500 persons killed in road accidents, its number increased to 24,600 in 1980 and 54,100 in 1990 and 78,900 in 2000, it is 86,000 in 2003, and yearly death is more than 100,000 today. In terms of mortality per 10000 vehicles, the rate of accident death in India is as high as 14 as compared to less than two in developed countries. The cost of road crashes has assessed at one to two per cent of GDP in developed countries. A study by the planning commission in 2002 estimated the social cost of road accidents in India at Rs 55000 crore annually, which constitutes about 3% of the GDP (Sunder, 2007).

Road traffic injuries are predicted to increase by 83% in low- income and middle-income countries (if no major action is taken), and to decrease by 27% in high-income countries (WHO, 2004). In India during 1990 to 1997, 32.22% increase registered in road accident deaths and number of persons injured in road accidents from 1980 to 2002 has increased by 270.9%. At the same time, most of the developed countries like U.S and U.K. registered reduction in death and injury. One of the reasons behind this positive result was scientific intervention utilizing findings of continuous research in the field of Traffic Psychology.

As we know, mobility and traffic generate economic value and social well-being; they also have harmful consequences on the health. Motorized transport has become more and more affordable and accident rate increased. Reducing harmful effects of traffic and preserving its advantages requires serious control and organization. Technological parts of Transport system has considered the best that can be devise and hence concern centered on individual differences in competence in vehicle control. Among social sciences, psychology is essentially the instrument of knowledge of the “human factor” and more precisely, of man in action. This is why since the beginning of 20th century; Psychology brought to study driver’s abilities and mental structures. It has provided and continues to provide scientific knowledge in the fields of perception, cognition, emotion, attitudes, learning related to drivers. In addition, provide assistance to public administrations, companies and people with regard to driver’s education, communication, diagnosis and therapy (Barjonet, 2001). On Indian roads, insecurity and its human cost increasing considerably but such a scientific approach to this problem not received yet from both administration and scientific world, particularly from psychologists. Hence, this humble attempt is to bridge this gap as far as possible.

1. 1, The Driving Task

Driving a vehicle may be described as a dynamic control task in which the driver has to select relevant information from a vast array of (mainly) visual inputs to make decisions and execute appropriate control responses in order to achieve mobility with safety (Fuller,2002).

Driving is a skill-based, rule-governed, expressive activity and there are three aspects involved in being socialized into becoming a member of the driving community (Straddling and Meadows (2004).Parker and Straddling (2001)cited in Dorn,(2005) have suggested that drivers learn and develop their driving in three distinct phases: technical mastery, reading the road, and the expressive phase. It is in this final phase of development where drivers will start to commit violations.

Safe driving requires more than skilful vehicle handling. It requires technical intelligence to handle the vehicle, environmental intelligence to read the road, social intelligence to read the intentions of other road users and self-control to restrain those expressive tendencies, which result in the commission violations.

1.2. Can we reduce the Road Accidents

In 2000, the UK Government published a ten-year plan for road safety entitled 'Tomorrows Roads – Safer for Every one'. This set some ambitious targets; a forty percent reduction in the number of road deaths and serious injuries, a fifty percent reduction in children killed or seriously injured and a ten percent reduction in slight injury accidents. The same document advocated the wider use of retraining rather than punishment of drivers as one way to achieve these aims. The National Driver Improvement Scheme (UK) is a driver-retraining scheme based on this type of educational approach. The NDIS appears to be successful with the majority of drivers attending the scheme improving their attitude to the driving task and improving their observational skills, at least in the short term. Such Driver Improvement Programme could be more successful at reducing accidents if it was used more widely before an accident is related to, but distinguishable from what you drive. Style of driving typically varies with age, gender and experience, but some basic 'scripts' for driving (e.g. "I am a very skillful driver and can handle the best at speed" "Other drivers should look out for me rather than me look out for them") may persist throughout a driving career. When manner of driving has informed by 'bad attitude', the driver is dangerous. It is in this final phase of development where drivers will start to commit violations. A violation occurs when a driver engages in behaviour that they know to be unsafe, possibly to gain a short-term advantage.

1.3. Practice and improvement in safe driving

Practice is crucial for skill to develop. Although it has been known for a very long time it is now much more widely recognized not only that practice is a good thing but also that there is a lawful relationship between the amount of practice an individual has had and their ability to perform a task. In relation to driving, we have shown that success on a task is a power function of the amount of practice some one has had. It means that performance will continue to improve given practice, but the rate of improvement will continually slow. It also implies that performance continually improves but never reaches perfection. In other words, practice makes us better, not perfect.

It is important to realize that with a complex task such as driving not all the components of the task will necessarily improve at the same rate. Different parts of the task has learned at different rates, implying that driving is not really one single simple task, but several tasks, all of which may need to be performed at the same time (Fuller, 2002).

1.4. Learning After Licensing (re training)

Few would draw the easy conclusion that once training has completed and a License to drive had awarded, that learning is complete. However, as explained above, the acquisition of driving skills is a power function of the amount of practice or experience of driving. Learning will never be complete. In fact, by virtue of driving skills developing as a power function of experience; all skills will be gradually changing. The appreciation of danger and safe handling of exposure to risk were the elements, which changed most slowly of all during training. In effect, the skills required to be safe hardly change at all during training, because when learning, drivers drive too little to be exposed to risks for which they can develop a competence in handling and it is only by interacting with and responding to events that we learn effectively. This suggests that safety should increase as a function of time spent driving, through direct exposure to risks and learn to avoid them. A discernible change will really only be observed some time after drivers have completed their training and this learning through direct experience may be attained while encountering a dangerous accident with irreparable loss and heavy cost. Hence, a retaining to improve skills mainly to handle risks, recognize hazards and avoid accidents is highly advisable (fuller, 2002).

1.5, Driver Control by consequences and its problems:

Perhaps the most direct application of behaviour analysis to enhance safe Driving Behaviour is with rewarding and punishing consequences, the former to establish and maintain safe behaviour and the later to discourage unsafe behaviour. The fundamental problem here is that a potentially unsafe behaviour for the driver, such as high speed can have rewarding consequences (e.g. avoiding

being late for an appointment) as well as punishing ones (Accidents). The rewarding consequence is typically fairly certain (reaching early); the punishment (accident) is typically uncertain and rare, if not improbable. The issue then is how to change the balance between these competing consequences in favour of supporting safer behaviour (Fuller, 2002).

1.6. Learning and Driving: An incomplete but continuing story

Learning is something we all readily recognize is necessary for people to be able to drive well and safely, but it is something, which must occur if we are to drive at all. Less obvious, but equally important is the fact there we continue to learn through our career as drivers, and that we do so as a consequence of the experience we gain from participating in the traffic system. Although there are inherited biological constraints on the success we are likely to achieve on the vast majority of tasks we perform, skilled performance depends over whelming on learning. Learning results in a lasting change in an individual's capacity to perform.

1.7. Learning as a Continuous Process

Of course, the task of learning to drive does not start with a blank canvas. It has situated in a life history of the individual in which many relevant elements have already assimilated. He will also have observed events as both a vehicle passenger, a viewer of action movies and observing other drivers, playing aggressive computer driving games. He will also bring to the driving task an acquired knowledge base derived from experience in environments other than the road way. Such knowledge is important for the developments of (un) safe driving.

How we behave as drivers on the roadway is also continuously subject to control by its consequences. If risk-taking achieves desirable rewards (such as the saving of time), this behaviour will reinforce. Similarly, rule following will tend to be abandoned where experience shows the consequences of rule following are not what is expected. Hence drivers are more likely to ignore speed limits and even traffic signals when streets are deserted, such as in the early hours of the morning, because of the low probability of punishing consequences to these behaviors(Fuller, 2002)..

1.8. Learning opportunities:

The fundamental problem for the young driver has to do with learning, from control skills to road reading. Clearly one of the most, if not the most salient problem for the in experienced driver is the sheer lack of exposure to the contingencies of the driving situation, to the relationships between antecedent conditions, the driver's responses to them and the consequences of those responses. Adding to this problem for the inexperienced driver is that many dangerous contingencies have a relatively low frequency of occurrence, yielding little opportunity for learning through direct experience of them.

From behavioural theory, we can predict that every time a driver takes risks, either knowingly or unknowingly and "gets away with it" without undesirable consequences, then that behaviour will reinforce; that is, made more probable in similar circumstances in the future. As Summala (1988) expressed it, "every successfully terminated trip reinforces the (associated) behaviour, which the driver feels safe and rational". Hence all these behaviours, learned in one or other way, can be better modified before it will end in grave and irreparable loss due to accidents, and learn incidentally too late.

1.9. Human Factors and Driving

Competence at a task such as driving a motor vehicle refers to what the driver is optimally capable of doing. It arises out of a combination of basic ability, training and experience. However, what the driver actually does at any moment of time, his or her actual driving performance, some

times falls short of this. Drivers, just like their vehicles, sometimes operate below their optimal level. Some of the characteristics of degraded performance are -

- ✓ A diminished ability to concentrate
- ✓ An increase in judgment errors
- ✓ An increase in failed detection of critical event
- ✓ Needless risk-taking
- ✓ Reduced regard for others safety

Those factors, which can intervene to undermine performance, collectively called human factors. Most road accidents linked to what somebody did or failed to do. Thus, the study of human factors clearly has enormous importance for road safety. There are three rather different levels at which a task such as driving can perform, a skill based level, a rule based level and a knowledge based level. No matter at what level a task has performed; human factors can undermine that performance. However, some human factors can undermine some levels more than others can. For example driving in very noisy conditions is more likely to interfere with knowledge-based performance (e.g. Solving a problem) than with skill based performance (e.g. changing gear) (R.Fuller, 2002)

1.10, Limits in sensation and perception

Our senses of course have bounded by performance limitations. If we cannot detect something with one or more of our senses, we are not going to be aware of its presence. Furthermore, in processing sensory information we may get both false sensations and false perceptions. False sensations some times occur when a receptor is in a fatigued state. False perceptions can arise from the properties of the stimulus or of the person doing the perceiving.

Another discrepancy between objective reality and our perception is the so-called “speed adaptation” effect, which arises from the immediate past experience of the person. Traveling for prolonged periods at high speed makes a slow speed seem considerably slower than it objectively is. This has implications for the management of driver’s speed on exit from high-speed roads such as National Highways. The likelihood is that drivers will approach the first pocket road bends and junctions at higher speed.

1.11, Limits in information processing

The capacity for information processing is limited. This limitation applied to the rate at which we can take information in and the amount we can keep in mind and use at any moment of time. If the amount of relevant incoming information exceeds the driver’s capacity, some of it will be lost. If the lost information is crucial (e.g. Sign indicating junction ahead), that loss could increase vulnerability of the driver to collision.

Information processing by our senses and by memory can degrade by factors such as fatigue, alcohol, stress and poor motivation. Information processing is also especially vulnerable to too high or too low arousal, as mentioned earlier. Under very high arousal, a driver may get tunnel vision – a very narrow focus of attention as if looking through a tunnel. The driver may also find that he or she replaces the right action with a wrong one, which is simpler and more practiced. This happens when Drivers of the vehicles particularly stage carriages compete on the road after quarrelling about timing and end in severe accidents.

1.12, Distraction: -

Information processing is also vulnerable to insufficient attention. Attention to a task can be diverting in number of ways, leading to performance error. One kind of diversion called attention capture. Attention captured by some non task-related stimulus such as your name called, an unexpected noise or something interesting going on around you.

Another kind of diversion of attention involves some sort of preoccupation with non task-related stimuli. During normal work about 10% of time, some times more has typically spent in irrelevant thoughts, in daydreaming and in fantasy. Attention can be distracted in this way by things going on in your head such as personal worries, reminiscences, thinking about event to come, fantasies, feeling uncomfortable and feeling tired.

1.13, Limits on decision-making

When making decisions, humans are prone to a number of biases, which can distort the outcome. These biases include biases of frequency, recency and confirmation. For example in driving, high frequency events on the road are more likely to be detecting than low frequency. Biases may be even more evident in the dynamic situation of real time driving. Under conditions of uncertainty, we can imagine the driver rapidly generating and testing hypotheses or expectations (such as the road direction beyond a 'blind' corner or hill top), reversing expectations as progressively more information becomes available. Sometimes critical decisions (such as speed or trajectory) based on incorrect hypotheses or expectations and there is no opportunity to recover the situation once the error has recognized. Taking bend at too high a speed and overtaking another vehicle, which, during the maneuver, turns into out pathway, are examples of this kind of expectation error.

1.14, Fatigue

The effect of fatigue may go no further than a psychological condition within the individual. However, they may extend to affect performance. Symptoms of fatigue include restricted field of attention, slowed or impaired perception, decreased motivation, subjective feelings of fatigue and task aversion and decreased performance in the form of irregularities in timing, speed, and accuracy.

Major causes of fatigue include inadequate rest or recovery from prolonged work and not enough sleep. Sleep loss over a number of nights can seriously affect performance. It is also stressful, partly due to the effort of trying to keep awake. Sleep loss can cause a person to fall briefly into sleep for seconds or shorter. These "micro sleeps" may not even be noticed. Hence, they can be dangerous when they occur during task, which require continuous attention such as driving. Although the driver will feel very drowsy before this happens, the onset of sleep happens suddenly. Crashes off the roadside or into other vehicles, without any evidence of attempting to brake, are evidence of having fallen asleep.

1.15, Alcohol and driving

Alcohol taken long before driving can still affect the driver, even several hours latter. This is because the body can only metabolize alcohol at a fixed rate, no matter how much has consumed. This rate is equivalent to about 1 bottle of beer an hour, although there are individual differences. Apart from loss of inhibition and co-ordination poor decision-making and drowsiness, alcohol can affect driving performance by brining the point of fixation of the driver—progressively closer to the front of the vehicle, as a result preventing effective detection of upcoming hazards, anticipatory reactions and planning. It is hardly surprising then that driving while intoxicated—frequently involves loss of control of the vehicle and is the largest single contributor to road accident.

1.16. Cognitive – Behavioural Treatment of alcoholism

In cognitive – behavioural therapy, therapists teach skills to enable patients to cope with situations and emotional states known to result in alcohol abuse. Patients practice drink–refusal skills, learn to manage negative moods and learn to cope with urges to drink.

Aversive conditioning is a behavioural technique employed in treating alcoholism. It is based on the principles of classical conditioning.

In covert sensitization uses aversive images and fantasies rather than shock or drugs.

Improved problem solving skills, particularly in the area of inter personal relations, learning how to anticipate and plan for stressful experiences and acquiring the ability to say “No thanks” when offered a drink have all shown to have therapeutic value for alcoholics. Assertive training is helpful to keep away from social or peer pressures to have a drink.

1.17. Emotion

Emotion affects performance largely by affecting the functioning of the nervous system and by distracting the driver from the task in hand. Some intense emotions such as anger, frustration anxiety and fear can produce a state of high arousal. Other emotional states such as depression and feelings of grief can be associated with low level of arousal. As mentioned earlier, performance tends to fall off at both ends of the arousal continuum. Both over and under arousing conditions can also undermine motivation.

1.18.Sensation – seeking

The relationship between personality construct ‘sensation – seeking’ and driver behaviour has been studied since 1970s. According to these results, decisions – regarding speed selection arise out of a broad range of possible motivational factors for example to arrive on time, to save time, to test the car’s limits or, last but not least, for the sheer sensation and thrill of speed and therefore to satisfy one’s sensation – seeking personality trait.

According to Zuckerman (1994) cited in Fuller, (2002) sensation – seeking is a trait that is – ‘characterized by the search for varied, novel and complex sensations and experiences and by the tendency to accept physical, social, legal and financial risks. Zuckerman regarded driving as the ‘most common form of sensation seeking in young men. While driving, these individuals may be particularly disposed to operate close to the critical limit. By approaching a certain threshold, accomplished and therefore dreary task, become complex and novel.

1.19. Impulsivity

Impulsivity is an urge or desire to act that is difficult to resist. While this sounds to be a simple proposition in fact, it is much more complex. We all have a different propensity for impulsive responding, the expression of which has modified by development, by the assimilation of societal rules, societal empathy and moral development and other general life experiences. Impulse control is therefore a reflection of this developmental process in transaction with this basic temperamental dimension. Impulsive individuals have shown to have significant difficulty delaying responding and switching to strategies that are more appropriate. Impulsive individuals have shown to tasks faster but less accurately.

1.20.Stress

Stress when driving can felt as a perceived difficulty in meeting driving task demands. Typical causes of stress for drivers given below, but a stressor make stress to one person may not be a stressor for another person. It depends on the coping skill and personality of the person.

- ❖ Work over load (inadequate recovery, demands which exceeds physical or mental capability)
- ❖ Time pressure (lateness, push to make up lost time)
- ❖ Social pressure (trying to 'prove' yourself to other. Feeling loss of self esteem through criticism by peers or others, conflict with others)
- ❖ Noise, Noise above 86dB(A) can cause annoyance, distraction, increased fatigue, increased mistakes, especially in demanding tasks and increased accident liability.
- ❖ Temperature When a person feels uncomfortably hot or uncomfortably cold, performance can deteriorate and mistake increase
- ❖ Get home – it is. This refers to hurry to complete a journey quickly and cease driving.

Apart from stresses during driving, there can be stresses out side of it. These may also affect driving performance. Examples of such stress are financial problem, family relationship problem, and health problem. If the drivers are unable to use proper coping strategy with skill it will affect driving performance.

1.21, Motivation

One of the human factors, which make for variability in performance, is motivation. When considering driving performance, motivation can express as the level of effort you are prepared to make to do the task effectively and safely. Poor motivation is likely to lead to a sloppy style of driving and a lack of concern for safety. A further problem is that conditions may arise which actually motivates unsafe behaviour.

1.22, Consequence, which can motivate risky behaviour

Since a primary goal of driving a motor vehicle is often that of reaching a destination by a certain time, saving of time becomes a priority when journey delays arisen. This has reinforced by social pressure (punishing consequences for being late) which drivers are motivated to avoid. Thus driving in ways, which may save time, become potentially rewarding options, and motivating potentially risky behaviour. If the passengers in the vehicle condone inappropriate behaviour, drivers discontinue this and adapt behaviour that is more appropriate.

1.23. Aggressive Driving

Aggressive driving is driving under the influence of impaired emotions, resulting in behaviour that imposes one's own preferred level of risk on others. This is aggressive because it assumes that others are capable of handling the same risk level and that one has the right to increase danger for others. There are three categories of impaired emotions.

1. Impatience and inattentiveness
2. Power struggle
3. Recklessness and Road Rage

The majority of Drivers drive in an emotionally impaired state at certain times some motorists drive in this state more often than others drive, and pose a serious risk to themselves and others. Driving violations can identify by reference to these three categories of impaired emotions. Each category of impaired emotion leads to different types of traffic violations.

At Colorado State University, counseling psychologist Jerry Deffenbacher, PhD, has studied anger and aggressive driving for nearly 20 years. His research has found that high-anger drivers (who identified themselves as such) differ from low-anger drivers in five key ways.

- They engage in hostile, aggressive thinking. They are more likely to insult other drivers or express disbelief about the way others drive. Their thoughts also turn more often to revenge, which sometimes means physical harm.
- They take more risks on the road. High-anger drivers are more likely to go 10 to 20 mph over the speed limit, rapidly switch lanes, tailgate, and enter an intersection when the light turns red.
- Not surprisingly, high anger drivers get angry faster and behave more aggressively. They are more likely to swear or name-call, to yell at other drivers, to honk in anger. In addition, they are more likely to be angry not just behind the wheel, but throughout the day.
- High-anger drivers had twice as many car accidents in driving simulations. They also report more near-accidents and get more tickets for speeding.
- Finally, short-fused drivers experience more trait anger, anxiety and impulsiveness. Perhaps from work or home stress, high-anger drivers are more likely to get in the car angry; they also tend to express their anger outward and act impulsively.

1.24. Effects and Remedy

Aggressive driving is on the increase. As a learned habit, this has transmitted from one generation to next and reinforced in the media. Unchecked, the incidence and severity of aggressive driving and road rage can expect to continue to rise. The re-education and continued training of the nation's whole drivers must be a priority along with strong enforcement programs. Given adequate training and motivation, most drivers can train themselves to be less competitive and more obedient to traffic regulations.

With out this training, drivers constantly find themselves in psychological states that are emotionally impaired driving. They cannot adequately deal with the rules of engagement on crowded streets and roads. Emotional disturbances at the wheel can be as dangerous as alcohol or drug impairment. It has believed that aggressive driving is largely a product of routinely driving in emotionally impaired states due to insufficient training; of course, there is a range from mild to severe degree of impairment. There is a diminished self-control and impaired judgment, due to emotions, that interfere with objective perception and lead to biased thinking.

Driving is emotionally challenging because unexpected things happen constantly, including dangerous things and being picked on. In addition, congestion intensified time pressure from delays and there is a greater diversity of drivers, some less competent than others. The rules of engagement on the road are harsh and competitive, even hostile. Most drivers find these conditions emotionally challenging and have trouble coping. Therefore, most people routinely drive in an emotionally impaired state. Drivers filled with competitive motives and explosive intentions that they are not fully aware. These motives and intentions are emotionally impaired states because they distort the drivers thinking and amplify the emotions beyond adequate self-control. Drivers use these emotions to engage in impulsive and risky behaviour, giving little thought to those they endanger by taking more risks. These emotions encourage drivers to be self-serving and opportunistic.

Training in Emotional Intelligence

Traditionally, driver education conceived as acquainting students with some general principles of safety, followed by a few hours of supervised hands-on experience behind the wheel, or on a driving simulator. Developing sound judgment and emotional self-control were not included as part of the drivers training, even though these goals were mentioned as essential for drivers. Most drivers today are untrained or under-trained, in cognitive and affective skills; cognitive skills are good habit of thinking and judgment. Affective skills are good habits of attitude and motivation. Drivers thus lack the necessary coping abilities such as how to cool off when angered or frustrated or how to cooperate with the traffic flow and not hinder it. This lack of training in emotional intelligence creates high stress conditions for most drivers.

Cognitive therapy suggests that psychological distress is caused by distorted thoughts about stimuli giving rise to distressed emotions. Cognitive therapy (or cognitive behavioural therapy) helps the client to uncover and alter distortions of thought or perceptions which may be causing or prolonging psychological distress. Cognitive therapy aims to help the client to become aware of thought distortions which are causing psychological distress, and of behavioural patterns which are reinforcing it, and to correct them.'

1.25. Personality Development

Since a healthy personality is not a part of the person's hereditary endowment but developed through learning and life experiences, almost every one can have a healthy personality. Thus, it is something the person must acquire for him, to do so requires motivation and know how. It has almost universally accepted that the key to good mental health is self-acceptance, while the chief cause of personality sickness is self-rejection.

Some of the major effects of self-acceptance on self-adjustments are apparent in the person's ability to recognize his faults, in his self-confidence and self-esteem, his willingness to accept criticism from others, his ability to make critical self-appraisals and to correct weakness he recognizes in himself. and his ability to be honest with himself as well as with others, his feelings of personal security, the ability to make effective use of his capacities and his ability to be satisfied with himself so that he does not want to be some one else. (Elizabeth B. Hurlock, 2004).

1.26. Speeding

Exceeding the speed limit is probably the most widespread violation today; high speeds have negative effects on the safety of road users, the efficiency of the traffic system and the environment (air pollution, noise). Non-compliance with speed limits is also one of the most extensively studied violations. Depending on the situation, type of the road, country and level of law enforcement, between 20% and 80% of all drivers exceed the indicated limits. Experts estimate that reducing the average speed by 5km/h causes fatal injuries to fall by 25%.

Why do drivers speed? What are the psychological reasons for speeding? According to Rothengatter (1990, cited in Siegerist and Roskova, 2001) "the pleasure of driving", traffic risk," "journey time," and "driving coast." Speeders and non-speeders differ on all four factors- drivers who exceed the speed limit believe this gives them more pleasure and do not accept that it will increase risk, and they value time more and coasts less than those drivers who observe the speed limit.

When choosing driving speed the influence of the behaviour of other drivers ("social comparison") probably also plays significant role, a driver will speed because the other drivers are speeding. Drivers believe speeding is acceptable and are prepared to act in accordance with these beliefs (attitude, beliefs).

The social utility of speed cannot contest, but it is interesting to analyze the perceptions and the way the individual experiences it. Speed and its limitations are central to the use of vehicles, not only as an instrument of mobility but also of social differentiation. Thus, when speed has regulated, this restricts the instrumental and social use of the vehicle. Speed is both an index of risk taking and the level of workload a driver is willing to accept. Speed can influence by sensory-motor abilities, cognitive activity, motivations, and attitude in the use of the vehicle and the road space. According to Rumar.R, (1999), there are several factors contributing to our under-estimation of the importance of speed from a safety point of view. we have no respect for speed in comparison to falling from a great height, speed is a behavioural variable with the highest correlations with crash risk as well as crash consequences; the relationship between speed and risk level is not linear. If speed is increased from 50 kmph to 100 kmph, the motion energy (KE) is increased not by a factor of 2 but by a factor of 4 and naturally consequence also increase geometrically.

1.27, Enforcement, is it influence the speed behaviour?

In general, we can say that enforcement is a necessary element of safety policy. Above a minimal level of police control, there is a relationship between the degree of enforcement and compliance: the more enforcement the more compliance. A measure of this minimal, critical level of control is the subjective likelihood of detection, which depends on the objective level of enforcement. Although enforcement is effective in changing behaviour, it only changes underlying psychological characteristics for a longer period if it has accompanied by information for drivers, by attitude-oriented campaigns and if enforcement itself kept above the critical level for an extended period.

1.28, Changing Attitudes and Behaviour

It is clear that many of the undesirable aspects of drivers' behaviours arose because of deliberate or intentional acts (as opposed to uncontrollable errors from say lack of experience). The positive aspect of this is that it suggests it might then be possible to change these deliberate behaviours, which are under volitional control. There have in essence been two approaches to promoting change in people by social psychologists and both approaches implicate the behaviour-attitude link. The first way involves changing individual's behaviour with the anticipation of change in the corresponding attitudes relating to that behaviour, which should then sustain the original behavioural change in the long term. Festinger suggested that consistency is central to the person. People need to achieve consonance between their attitude and behaviour. They may also need to justify to themselves why they are behaving in a new way (I am driving responsibly, because I am a responsible person).

A more common way to attempt behaviour change however seeks to change an individual's attitude or feelings first with the assumption that behavioural change will follow from this. The prominent social psychologist Carl Hovland sought with his co-workers to model the process of informational influence on attitude change. The Yale School as they were known, summarized the process as "who says what to whom with what effect in what context". In other words the key components they suggested that one should consider when evaluating the effectiveness of a message in changing behaviour are the characteristics of the message sender (or speaker), the message itself, the message receiver (or audience), the content of the message and the circumstances in which it was received and sent.

1.29, The theory of planned behaviour

At the core of much social psychological research is the relationship between attitudes and behaviour. Ajzen has maintained the relevance of attitude in social psychology largely through the development of a new model. This model known as the Theory of Reasoned Action (TRA) and it stresses the principle of compatibility. In other words, if one wishes to know the likelihood of someone engaging in a particular behaviour, one should measure the attitudes specific to that behaviour rather than general attitudes. This model suggests that in individual's intention to do something determined by his/her evaluation of the likely consequences of the behaviour as well as what they think those who are important to them think they should do. Later Ajzen modified the TRA to take account of the role of habit and self-efficacy in determining whether individuals would chose to engage in certain behaviours. He labeled his revised model the Theory of Planned Behaviour.

1.30, Driver Training and Road Safety

There are many ways, in which engineering interventions has used to combat the problem of road traffic collisions. In developed countries, they now have safer cars and safer roads, but the accidents are still taking place. In underdeveloped countries, the situation is far worse. In our lifetime, it is unlikely that we will solve the road safety problem by focusing on engineering interventions alone. The human factor also needs to be taken into account, given driver behaviour is a major contributor to road traffic accidents (Sabey, (1980) and 92% of accidents are preceded by at least one

violation of traffic law (Rothengatter, (1991). In contrast to engineering and enforcement interventions, education received comparatively little attention as a method to alter driver behaviour. Hitherto, much of the research on driver behaviour is disappointing in not providing sound practical solutions to bring about a desired change in driver behaviour.

It seems common sense then that training drivers would reduce the risk of collisions; yet, studies to evaluate whether driver-training delivers a safety benefit have been largely unsuccessful. However, driver training takes a skill-based approach and little attention has paid to the behavioural aspects of driving known to be a major factor in collision risk. This could explain why existing methods have frequently failed to reduce accidents. Notwithstanding, the vast majority of evaluation studies of driver training are limited due to poor methodology, biased selection procedures and crude outcome measures as reported in recent major review (Ker, Roberts, Collier, Beyer, Bunn and Frost, 2004 cited in Lisa Dorn, 2005).

1.31 A New Approach to driver Training

Coaching psychology has defined as the systematic application of behavioural science, to the enhancement of life experience for individuals, groups and organization. (Grant 2003 cited in Lisa Dorn, 2005,). It involves working with people who have no clinically significant mental health issue or abnormal level of distress to help focus on behavioural goals to enhance performance and well – being. It seems common sense then that training drivers would reduce the risk of collisions; yet, studies to evaluate whether driver training delivers a safety benefit have been largely unsuccessful. However, driver training takes a skill-based approach and little attention has paid to the behavioural aspects of driving known to be a major factor in collision risk. This could explain why existing methods have frequently failed to reduce accidents. Coaching psychology involves working with people who have no clinically significant mental health issue or abnormal level of distress, to help focus on behavioural goals to enhance performance and well – being.

Applying coaching psychology to driver training would help drivers to make behavioural changes using proven psychological theory and approaches. Driver coaching would encourage the development of behavioural skill sets with disciplined therapeutic protocols. Driver coaching sessions would be drastically different from standard instructional techniques; although attitudinal training for some more advanced, driver training courses often involves the discussion of inappropriate beliefs (Even, 1985 cited in Lisa Dorn, 2005), but in an interventionist way with the aim of changing these distorted beliefs. To do so, coaches need to employ strategies that focus on changing the internal context of beliefs and this can only reliably achieved with the use of psychological methods.

Coaching psychology has a variety of psychological interventions to choose from, but any behaviour change models should consider both a cognitive and behavioural approach in dealing with problem health behaviours. An effective intervention framework for driver coaching need to take into account both the way a driver thinks and behaves. One model that we find particularly useful, for driver coaching, and have a background in the successful applications for other psychological problems is cognitive behaviour therapy.

1.32. Psychology for Driver Training

There is no doubt that currently driver training focuses too heavily on developing perceptual and vehicle handling skills rather than appropriate driver behaviour (Don and Brown, 2003) even if driving is a cognitive skill (Groeger, 2003). Teaching drivers to execute finely grained perceptual and sensory-motor skills is essential if a driver is to learn to operate a vehicle safely. However, driver behaviour, conceptualized as the beliefs, personality and emotions that mediate between road and traffic environmental possibilities and constrains can interfere with information processing capacity and resources quite markedly (Mathews, Sparkses and Bygrave, 1996; Don and Mathews 1995 cited in Lisa Dorn, 2005).

Drivers know how to drive safely, but they do not always do what they know. For example, it is at risk driver behaviour such as speeding that is thought to be the major cause of perceptual and cognitive lapses, errors and violations and hence accident liability, (Parker, et al, (1995) Intentions to commit traffic violations can predict by attitudes towards this behaviour, and by sensation-seeking, external locus-of control, aggression and anxiety (Yagil, 2001). To illustrate, if a driver is waiting for a gap before overtaking at the same time as being late for work, two motives are in competition. It is emotion rather than a rational risk calculation that often wins (Summala and Naatannen, (1988). The lack of a clear safety benefit for driver training then may be due to the inappropriateness of current driver training approaches to address the issues that carry most risk. A driver creates risk by investing in traffic contexts with a level of risk he/she is willing to accept. Aggressive drivers tend to maintain negative dysfunctional beliefs with one or more biases in logical thinking that leads to increased risk taking. Research has shown that even highly trained drivers are likely to demonstrate a disruption to their driving performance under emotionally charged contexts (Dorn, 2005). It is high time that decades of research in driver behaviour, and well-defined psychological methods to change at risk health behaviours, brought together to design the content and structure of a driver-training programme that works.

1.33. Cognitive Behaviour therapy

Cognitive-behavioral therapy is an action-oriented form of psychosocial therapy that assumes that maladaptive, or faulty, thinking patterns cause maladaptive behavior and "negative" emotions. (Maladaptive behavior is behavior that is counter-productive or interferes with everyday living.) The treatment focuses on changing an individual's thoughts (cognitive patterns) in order to change his or her behavior and emotional state. Theoretically, cognitive-behavioral therapy can employ in any situation in which there is a pattern of unwanted behavior accompanied by distress and impairment.

Cognitive-behavioral therapy combines the individual goals of cognitive therapy and behavioral therapy. Pioneered by psychologists Aaron Beck and Albert Ellis in the 1960s, cognitive therapy assumes that maladaptive behaviors and disturbed mood or emotions are the result of inappropriate or irrational thinking patterns, called *automatic thoughts*. Instead of reacting to the reality of a situation, an individual reacts to his or her own distorted viewpoint of the situation.

Cognitive restructuring is the process of replacing maladaptive thought patterns with constructive thoughts and beliefs in cognitive behaviour therapy. Relaxation techniques used in cognitive-behavioral therapy to teach patients new ways of coping with stressful situations. An individual's cognitive process is likely to have implications for behaviour change. Cognitive restructuring is the process of identifying and evaluating ones cognition, understanding the negative behavioural impact of certain thoughts, and learning to replace these cognitions with more realistic and appropriate thoughts, Ellis (1962), Rose (1986) cited in Corey (1990) describes several forms of cognitive restructuring used in groups.

An important part of cognitive therapy is changing patient's cognitions to bring about emotional, behavioural, and physiological change. Cognitive therapist often start working at the automatic thought level because this superficial level of cognition is more amenable to change than are underlying assumptions and core beliefs. Modification of underlying beliefs is undertaken as quickly as possible because once patients experience a fundamental change in their distorted views of themselves, their world, and others; they tend to have fewer distorted thoughts, feel better emotionally and behave more functionally. (J S.Beck, 2005)

J S Beck, (2005) reported that,

A, therapeutic goals are for patients to,

- Erode the strength of core beliefs and reduce the frequency of their activation.
- Reduce distress, think, and behave more adaptively when beliefs activated.
- Develop and strengthen more realistic, more functional beliefs.

B, belief modification is more likely to be successful when patients believe,

1. they can trust their therapist,
2. the process will help and,
3. the outcome of belief modification will lead to a better life.

1.34, Group Psychotherapy

A major difference between group therapy and group counseling lies in their goals. Where as counseling groups focus on growth, development, enhancement, prevention, self-awareness and releasing blocks to growth, therapy groups typically focus on remediation, treatment and personally reconstruction. Group psychotherapy is a process of reeducation that includes both conscious and unconscious awareness and present and past. Some therapy groups primarily designed to correct emotional and behavioural disorders that impede clients functioning. In our case, groups designed to correct behavioural excesses and deficits in driving behaviour based on behaviour modification principles.

A central part of the work done in a group consists of challenging and exploring beliefs about situations. It has shown that emotionality related to successful outcomes when some form of cognitive learning (Lieberman et al., 1973 cited in Corey, (1990) accompanies it. In other words, understanding the meaning of intense emotional experiences is essential to further self-exploration. This cognitive component includes explaining, clarifying, interpreting, providing the cognitive framework needed for change, formulating ideals and making new decisions. Group offer members many opportunities to evaluate their thinking and to adopt constructive beliefs in place of self – limiting ones.

Group leaders who operate from a behavioural perspective draw on a wide variety of interventions that derived from social-learning theory, such as reinforcement, modeling, shaping, cognitive restructuring, desensitization, relaxation training, coaching, behavioural rehearsal, stimulus control, and discrimination training. These leaders follow the progress of group members through the ongoing collection of data before, during, and after all interventions (Corey, (1990).

It is essential that the sessions are guided by psychologists specialized in Road Safety, capable of promoting the desired behaviour changes not only through the transmission of knowledge but mainly through the deepened knowledge of the group dynamic, its internal mechanisms and interpretation of diverse obstacles to that change. In groups, it is possible to stimulate three dimensions of the human psychological functioning, emotional, cognitive and experiential dimensions. Once readiness to change has established within the groups, specific interventions can be target more effectively (Dorn, 2005).

1.35, A Case for study

“**Effect of cognitive behaviour Therapy for Driver improvement**” selected for study mainly due to its contemporary social and economic importance and present pressing need. Road accident is on increase and its impact on economy and health of society is devastating and unbearable. In this context **Kerala State Transport Corporation**, operating 4000 bus services engaged 10,000 drivers, has some typical problems require investigation and remedy. Hence, this

study can be useful and relevant in KSRTC and other transport companies for devising a better training programme reduce accidents, improve driving and economy.

Present picture of this state owned Transport Corporation is shocking, effort required to, rejuvenate this ill firm and to, make it feasible and useful to both public and state. The major economic problem is due to highest accident rate, about 400 accidents per 1000 vehicles, in the last year recorded, SCRB, (2005). An out standing liability of 50 crores for accident compensation and 15 crores loss every month makes this public undertaking think about urgent solutions. We cannot say all these problems are due to drivers fault, but even common sense itself may answer there are some problems. Hence a proper training to correct bad habits, change faulty thinking, improve maladaptive cognition and persuade negative attitudes and replace irrational core beliefs and finally motivate to proper driving behaviour will help this major public utility service. Hence, this study is to test the "Effect of Cognitive Behavioural therapy for driver's improvement".

1.36, Hypothesis to be tested

1. There is no significant difference in the Driving attitude and Driving Personality of KSRTC Drivers and they are Homogenous (H_0).
 2. There is significant effect of Cognitive Behaviour therapy on Driving Attitude and Driving Personality (H_a).
 3. There is no significant difference in the Driving Attitude and Driving Personality of Drivers due to practice effect (H_0).
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CHAPTER II

REVIEW OF LITERATURE

This chapter is to review relevant studies in this field about this subject. This will help to see the present position of this area of knowledge. Some recent studies in the drivers' improvement programme and training has reviewed in this chapter. Papers presented in the second International Conference on *Driver Behaviour and Training, 2005*, Edinburgh; and studies of research institutes, universities and relevant websites reviewed in this chapter for better understanding of present position of our field of interest. The studies presented here constituted the base for framing the research assumptions for the present Study.

Hutchinson, et al (2005) in a study of the Driver Improvement Programme reported effect of a 90-minute interactive small group discussion method. In this study, drivers themselves sought remedy for their problems and needs for attitudinal or behavioural changes, and draw conclusions as to how they might change. Facilitators directed to guide debate on the issues within the structured programme but not impose their own beliefs and values. The five main components of the programme cover the relationship between youth and crash involvement. Characteristics of the drivers participated in DIP have been compared with those of a group of young drivers. Results show that the DIP group had an appreciably better record than the expiation group in respect of offences. In respect of crashes, there was no statistically significant effect of whether or not the driver had attended DIP. Since DIP involves only 90 minutes intervention with low expenditure, even quite a small effectiveness could justify it. However, if a big impact on young driver's attitude and behaviours is wanted, an expensive, intrusive intervention with the whole population should consider some form of psychotherapy.

Stradling and Meadows (2004) cited in Dorn, (2005) found in his study named Regulation and Aggressive Violations in UK Drivers, there are three aspects of driving. Driving is a skill-based, rule-governed, expressive activity and there are three aspects involved while socialized into becoming a member of the driving community.

On the basis of a number of large scale, national surveys in England asking drivers how often they experience certain driving – maneuvers (Reason et al, 1990, Meadows, 1994; Parker et al, 1995, a,b; Lawton et al, 1997, b cited in Dorn,2005), they have been able to identify three basic types of driving behaviours, Lapses, Errors, Violations. In this study, it is those drivers who score high on violations, not those who score high on Errors or Lapses, who are statistically more likely to have been accident involved as drivers in the past, and to be accident involved (again) in the future (Parker et al, 1995c cited in Dorn,2005). Reducing the level of commission of violations would enhance safety margins and reduce the chances for interpolated error to have terminal consequences. Further research needed in order to best design and target appropriate remediation.

Antony C Hastings (2005) in his study *Should Driver Education Include Training against Instinctive Human Reactions* investigated for answer the question, Does world driver training need to include intensive training against the instinctive human reactions that contribute to crashes? 20 years of variable research, (post license driver education) reveals common and instinctive human behavioural patterns that contribute significantly to the end severity of, and actual involvement in motor vehicle crashes.

After training, eighty-one percent of male and ninety-one percent female participants performed the tasks with minimum fault. A driver's behaviour and lack of knowledge in how to counteract that instinct could contribute significantly to many crashes. It could be suggested that the ABS brakes and traction control in many vehicles today is reaction to the need to recognize human instinctive behaviour. If this is so, then this study demonstrates the need for on going development of training that needed to complement the future generations of drivers and potentially, reduce crash numbers.

Lee Martin, et al (2005) in *Assessment of Driving Training Courses*, conducted an investigation about effect of driver training. Glasgow City Council is currently offering range of driving training assessment courses to drivers, not necessarily caught speeding but who wish to improve their driving and pay for the courses themselves. The courses on offer include a speed awareness course, an older drive assessment course, a driver assessment course and business driver (TV) assessment course. Drivers, who have been driving for a number of years and have received no professional training since passing their test, recommended to attend a speed awareness test, along with those drivers who are not sure how to recognize speed limits and where they charge.

This paper reports a questionnaire data collected from the drivers who have attended one of these courses, with the aim of gaining a deeper insight into their motivation for and perceived benefits of attending and the impact of attendance on their attitudes towards road safety, safety cameras, other enforcement method and treatments.

Overall, the feedback regarding the driver training assessment course was very positive. Eighty-two percent felt that the course length was about right with the other eighteen percent stating that they thought the course was too short. Over all satisfaction with the course was also high. When asked what can be do to improve the course, the majority of the recommendations were positive. Driver training courses offer the possibility of undoing old habits and facilitating integrated, sustainable changes in driving style changing driving, addressing the knowledge, skills and attitude of drivers and reducing the numbers killed and seriously injured on the roads.

Ian Edwards (2005) in *Analysis of the National Driver Improvement Scheme – referral type*) investigated the effect of this driver improvement scheme. In 2000, the UK Government published a ten-year plan for road safety entitled “Tomorrow’s Roads – Safer for Every one”. The same document advocated the wider use of retraining rather than punishment of drivers as one way to achieve these aims. The National Driver Improvement Scheme is a driver-retraining scheme based on this type of educational approach.

The National Driver Improvement Scheme, aim to improve attitude of drivers, in the hope that, a positive change in attitude will encourage a long-term change in driving behaviour. It has anticipated that by correlating the different types of incident/accident with the course outcomes some conclusions can draw as to the appropriateness of the NDIS syllabus.

Two quantitative measures used in the evaluation, a questionnaire and an observation measure pre and post training.

The DAQ showed statistically significant improvement pre –course to post – course scores, with the pre-course mean scores increasing from 3.71 (SD = .51545) improving to 3.87 (SD = .43447) post course.

The observation scores improved significantly pre-course to post-course with the mean scores increasing from 3.26 (SD = 1.482) to 4.23 (SD=1.998) based on a sample of forty-three correctly completed observations.

These results would suggest that generally the course has improved both the participants’ attitude to the driving task and their observation. The NDIS appears to be successful, with the majority of clients attending the scheme improving their attitude to the driving task and improving their observation. Small but significant reductions in the reported frequencies of commission of lapses, errors and violations are all evident in the three months following the course. These frequencies are quite highly correlated before and after the course, implying that it is largely the same individuals committing the acts, although they are committing them less frequently than they were prior to course attendance.

Anthony Machin, (2005) conducted a study *Predicators of Coach (Bus) Driver’s Safety Behaviour and Health Status*; accordingly, Safety is an important issue for coach drivers. Increasing public demand for cheap travel and the deregulation of the industry during the early 1980s led to the entry of new bus companies and a marked escalation of competition, so much so, that by 1988/1989

two of the largest and longest established national operators were experiencing major financial difficulties. Public confidence in long distance coaches has further eroded at the end of 1989, when the country witnessed, in quick succession, its two worst coach accidents on records. In all, fifty-six people died. Vigorous public debate over the issue of road safety and responsibilities of the heavy transport industry followed.

The psychological health and well-being of coach drivers has been an area, which has received considerable attention. Research has indicated that coach drivers are prone to experiencing heightened levels of stress and fatigue, which can express as an emotional response, a physiological response or a behaviour response.

The current study has emphasized the role of organization factors in understanding the determinants of occupationally, induced fatigue, and perceived health status and safety behaviours of bus drivers. While individual coping strategies that drivers adopt will influence their responses to occupational risk factors, it is also necessary to emphasize the important role that the company management plays in creating and maintaining a satisfactory safety climate in the company. The development and implementation of a fatigue management strategy for coach drivers is one practical method for a bus company to demonstrate a proactive and strong commitment to safety. Moreover, this can achieve through training programmes to develop more effective fatigue management strategies (Machine 2003).

Gerald Matthew, et al (2005) in their study named *Driver Stress and Fatigue and its Implications for Drivers* discussed effect of stress and fatigue on driving.

This study shows that many drivers have latent vulnerabilities to maladaptive styles of coping with traffic demands. However, these vulnerabilities only become manifest as dangerous behaviours when the appropriate environmental triggers are present. For example, aggressive personality is dangerous primarily when the driver is frustrated or impeded by other traffic. The transactional analysis suggests a need for stress management interventions. In addition, training of effective self-management of coping style appears to an effective treatment for driver anger (Deffenbacher et al, 2002). The transactional model points towards a need for training the driver to handle different levels of workload, and to be aware of the potential dangers of both under load and over load conditions.

As with anger and anxiety, the transactional model supposes that fatigue reactions also depend on environmental factors (prolonged sustained workload) and on the trait of Fatigue Proneness. Two studies (Matthew and Dsemond, 2002) induced fatigue by having subjects perform a highly demanding secondary detection task while driving for about twenty-five minutes. Following this, fatigue induction performance was tested. Drivers in a control condition performed the same tasks without the fatigue induction. Both studies showed that fatigue induced by high workload proved state loss of task engagement (e.g. Decreased subjective energy and motivation), increased distress (e.g. Elevated tension) and decrease in tasks focused coping.

Katja Kanrer et al (2005) in the study named *Fatigue – Related Driver Behaviour* investigated the effect of fatigue on driving behaviour. One long journey under monotonous road conditions, many drivers experience short lapses of attention or even fall asleep at the wheel (so-called micro – sleep events). Therefore, driver fatigue is an important topic for active driving safety. In vehicle devices for driver, state monitoring may be above to detect a state of drowsing and give a warning sign before the driver actually falls asleep.

Driving experiences assumed a relevant factor affecting fatigue while driving. After much training, performance becomes skilled and replaced by an automatic mode of task performance. This is especially true for the task of vehicle driving (Wertheim, 1991) under monotonous road conditions (Thiffault and Bergeron, 2003), driving requires very little effort and the vigilance level subsides.

As has been discussed in the literature (Gulley and Churan, 2002), people can learn to keep their eyes open under certain circumstances and carry out necessary activities to some degree while

actually sleeping. In the context of driver behaviour, this phenomenon called driving without awareness or DWA (Karrer, et al, 2004).

The objective of the study was to investigate the differences between professional drivers or untrained drivers and average skilled drivers regarding fatigue behaviour in a simulated drive.

As had been expected, professional drivers differ significantly in their driving style from normal drivers in their mileage, that is the amount of kilometers traveled per year ($U=239.5$; $P<. 01$) while normal drivers travel about 10-20,000kms per year on average, eleven of fourteen professional drivers indicated that they travel more than 20,000 km per year.

Interestingly, professional drivers differ significantly in their driving style from normal drivers ($U=294.0$; $P<. 05$).

The video analysis could show that the occurrence of DWA often related to driving errors. About 17% of the drivers had DWA events with resulting errors. Professional drivers might be more skilled to drive on long journeys under monotonous road conditions showing less micro – sleep events and fewer driving errors in moments of driving without awareness, but if sleep gets the upper hand, the consequences are even more dangerous.

Dias and Cordeiro (2005) in the study *Group Dynamics in a Driver Rehabilitation Course*, They have been investigated the importance of group dynamics for drivers to realize about their own problems in a group atmosphere. The psychology Department of the Portuguese Road Prevention developed a set of course for rehabilitation of traffic offenders for offences such as drink driving, speeding etc. It is a very serious transgression when the driver exceeds the limit about sixty km/h outside urban areas and above forty km/h inside urban areas. According to the road code, licenses are suspended and offenders have to attend a relevant course, which has run by the psychology Department of the PRP.

. There are eight to ten participants in each group. Course run for twelve hours duration divided between two consecutive Saturdays or four sessions in the evening for three hours each. Participants should be punctual for all group sessions. At the start of the group session, participants informed about what will cover during the course. They are told that information will not be taught, rather that they will discover the nature of their problem driving in open discussion. This has made with the intention of creating a reflective group.

This paper verifies that group dynamics offers a space where the person, free from punishment and repressive judicial pressure, can find a more understanding perspective about why they have committed driving offences. This allows for psychological adjustments in their belief systems to occur, allowing the psychologist to link their driving behaviour to other life events. In this way, the group can initiate a process of mental development and evolution, respecting the potential for change for each individual and his capacity to analyze and properly understand why they might commit traffic offences. It has expected that this approach will reduce recidivism.

Najeeb, (2004) in the study of *Relationship of Personality and Dangerous Driving Behaviour* conducted an investigation about the relationship of personality and driving behaviour.

In this study, 60 drivers from total drivers of a taxi stand of a town selected in random sampling method and who were 20-30 year old and with 7 to 10 years of schooling and 5 years of driving experience.

This study is to see whether the driving habit has any correlation with their personality trait. In this study, we use Eysenk Personality Questionnaire to find out the personality trait of the Driver and their driving personality has quantified using a Driving Personality Questionnaire devised by Dr. Leon James of Hawaii University. There was significant correlation of $-.334$ at 0.01% level between psychotism and Dangerous Driving Behaviour.

Driver education and training continued to focus on imparting a minimum knowledge of safety principles and of vehicle operation and manipulation only. Even this form of driver education generally ends on obtaining a driving license. Driver education and training has to be addressed behavioural and personality problems that interfere driving.

Siegrist and Roskova (2001), in most countries, driving under the influence of alcohol has not forbidden but restricted in quantitative terms. The respective regulation indicates a Critical Blood Alcohol Concentration (BAC – limit). One problem of BAC–limits is that they are difficult to translate into behavioural standards.

Compared to other traffic offences, drunk driving is quite rare, but dangerous. In European countries, about 3% of all journeys are associated with an illegal BAC, but about 30% of injured drivers were under the influence of alcohol. Therefore, alcohol is definitely one of the major causes of accidents and is an aggravating factor.

Winkler et al (1990) ,Driver Improvement or remedial education programs developed as an additional measure for high consumption groups. Psychologists can contribute the prevention and therapy of alcohol addiction, which has a positive effect on recidivism rates. In Europe, this strategy has followed, especially in the German Speaking Countries. Evaluation studies support the hypothesis that it is a measure, which contributes to traffic safety.

Kroj and Dienes(2001) Programs for Driving while Intoxicated Based on results of some evaluations, courts and local road traffic authorities in Germany have been, since the early eighties increasingly interested in the application of – improvement and rehabilitation courses for alcohol impaired drivers .

In Germany, Traffic Psychologists specially trained for this task conduct the Driver Improvement Programs. However, the data, which are available from evaluation studies, reveal a clear reduction in the relapse probability of first-time offenders within the 36 months observation period. Due to intensive teamwork in small groups, all three German program models for drivers with previous drinking and driving offences (individual approach, behaviorist approach, and LEER model) have proven successful (Winkler et al, 1991). They all succeeded in redirecting driver motives for participation, which are often superficial at the initial stage and helping them accept the chance to solve personal and drinking problems. These changes include drinking habits, control of alcohol consumption, and avoidance of occasions when alcohol will consume and critical self-assessment of self-driving ability.

In addition, these driver improvement programs also produce a clear reduction in the relapse frequency, confirmed by a monitoring period of 5 years following the participation. The program participants who have received unfavorable medical and psychological reports clearly displayed a lower relapse rate (13%) than the drivers in the control group (18%) with better and psychological rating (Winkler et al 1991).

In a Finnish study, what is the main crash causes? (**Hakkanen and Summala 2001**) investigating the causality factor in 337 fatal two-vehicle crashes, it was found that in sixteen percent of the cases the truck drivers principally responsible. The risk of being involved in road crash is inversely proportional to be truck driver's experience. In New York, a seven-year investigation on probable crash causes for the bus crashes was performed (NY State Public Transport Safety Board, 1994) and it was concluded that the driver, the bus and other party represented more or less a third of the causes each. The major cause for bus driver-related crashes was failure to drive defensively.

Ogwude and Ugboma (2005), in this study investigated the importance of driver training and education in reducing road rage and carnages on the highways, observations of driver-related activities performed by drivers are essential to building knowledge of relationships between the importance of driver education/training and safety performance outcomes. This survey designed to secure data that is useful to characterize numerous aspects of driver behaviour and attitude associated with better safety performance in the Nigerian Commercial driving sector.

Finding from the questionnaire related to driver performance in the on-road assessment in order to evaluate the effect of driver education and training on driver behaviour.

In investigating the underlying dimensions of driver training, an exploratory factor analysis of respondents' ratings for the non-personality characteristics has performed. The observation results show that speedy driving, overtaking and risk-taking capabilities have high factor loadings. This means that the drivers evaluated engage in dangerous driving. This can attribute to lack of driver training where the consequence of the variable mentioned can taught, defensive, and safe driving learnt. Largely, this survey compels to believe that adequate driver education and training will help in reducing the problems of the variables with high loadings.

McKenna and Crick (1994) compared expert drivers, experienced drivers and novice drivers on their hazard perception latency and found that expert drivers were quicker to respond than experienced drivers were and in turn, they were quicker than novice drivers were. As expert and experienced drivers matched for age and exposure, the driver training received by the expert drivers may have been beneficial to developing hazard perception skills.

Lynn and Lockwood's (1998), survey analysis found no significant evidence that attending a training programme reduced a driver's accident liability. Although there was, some suggestion that companies that offered small financial rewards for accident-free driving had slightly lower accident rates. Survey research is obviously limited in its ability to evaluate training and incentive schemes because of self reflection effects-drivers who voluntarily undertake training may often be those least in need of it. To evaluate, the effectiveness of different intervention strategies, carefully controlled experimental studies are required.

Gregerssen et al, (1996) evaluated four different measures (Individual driving training, group discussions, campaigns and bonuses for accident free driving). The latter two measures, while costly and benefiting from considerable face validity, produced only small benefits compared to a control group. Nonetheless, the other two measures, driver training and group discussions did produce significant reductions in accident rates.

Sasika de Craen and Twisk (2005) in the study about *Development of Higher-order-skills During Driving Experience*, wisely commented that accident studies suggest that the decrease in risk has primarily related to practice rather than biological maturation, as the accident curve is similar for all novice driver groups, irrespective of age. A full understanding of how practice leads to a lower accident risk is still lacking.

To study the development of these higher-order-skills after Licensing, Questionnaires and observations has used. This article presents the results of an assessment of the diary as an instrument to study driver 'reflections'. The evaluation of a second phase training offered the opportunity for a test in a field study. Besides questionnaires and driving test, the participants filed out diaries.

182 young, novice drivers (ninety-eight males and eighty-four females, but 18-24, with 6 months driving experience) reported 271 situations in traffic. The participants asked to report freely about the situations, with only a few questions to guide them through the diary report.

The participants reported their experience in traffic over a period of three weeks. After this three-week diary period, about half of the young drivers participated in second phase training. The training aimed to improve perceptions of risk and to reduce over estimation of skills in the young

drivers and consisted of a one-hour drive with an instructor to evaluate the driving skill, four-hour training on a track, one-and-a half-hour group discussion. The other half, the control group, did not participate in the second phase training. About one month after the training, the participants asked again to keep a diary for three weeks.

A website used for data collection of diaries. Participants who did not have access to the Internet filled out paper versions of diaries.

The differences between males and females and the effects of the training tested for significance using a log linear analysis.

The one-day training aimed at reducing driver's over estimation of their driving skills and under estimation of risk in traffic. Due to the content of the training, we expected that the experimental group would change their attributions and reflections because of the training, while the control group would not.

The absence of statistically significant effects of the training on higher-order-skills was contrary to the expectations. The observed tendencies were even in the opposite direction, indicating that youngsters felt more competent in handling traffic situations. This pattern of results needs further study and it cannot exclude that the 'training' itself did not change trainees in the expected directions.

In a study by **Deffenbacher et al. (2002)**, the drivers were psychology students who scored high on the Driving Anger Scale, who indicated a personal problem with driving anger, and who desired counseling for that. Two variant therapies compared, that each involved eight weekly sessions of one hour each, give to small groups of about eight drivers. Results were quite encouraging, though the outcomes were measures like self-reports of risk driving, rather than actual number of crashes.

Deffenbacher (2003) found a combination of cognitive and relaxation techniques have shown promise for reducing road rage among high-anger drivers. Deffenbacher has taught applied relaxation coping skills and used cognitive restructuring, or reframing of negative events, to help high-anger drivers stay cool.

In a series of studies, high-anger drivers who wanted help attended eight therapy sessions involving either relaxation or cognitive-relaxation therapy. In the relaxation-only condition, the drivers learned deep breathing and other basic relaxation techniques. In the cognitive-relaxation therapy condition, drivers learned similar relaxation methods as well as cognitive change strategies. Both groups practiced skills to better control their anger while visualizing anger-provoking driving situations, such as someone cutting them off in traffic, and then practiced these skills when they were actually driving.

Deffenbacher found that both interventions were equally effective in curbing road rage. They could not completely douse a driver's anger, but they did reduce its frequency and intensity. What's more, some studies found that a year after therapy, people continued to keep their cool at roughly their immediate post-treatment and one-month follow-up levels.

In New York State in 1999, the University at Albany's Center for Stress and Anxiety Disorders treated 20 aggressive drivers referred by the local District Attorney's office and 10 volunteers who described themselves as aggressive drivers. Tara Galovski, PhD, designed treatment sessions that included deep relaxation, stress-management coping skills, and cognitive restructuring, and learning different ways to think about roadway events and stressors. These strategies have proven very successful with aggressive driving behaviors, as well as general anger and aggression. The treatment group averaged a 64 percent drop in aggressive driving behaviors, and showed marked reductions on measures of psychological distress, a standardized Driving Anger Scale, and a Driver Stress Profile. Improvements maintained at a three-month follow-up.

Gavoski and Blanchard's (2002) result provide good evidence for the efficacy of a cognitive- behavioral intervention on aggressive driving behaviours in general population. In this study, the control group did not improve on the anger measures until crossed over to the treatment group, indicating that sentencing alone was not enough to improve driving habits. This study reported total driving anger has significantly decreased due to cognitive-behavioral interventions. Cognitive-relaxation demonstrates overall positive results compared with no treatment and with other treatments Defenbacher (1988)

From the detailed review of literature, we can conclude that an effective intervention framework for driver coaching need to take into account both the way a driver thinks and behaves. One model that we find particularly useful for driver coaching, and have a background in the successful application to other health behaviours is Cognitive Behaviour Therapy (CBT). The underlying assumption in CBT is that individuals are recognized to have different sets of core beliefs that confer on a person a particular 'personality' and way of behaving in accordance with those core beliefs. Within the cognitive – behavioural paradigm, change is about changing behaviour by reducing symptoms and relapse prevention is the result of core belief has modified by challenging these beliefs. The use of CBT to both challenge distorted thinking and change at-risk driver behaviour involves consideration of driver beliefs, cost-benefits, analysis and outcome and efficacy judgments,(Dorn, 2005).

CHAPTER III

METHODOLOGY

Present driver training method is to impart some knowledge of road regulations, lecturing some safety methods and accident possibilities and its prevention methods, fuel economy technique and alcohol de-addiction class. Most of the time they do not address the emotional problems; effect of human errors, faulty cognition, maladapted thinking, unrealistic optimism about driver ability and lower evaluation of risk possibilities on the road traffic. In this study, major concern has given, to assess the effectiveness of driver coaching using Psychology and Cognitive behaviour therapy methods in KSRTC bus Drivers. Higher officers responsible for drivers training had found from their experience that no relevant changes in driving behaviour after finishing conventional method of training instructing driving skills, safe driving methods, road regulations and fuel saving techniques.

3.1. Experimental design

Two hundred subjects selected randomly from five stations across the state. Tested pre training and half of them assigned to special training, tested post training for their improvement. Next half assigned to control group without training and tested post training to assess the changes if any due to practice or any other factors in the same duration and compared. Hence, this is an experimental design with samples of 200 from same population selected first on area basis and then randomly from the list of the drivers of that station. Half of them assigned to experimental group randomly and they have given special training for four days, tested pre and post training. The next half left without any training during these four days, tested with same instruments pre and post, for any practice effect, and compared the change in both group.

3.2. Population and Sample

The total number of KSRTC drivers is about 10000 and a sample of 200 selected for this study. Five batches of 40 drivers selected randomly from their list from five geographically deferent stations across the state. Selected drivers were 35to55 years old and with 10 to15 years of experience and 5to 10 years of schooling. This sample of drivers assigned equally to experiment batch and control batch randomly after pre test at each stations. Sample represents whole state selected from 10,000 drivers of KSRTC and this study used random sampling.

3.3. Instruments Used

(a) Driver Personality Questionnaire

This Questionnaire has devised by Dr. Leon James, Professor of Psychology, and Hawaii University and dedicated to research on road safety and driving Psychology. This Questionnaire measure affective, cognitive and sensory motor domains of Driver Behaviour and this is a standardized instrument and used translation in 'Relationship of Personality and Dangerous driving (Najeeb, 2004)

(b) Driver Training Assessment Scale

This is mainly an attitude scale adapted from "Assessment of Driver Training Courses" by Lee Martin et al (2005), Napier University, UK. This scale on Pre and Post Training, measure the change in attitude about the major driving behaviour like speeding, cause of accident, driving ability,

risk on the road, necessity of training, road laws and its obedience, alcohol, fatigue etc. This instrument use 5 point Likert Scale, hence their change in attitude can quantify, and the effect of the training can be interpret.

(c) Overall satisfaction scale

This is a direct measure on the satisfaction of Trainees about (a) Training (b) Faculty (c) contents (d) its perceived utility on their career and their suggestions for improvement. Driver's satisfaction can assess as percent satisfied or dissatisfied in this training and their suggestions. This test used for experimental group for posttest only.

3.4. Cognitive behavioural therapy

Basic principle of CBT methods, mainly cognitive restructuring used to help the drivers to correct their faulty thinking, distorted cognitions, unrealistic optimism, negative beliefs and destructive feelings about driving and replace all of this with more appropriate healthy and constructive ones. Special training using cognitive behavioural techniques has imparted to samples selected for four days and daily eight hours. Emphasis has given, for preparing trainees for change in the first session, to create a warm and friendly atmosphere. Special Training given about,

- Effect and limitations of speeding, driving stress due to speeding;
- Driving physics and limitations of vehicle, road, and driver;
- Proper handling of vehicle and its advantages ;
- Human error and performance limitations, stress management, anger management, fatigue management and alcohol de addiction ;
- Actual risk on the road, road reading, risk perception training;
- Road regulations and reason behind the road regulations;
- Critical self assessment of driving skill and necessity of regular improvement;

3.5. Psychological Intervention

This study is mainly to see the effect of psychological techniques devised by several scientists for Behaviour Modification of non-clinical problems for the improvement of drivers. Major topic included in sessions for discussions are,

1, **speeding** and its consequences on control of vehicle, excessive wear and tear, increased fuel consumption, information over loading, stress and driver fatigue, pollution, over use of high decibel horn to prepare road ahead at that speed. However, most of the drivers not aware of any of these problems, and their core belief is that speed is beneficial and it is one of the measures of their personal competence. Hence, we utilize the cognitive Behaviour Therapy Technique to challenge his beliefs and replace it with more realistic and appropriate one.

Moreover, in the same way, the following problems addressed -

2, **Unrealistic optimism** about drivers own ability and capacity to control even at high speed without rest and even in drunken state. Driving physics help drivers to think critically, correct the optimism realistically with proper guidance.

3, Serious draw back of dangerous drivers are, low expectation of risk on road traffic, ignoring potential hazards on the road and hence **poor risk perception**. Discussing various driving situations including rare incidents, with heavy challenges to safety, probable accident situations, and its remedy help drivers to develop reflection on potential risk on the road and risk recognition to improve risk perception and avoidance. Explained road rules, the logic and reason behind each of them with its social and personal benefit contrasted with effect of violations.

2, **Limitations of vehicle**, brake, steering, tyre etc and its limitations, effect of rash driving on the safety, the maintenance cost, passenger comfort and life of the vehicle itself. Driving physics in

appropriate language will help the driver to convince his limitation to control vehicle beyond some limits.

3, **Limitation of Human** being on cognition, attention, perception, sensation and effect of emotions upon these functions and effect of information over loading and errors. Anger and its management, stress and its management, effect of fatigue on performance. Effect of alcohol on driving and human health, methods of avoiding drinks, problem-solving techniques also trained. Importance of positive self-concept also discussed for improvement of personality.

Most of the above problems address in a cognitive behavioural way and help to realize the actual position challenge the negative core belief itself so that relapse of old behaviour can avoid as the appropriate belief has replaced. The first step in this training was to make the drivers ready and willing for change, psychologists should always know this in their career, change in belief, attitudes and behaviour is deep personal matter and hence first of all the group must be made ready for change. This can be possible only by the group accepting the fact that there is more knowledge in this field different from what they know, knowing that will improve their career and life.

3.6. Pilot Study

A pilot study conducted with 20 drivers using these three questionnaires proved some flaws in the questionnaire. Drivers were worried about the use of this test, mistaken as a test to take any action against them. They responded on high scores to show that they are all good drivers; second batch of twenty samples administered after clearly explaining the intention of the study and built good rapport. Moreover, major benefit of this study was to correct the questionnaire, avoiding personal data and assuring anonymity for better response. 8 hour coaching session of four days was reported by the participants very interesting but not sufficient. A great change in the expected direction from pre to post response also noticed. Hence, mistake in the questionnaire corrected, even though same questions are used pre and post are marked Part A and Part B, for easy administration.

3.7. Administration of test.

Separate instruction in a printed form given to drivers to fill up the questionnaire stating what is the purpose of this test to relieve drivers' anxiety. This also explain how to answer the questionnaire, and separate form provided to write age, education, and experience of the drivers.

They instructed that no need of their name or address for this test and this test no way affect their job and assured full anonymity. After creating a friendly atmosphere with the subjects, those questionnaires issued for test. Questionnaire read aloud to help them for easy understanding. Good rapport created made the test easy and effective. Driving personality questionnaire, and training assessment questionnaire administered one by one, for pre test with a serial number and these two questionnaire for both groups and third one, a training satisfaction scale for experimental group only also administered for post test, with same serial number given for pre test. The pre and post questionnaires marked part A and part B scored and tabulated for analyses. Part C the satisfaction assessment scale scored separately to asses their satisfaction, opinion, and suggestions about the training in percentile and this could not test for statistical significance.

3.8. Statistical analysis

This study is an experimental design with a sample of two hundred, pre- tested with two independent scales, one is an attitude scale named training assessment scale and other is a driving personality scale to measure driving behaviour. Then they have assign to control and experimental groups and treatment given to experimental group only and test both groups post treatment. Our aim is to test (1) is this sample is homogeneous group; (b) is there any significant change in control group post training stage like practice effect,(c) is there any significant change in experimental group post treatment to prove the hypothesis. Independent and paired "t" test with SPSS used to test the analyses of variance in this study. Analysis conducted for total sample and station wise to see is there any significant effect for this training method on whole universe and regionally.

CHAPTER IV RESULTS AND DISCUSSION

Two hundred drivers, selected from same population and almost matched in various psychological facts were the sample in this research. KSRTC selecting drivers based on written test and practical test and hence they are almost homogeneous in nature. Hence 't' test used to analyze the variance and test the hypothesis.

In this experiment, two tests (an attitude scale and a driving personality scale) conducted Pre-Training to whole sample and then they assigned to control and experimental groups randomly. Special training given to sample assigned to experimental group only, tested after training, both experimental, and control groups. 't' test conducted with SPSS to test the hypothesis. Descriptive statistics of the both groups given in the table-1 and table-2 below.

4.1. DESCRIPTIVE STATISTICS OF VARIABLES

TABLE-1
(CONTROL GROUP)
N=100

VARIABLES		MEAN	STANDARD DEVIATION	KURTOSIS	SKEWNESS
Training Assessment Scale (Attitude)	Pre	61.72	6.49	0.576	-0.638
	Post	61.73	6.375	0.667	-0.638
Driving Personality Scale	Pre	19.57	3.893	-0.670	0.266
	Post	19.45	3.699	-0.669	0.366

TABLE-2
(EXPERIMENTAL GROUP)
N=100

VARIABLES		MEAN	STANDARD DEVIATION	KURTOSIS	SKEWNESS
Training Assessment Scale (Attitude)	Pre	60.54	6.530	-0.614	0.065
	Post	66.75	6.492	-0.393	-0.114
Driving Personality Scale	Pre	18.76	4.346	1.707	-1.397
	Post	24.77	4.297	2.254	-1.570

4.2, Independent 't' test

Independent 't' test conducted first to see whether the subjects selected and assigned to both groups are homogeneous. It is highly essential for an experimental research to verify the homogeneity of the sample and if otherwise, the effect of treatment cannot be assessed correctly and lead to faulty conclusions. Table No. 3 and Table No.4 shows the results of independent 't' tests.

TABLE-3
(INDEPENDENT 't' TEST FOR PRE-TEST)
N=100

Exp.gruop			Cont .group		at 0-01% level
VARIABLES	MEAN	SD	MEAN	SD	t
Training Assessment Scale	60.54	6.53	61.72	6.49	1.28
Driving Personality Scale	18.76	4.34	19.57	3.89	1.39

According to results of independent 't' test for pre-test (Table No-3) the mean value of training assessment score (Attitude) of experiment and control groups is 60.54 and 61.72, SD is 6.53 and 6.49. 't' value of this independent 't' test for pre-test of both experimental and control group is 1.28, t value is not significant at 0.01 level and this shows there is no significant difference among the sample of control group and experimental group and hence they represent same population and homogeneous.

Again independent 't' test of both group of pre-test value of second scale (Driving personality scale) and its result shows the mean value is 18.76 and 19.57 and SD is 4.34 and 3.98. 't' value of this test is 1.39 and this also not significant at 0.01 level. Hence it is affirmed that the sample selected represents the population and is homogeneous.

TABLE-4
(INDEPENDENT 't' TEST FOR POST-TEST)

N=100

VARIABLES	1) EXPERIMENTAL GROUPS		Control	group	at 0.01% sig
	MEAN	STANDARD DEVIATION	MEAN	SD	t
Training Assessment Scale (Attitude)	66.75	6.49	61.73	6.37	5.52
Driving Personality Scale	24.77	4.29	19.45	3.69	9.38

Table No. 4 shows the result of independent 't' test of post-test. This shows training assessment scale (Attitude) mean value of Exp. Group and control group in Posttest are 66.75 and 61.73 respectively. Standard derivations are 6.49 and 6.37 and 't'- value is 5.52 and hence there is highly significant difference at 0.01 level. Independent 't' test result of post test value of Driving personality score are, mean value 24.77 and 19.45 for exp. Group and control group. SD is 4.29 and 3.69 and 't' value of this test is 9.38. This is also highly significant at 0.01 levels.

4.3 PAIRED t-TEST

Main aim of this experiment is to verify the effect of this intervention and to know this paired 't' test were used. Table -5 shows the results of paired 't' test for experimental group.

TABLE-5
(PAIRED 't' TEST (1), EXPERIMENTAL GROUP)

	NO.OF PAIRS	MEAN	STANDARD DEVIATION	't' VALUE	2-TAILED SIGNIFICANCE AT 0.01LEVEL DF=99
Driving Assessment Scale (Attitude)	100	60.54	6.53	15.71	0.000
		66.75	6.49		

Result of paired 't' test of experimental group for training assessment scale (Attitude) score of pre and post shows mean is 60.54 and 66.75 SD 6.53 and 6.49 and 't' value 15.71 and hence highly significant at 0.01 level (0.000).

TABLE-6
(PAIRED 't' TEST (2), EXPERIMENTAL GROUP)

	NO.OF PAIRS	MEAN	STANDARD DEVIATION	't' VALUE	2-TAILED SIGNIFICANCE AT 0.01LEVEL DF=99
Driving Personality Scale	100	18.76	4.34	16.81	0.000
		24.77	4.29		

Result of this test of exp. group with driving personality scale sores of pre and post test show mean value are 18.76 and 24.77 and SD 4.34 and 4.29 and 't' value 16.81 and this is also having highly significant change at 0.01 level (0.000).

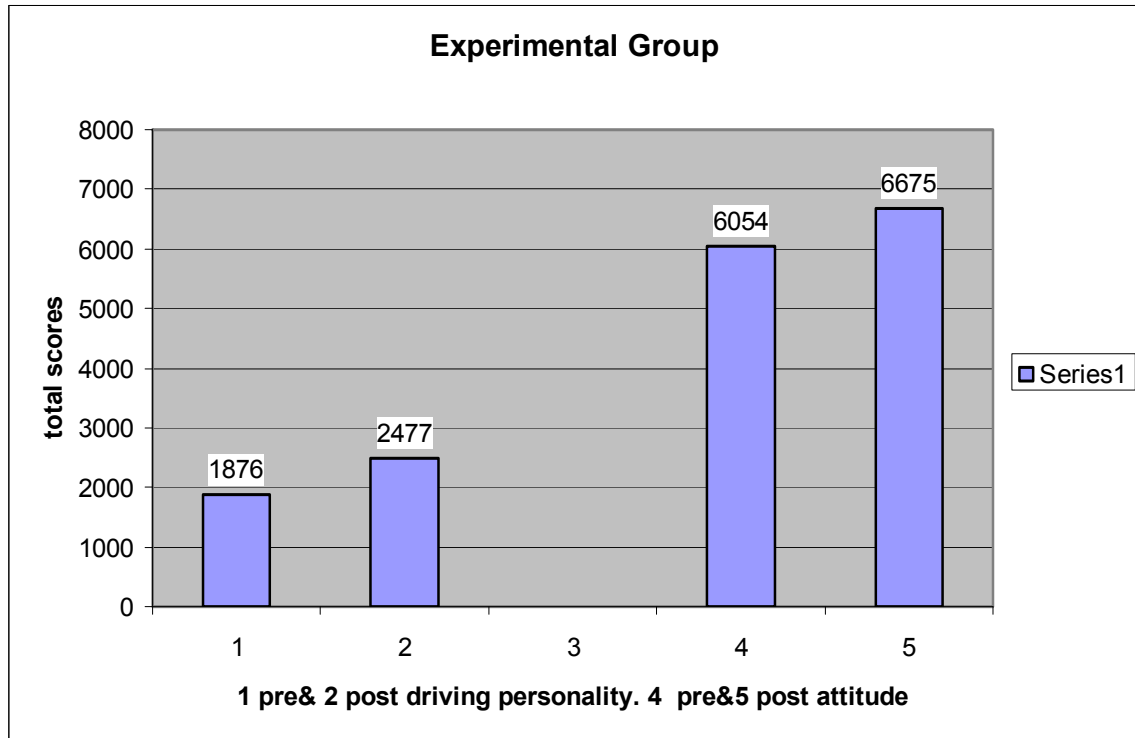
TRAINING EFFECT

TABLE-7
(PAIRED 't' TEST (1) FOR CONTROL GROUP)

	NO.OF PAIRS	MEAN	STANDARD DEVIATION	't' VALUE	2-TAILED SIGNIFICANCE AT 0.01LEVEL DF=99
Training Assessment Scale	100	61.72	6.49	0.11	0.911
		61.73	6.37		

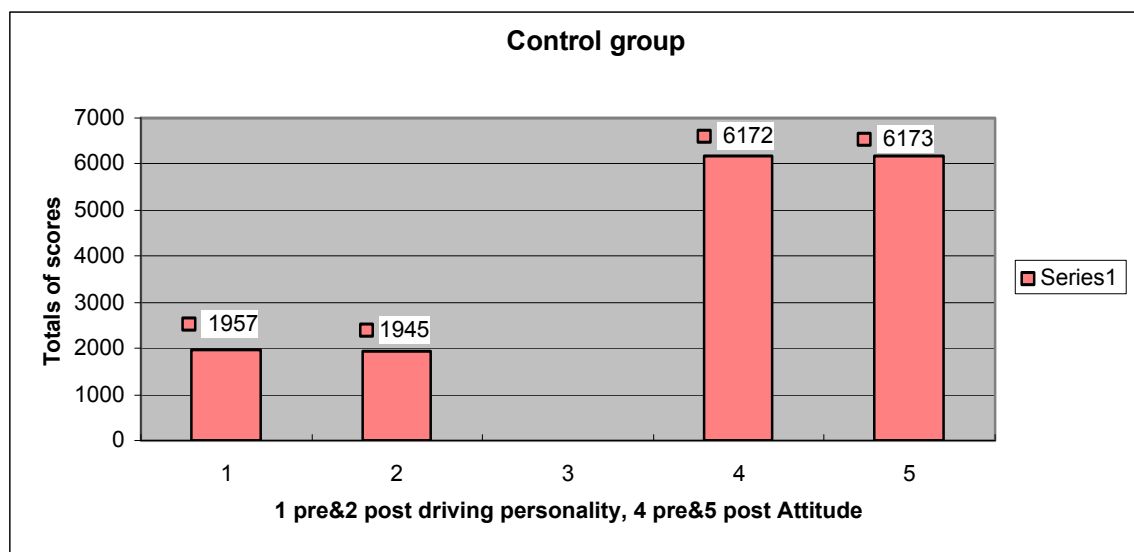
Table-7 shows the result of paired 't' test of control group pre and post of training assessment scale values. This value show mean values are 61.72 and 61.73 and SD 6.49 and 6.37 and 't' value is 0.11 and it is not significant at 0.01 level and hence shows that there is no significant change in control group in training assessment scores.

TABLE-8
(PAIRED 't' TEST (2) FOR CONTROL GROUP)

	NO.OF PAIRS	MEAN	STANDARD DEVIATION	't' VALUE	2-TAILED SIGNIFICANCE AT 0.01LEVEL DF=99
Driving Personality Scale	100	19.57	3.893	0.77	0.441
		19.45	3.69		

Table-8 shows the result of paired 't' test for control group for driving personality of pre and post tests, mean values are 19.57 and 19.45 and standard deviation is 3.89 and 3.69 and its 't' value is 0.77 and not significant at 0.01 level. Hence, there is no significant change in this dimension during the pre and posttest in control group.

NO EFFECT IN CONTROL GROUP



The above result shows mainly these findings. (a) the sample in both experimental and control groups are homogeneous. (b) There is no significant change in control group pre and posttest using both scales. (c) There is independent effect on both attitude scale and driving personality scale due to this training. (d) There is highly significant change in experimental group from pre to post test and hence the training is highly effective and this change is not due to any practice effect or any other extraneous factors, hence the hypothesis proved.

4.4, Area wise analyses

This training and assessment took place at 5 different stations (Calicut, Malappuram, Palghat, Trichur and Trivandrum) and table 9, 10, 11 and 12 shows the results of pre and posttest for both groups for attitude and driving personality scales separately station wise.

TABLE: 9
Driving personality scores

Groups	Control Groups				Mean Diff.	SE	t
	Pre Test		Post Test				
Location	Mean	SD	Mean	SD			
Calicut	22.25	4.00	21.05	3.43	1.20	1.18	1.02
Malappuram	17.95	3.49	17.25	3.70	0.70	1.14	0.62
Palghat	19.75	3.96	17.75	3.64	2.00	1.20	1.66
Trichur	22.00	4.01	21.00	3.71	1.00	1.22	0.82
Trivandrum	19.25	4.87	18.85	4.03	0.40	1.41	0.28
Groups	Experi. Groups				Mean Diff.	SE	t
	Pre Test		Post Test				
Location	Mean	SD	Mean	SD			
A	22.45	3.33	26.10	3.14	-5.65	1.20	5.52**
B	19.65	3.79	24.00	4.04	-4.35	1.24	3.51**
C	16.90	4.96	23.85	4.92	-6.95	1.56	4.45**
D	18.00	3.63	25.30	3.36	-7.30	1.11	6.60**
E	18.70	5.16	24.60	5.55	-5.90	1.69	3.48**

According to table: 9 driving personality scores of control group for pre and post tests of all five stations found not significant as the table value is 2.861 at 0.01 level for a Degree of Freedom: 19. Table: 10 show the DPS scores of experimental groups for pre and posttests of the five stations. These t-values are highly significant at 0.01 levels for a DF: 19 and hence, the training has improved the driving personality scores at all stations and this is not due to any practice effect

TABLE: 11.
Driving assessment scores

Groups	Control Groups				Mean Diff.	SE	t
	Pre Test		Post Test				
Location	Mean	SD	Mean	SD			
A	64.50	3.91	63.70	6.01	0.80	1.60	0.50
B	62.25	6.38	60.90	6.66	1.35	2.06	0.65
C	65.05	7.42	64.70	6.30	0.35	2.18	0.16
D	65.80	7.13	64.45	7.70	1.35	2.35	0.58
E	66.45	6.24	64.60	6.25	1.85	1.97	0.94
Groups	Experi. Groups				Mean Diff.	SE	t
	Pre Test		Post Test				
Location	Mean	SD	Mean	SD			
A	59.75	4.71	66.05	5.19	-6.30	1.57	4.02**
B	60.35	6.32	67.50	6.51	-7.15	2.03	3.52**
C	57.75	6.55	66.00	7.02	-8.25	2.15	3.84**
D	56.15	6.14	64.75	6.66	-8.60	2.03	4.25**
E	59.05	11.19	69.40	6.61	-10.35	2.91	3.56**

Table: 11 and 12 shows the training assessment scores (attitude) of both groups pre and post training of all five stations. According to the table:11 the t values of control groups at all stations were not significant at 0.01 level for degree of freedom 19, (table value is 2.861). Table:12 shows the scores of experimental group of pre and post test on training assessment scale at all five stations. These values of t for experimental groups' at all five stations are highly significant at 0.01 levels for degree of freedom: 19. Hence, this training improved this scores very significantly at all stations and this change is not due to any practice effect. Variations in scores at different stations may be due to cultural factors and difference in instructors involved.

This shows the driver re-training using cognitive therapy methods is an effective method for drivers' improvement and rehabilitation as stated by various theories. The major difference of this system is challenging the core belief of drivers about driving and help to replace such false and destructive beliefs with correct, safe, and constructive belief and behaviours voluntarily so that relapse of old dangerous behavior is rare.

4.5, TRAINING SATISFACTION ASSESSMENT

The third questionnaire administered to the experimental group alone (N=100) during post training period, gives a percentile rate of response on the questionnaire and this result is given below.

DRIVERS TRAINING OVERALL SATISFACTION SCALE

1) How satisfied were you with the training

Very Satisfied 82%	Satisfied 17%	Nothing Felt	Not Satisfied	Not at all Satisfied 1%
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2) For a driver, the content of the training is

Very Useful 89%	Useful 11%	Nothing Felt	Not useful	Not at all Useful
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3) What did you think about skill of the course instructors?

Excellent 70%	Skilled 27%	Nothing Felt 2%	Un Skilled 1%	Very Poor
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4) Had the course changed your driving?

Totally Changed 58%	Changed 39%	Nothing Felt 1%	Not Changed 1%	Not at all Changed 1%
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5) Do you need such training more often?

Highly Need 47%	Need 52%	Nothing Felt	Not Need 1%	Not at all Need
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6) Will the training help you to reduce road accident future?

Very Helpful 73%	Helpful 26%	Nothing Felt	Not Helpful 1%	Not at all Helpful
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7) Recommendations to improve the course.

According to these results, 82% of the samples 'Highly satisfied' in the training and 17% 'satisfied' and 1% said they not all satisfied

For the second question 89% consider the content is 'very good' and 11% feels that it is 'good'.

Opinion about the instructors was “Excellent” for 70% and skilled for 27% and 2% thinks nothing felt.

The answer for, question had this training change your driving?-58% “Highly Changed”. And 39% feel changed. 1% nothing felt, 1% not changed, 1% not at all changed.

For fifth question, “Do you want such training often in future?” 47% responds, “Highly need” and 52% need 1% not need.

For the sixth question, “Will the knowledge of this training help to reduce accidents? 73% found highly helpful, 26% helpful and 1% not helpful.

For the seventh question was about their opinion to improve the training. Most of them were satisfied and said training all staff of KSRTC is highly essential for collective good of this industry and this was essential very early.

Total response in satisfaction assessment confirms the findings of TAS and DPS and hence the training is highly effective and improved driver’s observation, attitude, beliefs, thinking and feeling to the expected direction greatly. According to psychological principles, naturally drivers will change their behaviour in consonance with their new beliefs, thinking and feeling.

CHAPTER V

SUMMARY AND CONCLUSIONS

Road safety scenario is a major concern world wide today, due to shocking accident rates of 1,200,000 deaths and around 50,000,000 injured every year, revealed in a study of WHO (Pedden et al, 2004). In India vehicle population is increasing in a rocket speed, accident rate also follow this speed, and yearly death is more than 100,000 today. In terms of mortality per 10000 vehicles, the rate of accident death in India is as high as 14 as compared to less than two in developed countries. The coast of road crashes has assessed at one to two per cent of GDP in developed countries. A study by the planning commission in 2002 estimated the social coast of road accidents in India at Rs 55000 crore annually, which constitutes about 3% of the GDP (Sunder, 2007).

Road traffic injuries are predicted to increase by 83% in low- income and middle-income countries (if no major action is taken), and to decrease by 27% in high-income countries (WHO, 2004).

Most of the developed countries addressed this problem and conducting regular studies and utilizing that result to improve the traffic system and its efficiency to reduce road accidents and its causalities to minimum. Literature review shows the possibilities of psychological methods for drivers' improvements. Coaching psychology has defined as the systematic application, of behavioural science, to the enhancement of life experience for individuals, groups and organization (Grant 2003 cited in Dorn.2005). It involves working with people who have no clinically significant mental health issue or abnormal level of distress to help focus on behavioural goals to enhance performance and well – being. It seems common sense then that training drivers would reduce the risk of collisions.

This study was to find out the effect of psychological methods devised by several scientists for behaviour modification of non-clinical problems for the improvement of drivers. Driver coaching sessions would be drastically different from standard instructional techniques; although attitudinal training for some more advanced, driver training courses often involves the discussion of inappropriate beliefs (Even, 1985 cited in Dorn, 2005), but in an interventionist way with the aim of changing these distorted beliefs. To do so, coaches need to employ strategies that focus on changing the internal context of beliefs and this can only reliably achieved with the use of psychological methods. Coaching psychology has a variety of psychological interventions to choose from, but any behaviour change models should consider both a cognitive and behavioural approach in dealing with problem health behaviours. An effective intervention framework for driver coaching need to take into account both the way a driver thinks and behaves. One model that we find particularly useful for driver coaching, and have a background in the successful application to other health behaviours, is Cognitive Behaviour Therapy. (Dorn, 2005)

In this experimental study, total two hundred matched subjects selected at five stations of KSRTC at Calicut, Malappuram, Palakkad, Trichur and Trivandrum randomly and tested them with two questionnaires (TAS and DPS). Conducted pre-testing and equal samples of twenty each assigned to experimental and control groups randomly at five stations. Treatment has given (four days special training) to experimental groups only and tested post training both groups. The score of two tests, for pre and post training of both groups analyzed with 't' test, to test the significance of variance, station wise and statewide.

Results of independent 't' test shows, pre-test values of training assessment scale and driving personality scale scores in both groups do not vary significantly at 0.01 level and hence the sample represent same population and are homogeneous(t-value of TAS is 1.28 and t-value of DPS is 1.39, Table Value 2.617 p=0.01). Paired't' test of experimental group pre and post scores for both attitude and the personality scores shows (t-value of TAS is15.71 and t- value of DPS is16.81 Table Value 2.617 p=0.01) there is highly significant difference at 0.01 level, for pre and post scores.

This shows the treatment is highly effective and training caused great change in the attitude and behaviour of drivers in the expected direction. An important part of cognitive therapy is changing patient's cognitions to bring about emotional, behavioural, and physiological change. Cognitive therapist often start working at the automatic thought level because this superficial level of cognition is more amenable to change than are underlying assumptions and core beliefs. Modification of underlying beliefs is undertaken as quickly as possible because once patients experience a fundamental change in their distorted views of themselves, their world, and others; they tend to have fewer distorted thoughts, feel better emotionally and behave more functionally. (J S.Beck, 2005). This training has used mainly cognitive behavioural therapy methods and principles to change drivers negative thoughts and distorted beliefs. Discussion about various aspects of driving progressed always to change unrealistic and false belief and replace correct ones. Change is in beliefs, thinking, feelings and cognition about driving, road reading, risk perception and attitude about speeding and vehicle handling methods. This will necessarily reflect in their driving behavior also.

Paired 't' Test of control group for its pre and post test results on attitude (TAS t-value is.11) and personality (DPS t-test value is.77) shows there is no significant change at 0.01 level and hence the result of the experimental group with highly significant change after training is not due to any practice effect.

Station wise analysis also proved that there is no significant difference in scores of control group, pre and post training at all five stations. Scores of experimental groups pre and post training at all five stations shows significant difference at 0.01 level and hence it is proved that the training has changed drivers attitude, beliefs, thinking and feeling about driving more positively in the expected direction. Naturally, this will change the driving behaviour also in the desired direction. Hence this results shows this method of driver training is highly effective and suitable for training of motor vehicle drivers.

The training satisfaction scale shows almost majority of the sample highly satisfied with the training and their driving behaviour also improved, only very negligible percent responded otherwise, this is also confirming the experiment result. The scores of training satisfaction scale cannot test for statistical significance.

In India during 1990 to 1997, 32.22% increase registered in road accident deaths and number of persons injured in road accidents by 270.9% from 1980 to 2002. At the same time most of the developed countries like U.S and U.K checked the rate of increase in accidents, deaths and injuries, mainly through regular re-training of drivers and compulsory (court) referral system of re-training for violators and scientific driving education and testing for licensing. This alone do not change the driving as there is reinforcing and conditioning stimulus were present on the road and in the vehicle for driver's dangerous driving behaviours. Most of the time passengers encourage over speed and dangerous violations due to time pressure and appreciate such dangerous driving and punish or criticize if late for an appointment.

Enforcement if above a minimal level with high-perceived risk of detection will also help to control driver's behaviours at least at the range of enforcement. However, regular objective enforcement has not found practical in a social situation of India. Enforcement officer's work to achieve the target, without knowing the theory and principle behind these behaviour modification methods, administration consider it as a revenue only and public feel it is nuisance. In the case of KSRTC, being a state owned bus operator, enforcement officers consider them as part of state and hence left free of checking, and they are eventually missing such a system, helpful to confirm their drivers to road laws and regulations.

Hence KSRTC drivers can drive as they think proper and hence their own decision about driving style, speed, obedience of laws are very important as far as the safety and economy are concerned. Hence a training to correct their feelings, thinking, cognition, beliefs, attitude and there by their behaviour from their inner being has high relevance for drivers in KSRTC. In general surveillance of driving cannot be practical in each places to punish for violations, training to such a basic change in core belief and behaviour make better result in safety and economy. This study

shows cognitive behavioural method is highly effective to change the attitude and behaviour of the drivers in KSRTC and this method is suitable for training of all motor vehicle drivers to improve safety and economy.

LIMITATIONS

The major threat to change of behaviour of drivers are peer pressure, passengers attitude and harden believes and unrealistic optimism of drivers about their driving, capacity to control vehicle in any speed without proper rest and even drunk. At the same time, they do not expect risk on the road realistically and feels free to drive fast as the accidents are rare incidents. In KSRTC, there are only 1.1 accidents per 100,000 kms but the accident per thousand vehicles per year is 400 and this is very high and more than three times the national average. Drivers believe accidents do not happen to them until they involve in a major accident to learn incidentally and they do not want change in their driving. Even if they met with an accident, they attribute its cause on others.

This study used self-reported questionnaire methods for evaluation and hence there is some chances of test effect due to pre and post test with same instruments. Observation in actual driving condition to verify the change is the foolproof method though it is difficult. Moreover, follow up study in actual setting after training necessary to draw a conclusion. In the case of KSRTC, accident data shows about 27% reduction in total accident after training programme. Further study is necessary to confirm the consistency of behaviour change achieved and the relapse rate and to plan follow up programmes as booster dose.

CONCLUSSION

In India vehicle population is increasing in a rocket speed, accident rate also follow this speed, and yearly death is more than 100,000 today. In terms of mortality per 10000 vehicles, the rate of accident death in India is as high as 14 as compared to less than two in developed countries. Road traffic injuries are predicted to increase by 83% in low- income and middle-income countries (if no major action is taken), and to decrease by 27% in high-income countries, (WHO, 2004).

Most of the developed countries addressed this problem and conducting regular studies and utilizing that result to improve the traffic system and its efficiency to reduce road accidents and its causalities to minimum. Literature review shows the possibilities of psychological methods for drivers' improvements. This study was to find out the effect of psychological methods devised by several scientists for behaviour modification of non-clinical problems for the improvement of drivers

An effective intervention framework for driver coaching need to take into account both the way a driver thinks and behaves. One model that we find particularly useful for driver coaching, and have a background in the successful application to other health behaviours, is Cognitive Behaviour Therapy. (Dorn, 2005). This study investigated effect of Cognitive Behaviour Therapy for driver's improvement. Basic principle of CBT methods, mainly cognitive restructuring used to help the drivers to correct their faulty thinking, distorted cognitions, unrealistic optimism, negative beliefs and destructive feelings about driving and replace all of this with more appropriate healthy and constructive ones. Special training, using cognitive behavioural techniques has imparted to samples selected, for four days, daily eight hours. Emphasis has given, for preparing trainees for change in the first session, to create a warm and friendly atmosphere.

The result of this study shows the treatment is highly effective and training caused great change in the attitude and behaviour of drivers in the expected direction. However, in this method the trainers must have knowledge in driving, its technology and road laws of that land and reason behind it, psychology and behaviour modification methods, and after all experience to deal with groups, mainly drivers. Anyhow, first stage, the preparation of drivers for change is highly important and post training follow up of drivers to encourage and appreciate for their improvement will help to avoid relapse to old dangerous behaviour. Better driving naturally yield better fuel efficiency, low maintenance coast, increased passenger satisfaction and reduced accident.

It is clear that behaviour of drivers change, with their experience and its consequences, and more chance is to unexpected and dangerous direction. This shows the relevance of occasional retraining of drivers. Applying coaching psychology to driver training would help drivers to make behavioural changes using proven psychological theory and approaches. Driver coaching would encourage drivers to self reflect, based on an integration of perceived inconsistencies in their behaviour, to raise awareness of inconsistent believes and to generate an unpleasant state to motivate change (Lisa Dorn, 2005).

Understanding how driver characteristics influence driver behaviour has clear implications for the design of driver training (Lisa Dorn, 2005). However, currently there is a large gap between theories of driver behaviour and the practical applications of driver training. To bridge the gap, research needs to apply to training interventions designed to instigate and maintain behaviour change using psychological interventions.

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