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Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis

Abstract

Objectives: This mixed methods study reviewed the role of coaching in the driver development environment. The study sought to explore the impact of coaching as a learning methodology and to compare this with the traditional instruction-based approach.

Design: The study involved a mixed methods sequential design. The first part of the study was a randomized controlled trial (RCT) and the second part of the study used semi structured interviews and thematic analysis.

Methods: The RCT element of the study involved participants being randomly allocated to one of two learning groups. In the first group participants were trained by driving instructors trained in coaching skills using a blended method of coaching and instruction. In the second group participants were trained by driving instructors using solely an instruction approach. In total 208 participants took part with 24 driving instructors delivering the coaching or instruction across the two groups. In the qualitative part of the research, 4 driving instructors and 7 learners were interviewed using semi-structured interviews and the data analysed using thematic analysis.

Results: The quantitative study revealed that coaching was a more effective and efficient method for learning in this context. The independent samples t-tests indicated significant differences with learners in the coaching group spending less time in training ($p<0.01$) and being more likely to pass their test on the first attempt ($p<0.01$). The coaching group also had fewer attempts to pass the assessment ($p<0.01$) than the instruction group. The qualitative study suggested that from this group that both learners and 'instructors' observed positive aspects to the coaching style of learning. This was strongest for instructors who suggested coaching facilitated an improved relationship and helped the learner to learn more quickly.

Key words: *Coaching psychology, RCT, Mixed methods, coaching and learning, coaching impact, pedagogy, adult learning, coaching and driver development*.

Introduction

The UK government and other governments in the developed world are faced with a challenge of how to improve road safety. Despite persistent attempts at reducing accidents through campaigns, road design and changes to car design, road traffic accidents remain one of the largest causes of death in the developed world. In 2008, it was reported that around seven fatal incidents occur per day in the UK. Death through a driving related incident is the single largest cause of death for young people between17-25. Further, around 20% of new drivers are involved in an incident within the first 6 months of acquiring their licence (DSA, learning to drive consultation paper, 2008).

While drivers are often blamed individually for incidents, behind this are issues of national culture, personal attitude and driver learning. Leading coaching practitioners such as Whitmore (2010) have questioned the current methods for learning to drive and have suggested that coaching may be a more effective method for driver learning, compared with the current instructor led approach.

The Driving Standards Agency (DSA) in a consultation paper '*Learning to drive'* discussed ways of revising the current approaches by changing the current system's focus on merely teaching the skills required to pass the test, with a view towards developing greater use of higher order skills. As part of this process the DSA is engaged in a five-year project to assess which methods are more effective in enhancing road safety. Serious questions have however been raised about the methodology of the study even before initial results have been published (Passmore, 2010a; University of East London, 2011). These include questions about cross-contamination between the coaching and control group, where it is reported that members of the control group have previously received training in coaching skills.

In the UK, the key requirements for acquiring an LGV (large goods vehicle) licence is that the individual must have a full category B licence (car), meet the eyesight criteria and be a minimum of 21 years of age. An LGV licence is required for all vehicles that weigh over 3.5 tonnes. Similar to driving a car, the LGV learner must complete a theory, hazard perception and practical test.

The British Army have a large need for LGV drivers which is supplied by the Defence Driving School of Transport (DST) who train British Army learners for cars (category B), lorries (Large Goods Vehicle (LGV) (category C and C + E) and Passenger Carrying Vehicles (category D and D+E), in addition to special vehicle such as tanks and specialist off-road vehicles.

The methods for teaching a learner how to drive a lorry and car in the British Army are the same as a commercial driving school with instructors using instruction led techniques (Defence Instructional Techniques Manual, 2009). This typically involves the instructor in providing explicit instruction on the mechanics and operation of the vehicle, instruction on risks, as well as commands during the drive on what to do (i.e.

'use your mirror before you signal') and where to go (i.e. 'turn right at the next junction').

Training standards are considered high, the DST 'road traffic accident statistics' in 2008 reveal there was a decrease of 11% of road accidents. However, the total number of 'vehicle driver' deaths increased compared to 2007. A greater driver for change was internal financial pressures and the increasing demand for trained drivers, a direct result of operations in Iraq and Afghanistan.
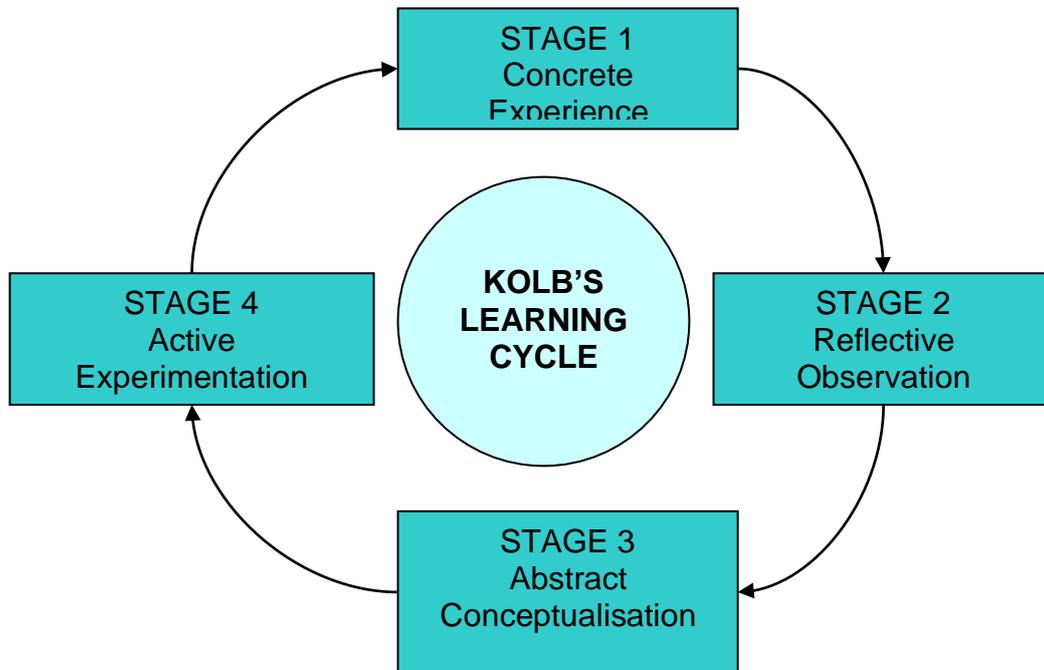
Coaching was identified as a possible solution to improve driver outcomes and DST was interested in exploring these ideas. In parallel other work was underway in other areas of driver training which has provided evidence of coaching's potential contribution to driver development (Passmore & Mortimer, 2010; Passmore & Townsend, In Press). These previous studies in the learner driver and police advanced driver environments have revealed the perceived value by driving instructors of coaching in supporting driving pupil's learning, improving the learning relationship between 'instructor' and learner and the perception that learning was more effective when the 'instructor' used coaching in comparison to instruction.
At this stage the contribution of coaching to adult learning remains theoretical. There are many theories that attempt to explain how adults learn. The most widely used theory is Kolb's (1984) experiential learning theory (ELT). Kolb defines learning as *"the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience..."* (Kolb, 1984, p.41). Kolb emphasises experience as an important aspect of how adults learn (Kolb & Kolb, 2005), within a four-stage cycle of learning (Figure 1). Whilst Kolb notes that learning can occur at any point of the cycle, it generally begins with the process of 'concrete experience' (Rakoczy & Money, 1995).

According to the ELT, learning involves developing a theory, forming hypotheses and then testing those hypotheses. On the whole, the four stages of the cycle involve the learner in self-reflect, observation and testing (Rakoczy & Money, 1995). Kolb highlights that for learning to be a success, the learner needs to actively complete all four stages of the cycle. Argyris (1991) has further developed learning theory through his 'double-loop' analogy. Argyris argues that 'double-loop learning' consists of asking yourself questions and then testing them. 'Double-loop learning' occurs at the third stage of Kolb's cycle, whereby adults learn to apply their hypotheses and theories to new conditions.

It can be hypothesised that coaching further aids the learning process described by Kolb (1984), as coaching creates a sense of personal responsibility of the learning and stimulates the double loop learning described by Argyris, as the coachee is encouraged to reflect on their situation and its implications through questions from the coach. These models of learning suggest that an individualised coaching approach might help enhance the efficacy of LGV driver training beyond the traditional directive, instructor lead approach.

Figure 1: Kolb's (1984) Stages of Learning Cycle:

Adapted from Kolb and Kolb (2005)

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Figure 2: A model comparing the outcomes of the coaching and instructional approaches

| **Instructional Technique:** telling the learner what to do | → | Stage 1 | → | Stage 2 | → | **LONG TERM OUTCOME:** Can only apply this to the same situation |

| **Coaching Approach:** Encourage reflection of behaviour, Socratic questioning, testing & forming hypotheses | → | Stage 1 | → | Stage 2 | → | Stage 3 | → | Stage 4 | → | **LONG TERM OUTCOME:** Apply knowledge to other situations |

Double-Loop Learning
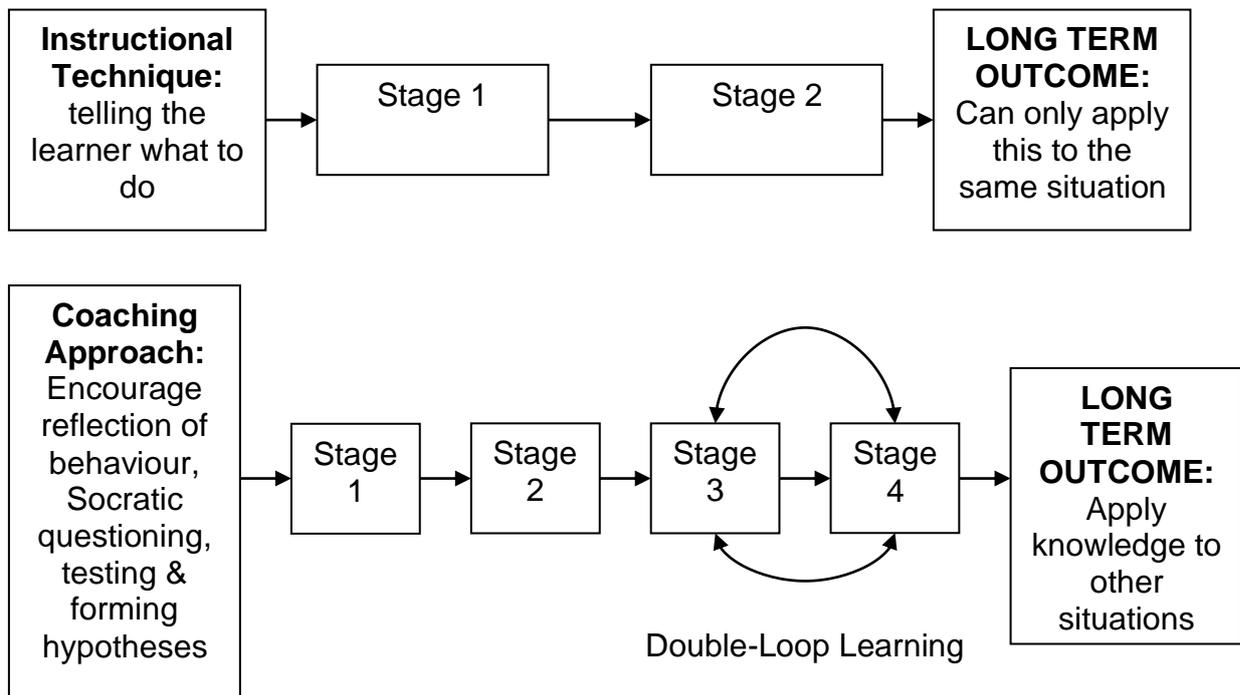
Adapted from Kolb's (1984) cycle

A number of previous studies of coaching have indicated the effectiveness of using coaching and training simultaneously to help the learner personalise learning and thus enhance application to workplace activities (e.g. Olivero et al., 1997). However, to-date no direct comparisons have been made comparing instructional and coaching approaches as learning methodologies. Further, the randomized trials which have been undertake have tended to focus on the development psychological characteristics, for example resilience or behavioural skills (see Grant et al., 2010 for a fuller discussion) rather than compare coaching with other comparable developmental interventions.

Research however is still limited even in the area of the development of behavioural skills and even rarer in using coaching with people who may have poor literacy skills. Allison and Ayllon (1980) used a behavioural coaching strategy with twenty-three participants to aid the learning of specific skills in sports. They found that the behavioural coaching approach enhanced performance and appropriate use of the skills by an average of 50%. The findings of this study suggest that a behavioural coaching approach might be successful in driver training with a diverse population, as driving involves learning a motor skill, which needs to be executed correctly to ensure driver safety beyond the training. However, in addition it involves higher order cognitive skills, such as decision making, which themselves are affected by

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emotional state, personality and attitudes. As a result, a cognitive behavioural approach, combining both basic behavioural coaching with an exploration of cognition may enhance driver development outcomes.

A review of the driver development literature reveals there are currently no empirical research looking at the effects of coaching on driver training, with the exception of the papers noted above conducted as part of this wider review of coaching and driving (Passmore & Mortimer, 2011; Passmore & Townsend, 2012).

In terms of the wider driver training arena, some work has been conducted. Work by Senserrick & Haworth, (2005) has noted the central role of attitudes. Stanton et al. (2007) have suggested hazard perception programmes to help improve the effects of training. Senserrick and Swinburne (2001) noted the value of advanced 'insight' training courses which made drivers more aware of the risks involved in driving. Hutton et al. (2002) have highlighted the role of feedback on driver safety behaviours and have found a positive effect of using feedback to change negative behaviours. Boorman (1999) found that an advanced driver training programme conducted with the Post Office lorry drivers significantly improved fleet performance and also resulted in a reduction in accidents after the programme. These studies lend preliminary support to the notion that driver training can be enhanced with the addition of supplementary approaches.

Given this context, leading driving researchers (Dorn, 2005) have suggested that coaching may be an appropriate methodology for driver training. Rismark and Solvberg (2007) proposed a dialogue similar to feedback and coaching to improve the effects of driver training in Norway. The study looked at how to improve driver training in terms of its content through enhancing the communication between the instructor and learner. This approach helped enhance self awareness and reflection in the driver, which led to better driving behaviour beyond training. Similarly, Stanton et al. (2007, p.1213) evaluated the effectiveness of an advanced coaching driving intervention, training drivers' in the 'Information', 'Position', 'Speed', 'Gear' and 'Accelerate' system (IPSGA). They conducted the study with 75 participants, who were either put in the coaching group, an observation group with no coaching or a control group with no observation or coaching being given. The participants were adults between the ages of 23-65 with several years of driving experience. They found that the experimental coaching group significantly improved their attitudes, situational awareness and skills related to driving. They propose that their findings suggest that a formal one to one coaching course will help produce safer drivers, emphasising that the content and methods of an advanced training programme is the key to its success. These findings indicate that coaching will be useful for improving driver development for all vehicles and in particular for lorry driver training to help facilitate the acquisition of the specific skills and to enhance road safety beyond the test. Nevertheless, a major weakness identified with their study is the nature of participation in the study. Their sample for the coaching group was self-selected and this group were *"motivated to improve their driving"* (Stanton et

al., 2007, p.1231). Stanton et al. (2007) and Rismark and Solvberg's study (2007) provide evidence and support for the use of coaching as an independent and formal programme.

These studies were picked up by the EU Hermes Project (2007), which has explored the role of coaching as a learning approach for novice drivers. Its report (2010) has suggested ways that driving instructors can incorporate coaching into driver training (see for example HERMES, 2011). HERMES also highlighted *"Goals for driver education"* (Table 1). The matrix defines the goals and competencies required for teaching individuals how to drive, using a 'hierarchical approach'. Level 1 'vehicle control' is gaining skills in the basic manual handling of the vehicle, such as manoeuvring and general car maintenance. Level 2 'driving in traffic' consists of gaining control in traffic situations and different road and weather conditions, it is the mastery of driving in varied conditions. Level 3 'goals and context of driving' and level 4 'goals for life and skills for living' are the higher-order skills required for driving, such as understanding driver motives and intentions for driving, factors related to driver personality and values, 'self-awareness', 'emotions' and being able to understand driver personal strengths and weaknesses. They can be seen as the 'what, where, when and how' of a journey and understanding the rationale for making decisions. The matrix can be used to understand what the current traditional approaches to driver training need to revise and reconsider.

While the instructor lead approach focuses on levels 1 and 2 of the matrix, which are formally assessed on the driving test, it is suggested that the coaching approach helps develop levels 3 and 4 of the matrix, as coaching helps challenge one's beliefs (HERMES, 2010). The evidence suggests that these factors are important and have a large impact on driving behaviour, (Dorn & Brown, 2003; Dorn, 2005). The HERMES Report argues that for driver training to be successful it needs to incorporate all levels on the matrix.

It can be questioned whether a more enhanced coaching approach to driver training will enhance its effectiveness. Driving involves both cognitive skills, such as calculating other road user speed, intended direction and associated risks of manoeuvres and behavioural skills, such as vehicle control. For coaching to be successful in driver training, it needs to adopt approaches which enable these aspects of skills development to be addressed. Grant (2001) found that a combined approach of cognitive and behavioural methods was more effective in enhancing learning for adult learners, finding that it led to 'deeper' understanding, as well as reducing anxiety and these effects were also maintained at follow-up.

The current study aimed to explore whether coaching could improve the efficiency and effectiveness of driver training. Unlike the small number of driving studies that focus on young novice drivers, the current study focuses on adult learners who already know how to drive and has passed their test for category B (motor car).

Table 1: Goals for Driver Education (GDE) Matrix.

Hierarchical levels of driver behaviour	Competency 1: Knowledge and Skill	Competency 2: Risk Increasing aspects	Competency 3: Self- Assessment
LEVEL 4: Goals for life and skills	• Lifestyle, age, group, culture, social position etc, vs driving behaviour	• Sensation seeking • Risk acceptance • Group norms • Peer pressure	• Introspective competence • Own preconditions • Impulse control
LEVEL 3: Goals and context of driving	• Modal choice • Choice of time • Role of motives • Route planning	• Alcohol, fatigue • Low friction • Rush hours • Young passengers	• Own motives influencing choices • Self-critical thinking
LEVEL 2: Driving in traffic	• Traffic rules • Co-operation • Hazard perception • Automization	• Disobeying rules • Close-following • Low friction • Vulnerability	• Calibration of driving skills • Own driving style
LEVEL 1: Vehicle control	• Car functioning • Protection systems • Vehicle control • Physical laws	• No seatbelts • Breakdown of vehicle systems • Worn-out tyres	• Calibration of car control skills

(Adapted from Hatakka, Keskinen,Glad, Gregerson and Hernetkoski, 2002, pp.209-10) and Gregerson (2005, p.9).

Method

This study investigated the impact of coaching on Large Goods Vehicle (LGV) driver training with the Defence School of Transport (DST) in the UK. The first part of the study used a randomized controlled trial methodology (RCT), where participants were randomly allocated to the coaching experimental group or the instruction

control group. In this study, the independent variable identified was the coaching style of teaching learners how to drive a large goods vehicle (LGV). The dependent variables were the total number of hours spent in training; the total number of kilometres (kms) spent driving in training prior to passing the test, the number of tests taken to pass the driving test and passing the driving test on the first attempt. The design of the study was a between subjects design, as there were different participants in each group. The experimental group ('Group 1') received the coaching style of teaching and 'Group 2' was the control who received the standard instruction style of teaching. Participants in each group were matched according to their LGV driving test category; whether they were training to acquire their category C licence, which is for *"vehicles over 3,500 kg, with a trailer up to 750 kg"*; or training for their C+E licence, which is the same as category C with the exception of a trailer weighing *"over 750 kg" (Direct Gov, 2010).* The data was collected by members of the DST and subjected to analysis by the researchers. The second part of the study involved a series of short semi-structured interviews, transcription and thematic analysis to identify common themes.

Participants
The RCT part of the study involved 208 participants, with 104 participants in each group. Participants were serving members of the British Armed forces who were learning to drive a lorry with the Defence School of Transport (DST). The sample included both English as a second language, (mainly from Nepal and Kenya), and native English speakers. Participation in the study was voluntary. Participation of learners in each group was randomly assigned, through an ABAB process, following posting to DSA. The driving instructors were all members of unit D, one of seven units involved in driver training. The selection of this group was random. The driving instructors attended five days of coach training. The training covered basic skills in coaching and included a basic coverage of behavioural and cognitive behavioural coaching models. Participants also completed coaching practice during which they were observed and received feedback, along with a subsequent assessment

The qualitative study involved 11 participants, 4 instructors and 7 learners, who were interviewed by independent researchers. These were selected at random from each of the groups. Participation was again voluntary.

Materials
   (i) Participants: For each participant (learner driver) a record of the hours spent in training, kilometres driven, number of tests taken and the date and time of all lessons and tests were recorded using individual learner record sheets. The summary data for each individual was transferred to an Excel spreadsheet for analysis.

   Each participant (learner driver) was given a work book, work sheets and an instructor resource to refer to post training (PLD, 2008a; PLD, 2008b).

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(ii) <u>Trainers</u>: Twelve DST staff were trained in the coaching approach. The training was designed to develop the driving instructors' knowledge, skills and attitude to learners and to be able to undertake coaching with confidence and competence. The aim of the training programme was to ensure that the trainers (driving instructors) were skilled in the approach so that they could then train other instructors within their organisation. The training contents is summarised in Table 2.

(iii) <u>Data Collection</u>: Trainers (driving instructors) were asked to monitor the hours spent in training, kilometres driven and test details on a record sheet for each student at the end of each session. The collection of such information was part of the instructors' normal role. Data was collected during January- July 2009. During this period, each instructor trained approximately 10 students.

Trainers (driving instructors) trained participants (learner drivers) in the experimental group how to drive a lorry, using techniques from both coaching and instruction. Instructors who had not received the additional coaching training taught participants (learner drivers) in the control using the DST's instructional style.

Participants (learner drivers) were randomly allocated to a trainer (driving instructor). Each participant was informed that their details would be monitored during their lessons. In addition, each received an explanation that the Army was reviewing its driver learning methods; although precise details were not disclosed as to the types of training methodology or whether the participant was in the experimental or control group.

Table 2: Training objectives

Day	Objectives
1	• Introduce the coaching process – define coaching and how it compares with other forms of learning • Core coaching skills – listening, questioning, summary & reflection
2	• Core coaching models, e.g. the GROW model, goal setting (SMART goals). • Coaching practice
3	• Models of adult learning – Learning cycle, social learning & Double loop learning • Learning styles • Supplementary models - Cognitive behavioural approach and

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	techniques • Coaching practice
4	• Building learning relationships with learners • Driving lesson planning – combining instruction and coaching • Coaching Practice
5	• Integrating the skills • Coaching practice • Personal review and action planning.

Eleven semi-structured interviews were also conducted with both trainers and learners to gain further insight into their experiences of the coaching approach. Each interview lasted between 10 and 20 minutes. Interviews were conducted with four instructors who had been trained to use coaching to teach learners how to drive. The interviews explored the effects of the coaching course on their role as an instructor, in particular, looking at ways in which it might have changed the way they teach and the effects that this teaching style had on their learners.

Seven learners were interviewed. All the learners interviewed were either doing their C or their C + E LGV category license training with the British Army through the Defence School of Transport. All learners had already acquired their category B (car driving) license. The learners were asked if they had noticed any differences in the way they had been taught between their previous instructor and the new coaching instructor and about the learning experience.

Results
<u>Quantitative Data</u>
In this section the findings from the statistical analysis are reviewed for each of the four hypotheses. The level of statistical significance adopted for this study was $p<0.01$. An initial review of the data using a One-Sample Kolmogorov test revealed that the data was more or less normally distributed, therefore the Independent Samples t-test was a robust enough test for the data obtained. The t-test also copes better with outliers and is the test of significance for comparing the difference between two groups.

The comparisons made between the experimental group (coaching) and control group (instruction) included:
▪ The total number of hours in training to pass the test

▪ The total number of kilometres driven in training to pass the test

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- Average number of tests taken to pass the driving test

- Whether the learners passed their test on the first attempt.

Hypothesis 1: *Learners in the coaching group will spend fewer hours in training compared to the instruction control group.*
Table 3 below shows the average number of hours spent driving in training in order to pass the test for the coaching and instruction groups. It can be seen that there is a difference in the number of hours driving between the two groups (control M= 30.12, coaching M= 21.43).

Table 3: Descriptive statistics - total number of hours driving to pass the test for the coaching and instruction control group

TYPE OF TRAINING	NO. OF LEARNERS (n)	MIN.	MAX.	MEAN	STD DEV.
Instruction Group (Control)	104	10.15	106.75	30.12	17.78
Coaching Group	104	7.00	81.00	21.43	13.06

The coaching group spent fewer hours in training in order to pass their test, indicating a mean difference in hours spent in training of 8.69 (hrs). An Independent Samples t-test was conducted to determine whether this difference in total hours spent driving was significant. Levene's test for equality of variances was $p<0.05$ ($p=0.026$). The analysis revealed that the difference between these two groups was significant ($t= 4.014$, $p<0.01$, $p=0.0005$, one-tailed), indicating that the coaching group on average take less time in training to pass their test. The null hypothesis can therefore be rejected.

Hypothesis 2: *Learners in the coaching group will drive fewer kilometres to pass the test compared to the instruction control group.*
Table 4 demonstrates the mean for the total number of kilometres driven in training to pass the driving test for both groups. There appears to be a difference between the mean for the instruction control group (M= 449.99) and the coaching group (M= 394.44).

Table 4: Descriptive statistics – total number of kilometres driven in training to pass the test for the coaching and instruction control group

TYPE OF TRAINING	NO. OF LEARNERS (n)	MIN.	MAX.	MEAN	STD DEV.
Instruction	104	90	1934	449.99	310.76

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Group (Control)					
Coaching Group	93	100	2350	394.44	327.44

The mean difference between the two groups was 55.55 kilometres. The Levene's test for equality of variances was $p>0.05$ ($p=0.621$), using the top row of values for t, the equal variances assumed row. However, an Independent Samples t-test revealed that this difference in kilometres spent driving in training was not significant ($t = 1.221$, $p>0.01$, $p= 0.112$, one-tailed), thus the null hypothesis failed to be rejected, as coaching showed no improvement in the kilometres driven in training to pass the test.

Hypothesis 3: *There will be a decrease in the number of tests taken to pass the test for learners in the coaching group.*

Table 5 shows the average number of tests taken for the learners to pass their test in both groups. It can be seen that on average the coaching group take less driving tests to pass ($M=1.38$).

The difference between the two groups in the number of tests taken to pass their driving test was small (0.33). An Independent Samples t-test analysis revealed that the difference between the number of tests taken for both groups was significant ($t=2.659$, $p<0.01$, $p= 0.005$ one-tailed). Levene's test for equality of variances was $p<0.05$ ($p=0.004$) and so the bottom row of values for t were used. As predicted, there was a decrease in the number of tests taken to pass the test for the coaching group and the null hypothesis can therefore be rejected.

Table 5: Descriptive statistics – total number of tests taken to pass the driving test

TYPE OF TRAINING	NO. OF LEARNERS (n)	MIN.	MAX.	MEAN	STD DEV.
Instruction Group (Control)	104	1	6	1.71	1.01
Coaching Group	104	1	4	1.38	0.74

Hypothesis 4: *Learners in the coaching group are more likely to pass their test on the first attempt.*

The data for hypothesis 4 was categorical and thus the Chi-Square non-parametric test was used for analysis. Table 6 below shows the average number for whether the learners passed their test on their first attempt for the coaching and control group. It

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can be seen that there is a difference between the coaching group (M=1.00) and instruction control group (M=1.45) for whether they pass their test first time.

Table 6: Descriptive statistics for passing the driving test on first attempt

TYPE OF TRAINING	NO. OF LEARNERS (n)	MEAN	STD DEV.
Instruction Group (Control)	77	1.45	0.501
Coaching Group	77	1.00	0.000

Table 7: A table to show the cross-tabulation for whether both groups pass the driving test on the first attempt

		Coaching or Control Group		
		coaching	control	Total
Whether they passed their test first time	yes Count	77	42	119
	Expected Count	59.5	59.5	119.0
	no Count	0	35	35
	Expected Count	17.5	17.5	35.0
Total	Count	77	77	154
	Expected Count	77.0	77.0	154.0

Table 7 indicates that all learners in the coaching group (n=77) passed their test on the first attempt, indicating that on average a coaching style of teaching will help learners pass their test first time. A Chi-Square analysis revealed that there is a significant association between the two groups (X2= 45.294, df= 1, p<0.01, p=0.0005, one- tailed). The analysis supports the hypothesis that learners who receive a coaching style of teaching are more likely to pass their test on the first attempt and the null hypothesis can therefore be rejected.

Qualitative Data
Data from the semi-structured interviews was transcribed and analysed using a thematic analysis approach. This approach can help understand emerging ideas from research (Aronson, 1994). *"Thematic analysis is a method for identifying, analysing, and reporting patterns (themes) within data" (Braun et al., 2006, pg.6).* An advantage of using this approach is that it allows for flexibility (Braun et al., 2006).

The process of analysing the data firstly entailed becoming familiar with the interview data. The second stage involved identifying the themes and patterns from

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all the interviews by moving back and forth between the interview data. During this stage, all patterns and trends found in the data were coded. The third stage involved a review of the patterns and trends to form and define the specific themes. The fourth stage combined the common or similar themes together in order to create sub-themes. The final stage of analysis was to identify the data that was related to these themes (see Braun et al., 2006).

<u>Trainers</u>
Table 8 below summarises the key themes that arose from the interviews with the trainers. The trainers felt that their teaching style had improved from using the new coaching method and could see marked improvements in their learners who had received this style of teaching. Trainers felt that they reflected back more when using the coaching style, they gave more feedback, worked in a more collaborative style with their student, set clear goals, helped their students to actively learn through practice rather than instructing and that they asked their students more questions in order to explore whether their student understanding the task. The trainers also mentioned that coaching was a useful tool for teaching their learners, commenting that this technique definitely worked with their students and would recommend the wider use of the technique in other areas of training. Comments from trainers included:

"I think it's certainly made me a little bit more enthusiastic in getting out there and doing it. No doubt…well, job satisfaction" (T5-278-282)

"I've got that little bit that's really helping me and I can see the big difference in my students" (T3-140-142)

"You're getting the answer out of them rather than you telling them you're asking the questions they're giving you the answer then you're waiting for the response of that student" (T3-26-29)

"It's totally different now because now all I'm doing is I'm bringing the best out of the students I'm praising them, everything they do…the Q & A technique, it's worked so well for me because, now it's making my job easier they're now thinking for themselves a lot earlier" (T3-128-136)

"It's definitely got a place in driver training" (T2-227).

Table 8: Key themes from the interviews with the Trainers

Themes	Trainers' thoughts/comments
Driving instructor – learner relationship	Trainers felt that coaching helped to build good relationships with their students, creating a good atmosphere to teach in.
Coaching as a complementary	Coaching helped to enhance the skills they were already using.

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methodology	
Enhanced opportunity for learner self reflection	The approach encouraged more self-reflection and helped learners to become more tolerant of situations that they are faced with. Using reflection also helped to find out if the learner understood the issue and provided the opportunity to then cover again material if the concept was not fully understood.
Flexibility with using the coaching style to teach	Trainers felt that they were able to use a variety of methods to teach, which is tailored to the each individual learner's needs.
Feedback and Preparation	These were regarded as an important process in their teaching methods.
Involvement	Coaching has made them more aware of ensuring that both learners' needs are met and that they keep them interested through more involvement e.g. by having more conversations with them.
Exploring through questions for deeper understanding	Trainers felt that they now explain more to their learner's through asking more questions. They explained that it helps the learner understand and also give an insight into how much help the learner needed.
Working collaboratively with the learner	They work in partnership with the learners and that working together towards the same goal helped make the experience more enjoyable for everyone.
Setting Goals and Objectives	They now set more clear goals with their learners, and reassure them that they can do it through using positive reinforcement.
Responsibility of the learner	Trainers now let their learners take control of their learning, so that they're not constantly telling them what to do. They found that by giving the learner responsibility of their learning helped them to focus and learn.
Active Learning	Actively learning through practice helps the learner to hold onto those skills, making them more able to use those skills outside of training.

Learners

Table 9 below summarises the key themes from interviews with the learners. Four out of the seven learners interviewed noted no difference in the teaching of the coaching style and felt that their experience was similar to other instructors. Two out of the seven learners interviewed noticed that there was a difference in the teaching style compared to when they did their category B. They commented that the instructors were more careful with them as individuals.

These two learners also noticed the difference in the teaching style compared to their previous instructors and commented that the coaching style of teaching helped them to retain the skills learnt after the course and that this would help them when

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they are out in the field. Learners felt that their new instructors were very good, gave them more one to one attention, helped them to increase their confidence in driving, had more conversations with them and explained what to do more. They commented that they had learnt the importance of safety and checking whilst on the roads. Overall, the learners expressed satisfaction with the course and their trainers and had no negative comments. On average, all the learners interviewed were ready for their test within 5-8 days of training from a coached instructor. Comments from learners included:

"It's more one on one as opposed to in a classroom with 20 other students- I think it's a lot better" (L4-42-43)

"I've got the confidence now…so it's good" (L5-50-51)

"It's helped me to observe more" (L5-85)

"He kinda knows where he needs to explain things to you and he…overemphasises on a lot things so he'll help you understand things a lot more" (L4-68-71)

Table 9: Key themes from the interviews with the Learners

Themes	Learners' thoughts/comments
Course quality and Instructor competence	Learners felt that their instructors and the course were very good and that they helped them to be ready for their test early.
One on One learning	Some felt that their instructors had more one to one time for them, making their experience more personal.
Flexible learning	Some felt that there was more flexibility in the coaching approach to teaching and were given a choice of techniques.
Increased Confidence	All learners commented that their instructors helped them to increase their confidence in their ability to use the skills learnt. Their increased confidence helped to deal with difficult situations.
Conversational	Some learners felt that their instructors were very approachable, friendly, informal and easy to talk to. They talked to them more, explained things and asked more questions to help enhance their understanding.
Deeper understanding	All the learners highlighted that their instructors helped them to understand why they were undertaking activities.
New skills	Some felt they learnt many skills through the style of teaching, specifically to think about safety on the road and interaction with other road users.

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Discussion

The study investigated whether a coaching style of teaching learners to drive a heavy goods lorry would improve driver training outcomes. In particular, the study aimed to directly compare the differences between a coaching style of learning with the traditional instructional approach used to teach learner drivers.

British Army Driver training was selected as there are clearly defined measures of success; namely a driving test undertaken by an independent examiner. Further, rather than compare coaching with a control group on a wait list or a group which receives no intervention, driver training offers a commonly used method of learning (Instruction), which coaching could be directly compared with. A third benefit was that both instruction and coaching took place 1-2, so there was a direct comparison of the learning time. Finally, by using a sample drawn from an organisation, such as the British Army, meant that a relatively large sample could be collected, ensuring a reliable and that record keeping was highly accurate and was completed in full by all trainers.

The results indicated that there was a significant difference between the coaching and instruction (control) group in the number of hours they spent in training to pass their test *(p<0.01).* As such, it was found that the coaching group spent fewer hours in training. This finding suggests that the coaching approach of teaching helps learners to grasp the techniques required for lorry driving quicker than the instructional method. A possible explanation for this finding could be that the use of Socratic questions and the self-reflection methods used in coaching aid the learner to make more meaningful links between their existing knowledge and new knowledge, and personalise the learning so the focus of learning is on the learners' needs, rather than a fixed course time and content.

The expectation that learners in the coaching group would drive less kilometres to pass the test compared to the instruction control group, failed to reach significance *(p>0.01).* It was assumed that coaches would spend more time at the side of the road discussing the drive, while instruction would take place during driving. This hypothesis reflected earlier research with learner drivers which suggested that it may be difficult on occasions to use coaching while the learner was driving, due to the cognitive demands which both learning to drive and reflective questions place on the driver's mental workload (Passmore & Mortimer, 2011). Whilst the coaching group were found to drive less kilometres in training in order to pass their driving test, the analysis revealed that the difference between the two groups was in fact small (55.55 kms). One of the reasons for such a finding could be that the coaches were in practice coaching while their learner was driving. This view is consistent with the Experiential Learning Theory (ELT), which highlights that in order for adults to learn effectively, they need to engage in the four stages of learning involving observation, reflection and testing (Kolb, 1984). However, the finding that the learners in the coaching group spent fewer hours in training supports the fact that

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coaching was in fact a more time efficient method, as these learners significantly spent less time to procure the necessary skills for lorry driving.

It was hypothesised that the learners in the coaching group would take fewer tests in order to pass their driving test compared to the instruction control group. A significant difference was found between the two groups in the number of tests taken to pass their test *(p<0.01).* On average, the coaching group were found to take less driving tests to pass compared to the instruction control group. The analysis also revealed that the prediction that those in the coaching group were more likely to pass their test on the first attempt was significant *(p<0.01)*. As highlighted in the Goals for Driver Education Matrix (GDE), safe driving behaviour involves not only the manual control of the vehicle, but also requires interpersonal and situational awareness for making safe decisions (Hatakka et al., 2002). This study suggests that a coaching style of teaching can be used to optimise driver training outcomes by addressing the higher-level goals for driving as outlined in the GDE.

Although coaching improved the process of the training and was found to be a more time efficient method as opposed to the instruction approach; the difference between both groups was actually small (0.33), thus these significant findings could have been due to a type 1 error, whereby other confounding variables influenced the results. One of the variables identified is that individual characteristics, such as attributions about the driving lessons and cultural experiences of the learner could have influenced the way that they responded to the coaching and thus the findings of this study. Other possible explanations were individual differences. Gregory et al. (2008) discuss the influence of individual differences, such as gender and age, on the coach's questioning skills. In a future study it might be beneficial to match the coach and coachee to try and control for this variable. Weather conditions have also been reported as another confounding variable that can impact on driver performance (Gregerson, 1996; 2005). However, it could be argued that these confounding variables were inevitable and difficult to control in this study. Overall, in light of these difficulties, coaching was consistently found to help learners pass their driving test with fewer attempts.

As noted above there is limited research that evaluates the efficacy of a coaching intervention in learning and specifically within driver development. Nevertheless, the results of the study are consistent with the view that coaching can help to enhance the effectiveness of current driver training approaches by teaching learners the higher-order skills associated with driving (Hermes Project, 2007; Senserrick & Haworth, 2005; Dorn, 2005). The wealth of research on coaching suggests that it helps with knowledge and skill acquisition and enhances performance of individuals in organisational settings (e.g. Olivero et al., 1997; Feggetter, 2007; Tee et al., 2009), suggesting that coaching is a highly effective methodology for adult learning. The results of this study further support the fact that coaching can be used successfully to improve outcomes in driver training with a diverse population.

Clark et al. (2005) and the National Road Safety Statistics (2008) reveal that lorry drivers are more likely to display unsafe driving behaviour. Although driver safety

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was not directly measured in this study, nor was data collected on subsequent accident rates from both groups (the subject of current research), it can be hypothesised that the results of the current study suggest that a coaching methodology may help learners to become more aware of the risks associated with unsafe behaviours. Parallels can be drawn between the results from this study and similar findings of research which has evaluated the impact of advanced driver training programmes and shown that these additional courses help increase self-awareness, thereby leading to a reduction in accidents (e.g. Lund & Williams, 1985; Gregerson, 1996; Gregerson & Bjurulf, 1996; Senserrick & Haworth, 2005; Rosenbloom et al., 2009). For instance, Molina et al. (2007) found that a one-day advanced course helped promote a 'safer driving style' up to nine months post training. However, in contrast to other driving studies, this study we believe is the first to look at the impact of a formal coaching programme directly on drivers, whereas the majority of the driver training literature assesses the impact of a short-advanced course, such as 'insight training' or 'hazard awareness' training. Evidence for such advanced courses is also mixed, as some studies have revealed that whilst they are helpful in targeting unsafe behaviour, their overall effect is 'weak' (Ker et al., 2005; Lonero, 2008). Thus, whether coaching does indeed help learners become safer drivers requires further investigation.

The weaknesses with the traditional instructional approaches of teaching learners to drive have been well documented (e.g. Hermes Project, 2007). As such, the literature documents that the current approach to driver training does not equip learners with the skills required to be safer drivers. This study challenges the current driver training teaching methods by providing an alternative approach that can help overcome the issue of safety and retention of skills beyond the test. It has been highlighted that coaching can help address the higher- cognitive skills required for driving safely (Hermes Project, 2007). Similarly, Stanton et al. (2007) has suggested that an advanced coaching programme can help improve driver knowledge, skills and attitudes.

Grant et al. (2010) have highlighted that many coaching studies lack the use of a control group, making it difficult to firmly assert that the changes produced were due to the coaching itself or some other variable. It is reported that out of the 16 between-subjects studies, there have only been 11 RCT coaching studies to date (e.g. Green et al., 2007; Spence & Grant, 2007). However, a number of these have been with relatively small sample sizes. This study was thus untypical in using an RCT method with an equal and comparable control, which allows the placebo effect to be removed, and with a relatively large sample.

There has been growing UK and EU government interest in the use of coaching in driver training as highlighted in the Hermes project (2007) and the DSA consultation paper (2008). This research contributes to this wider agenda and begins to provide support for coaching as a useful learning methodology.

As recommended by Dorn (2005) and Rismark and Solvberg (2007), the current study has attempted to answer the questions raised about the effectiveness of driver training. The results in this study demonstrate that coaching improved learning outcomes, and in this context was more efficient and effective than instructional learning. The results suggest that the coaching approach of teaching learners to drive has the potential to offer significant benefits in the driver training domain.

More generally the findings from the study provide useful evidence about the value of coaching as a learning methodology, when compared to traditional instruction. The paper extends the work of Olivero et al. (1996) through its use of a larger and consistent sample and through using comparable interventions producing statistically significant results on both learning outcomes (percentage of those reaching the required standard / passing the test) and in the time taken to reach the standard (learning hours).

Limitations of the study

Despite these strengths, a number of limitations are acknowledged with the design of the current study. No demographic information about the participants was collected and therefore the sample could not be matched according to their background. This was due to constraints placed on the study by the British Army regarding publishing data on forces personnel. This barrier leads to a question over whether it is reasonable to generalise the results of this study to other groups and to learning environments. Questions could also be raised whether these findings apply to other drivers, for example non-forces personnel, and driving test categories, such as motor cars. A further limitation of the study was that learner attitudes, driving behaviour and safety outcomes were not assessed. The driving literature indicates that one of the problems with the current approaches to driver training is that they do not produce safer drivers, as accident rates are still on the rise (National Road Safety Statistics, 2008; Clark et al., 2005; Senserrick & Haworth, 2005). In order to assess whether coaching helped produce safer drivers it was therefore important to have a measure of safety. For example, Boorman (1999) found that an advanced training programme improved fleet performance and led to a reduction in accident rates post training. Similarly, Stanton et al. (2007) measured driving attitudes in the coaching and non-coached group using the 'Montag Driving Internality Externality (MDIE) LOC questionnaire' developed by Montag and Comrey (1987, cited in Stanton et al., 2007, p.1214). Future coaching and driving studies should therefore assess knowledge, skills, attitudes and behaviour administering a similar questionnaire pre and post training or through assessing driver behaviour or instructor, as well as assessing accident rates as a measure of safety. Further research is underway on driver accident rates and also of instructor behaviour following coaching training using the GDE matrix within a police driving context, and data is currently being analysed on a fourth study involving 'professional drivers' and accident rates (initiated by the same research team).

Conclusion

This study aimed to explore the effectiveness and efficiency of coaching as an adult method of learning with a driver learning context. The study provides evidence that coaching is a more effective learning methodology than instruction for driver training. Further research is needed to explore whether coaching may be a more effective methodology than instruction for other aspects of learning, such as leadership development or presentation skills. We believe this study provides is a useful contribution to the debate on both driver development and the wider use of coaching in adult learning.

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References

Allison, M.G. & Ayllon, T. (1980). Behavioral coaching in the development of skills in football, gymnastics and tennis. *Journal of Applied Behavior Analysis*. 13(2), pp.297-314.

Argyris, C. (1991). Teaching smart people how to learn. Reflections. 4(2), pp.4-15. Retrieved on 18 March 2010 from: http://www.velinleadership.com/downloads/chris_argyris_learning.pdf

Aronson, J. (1994). A pragmatic view of thematic analysis. *The Qualitative Report*. 2(1). Retrieved on 3 March 2010 from: http://www.nova.edu/ssss/QR/BackIssues/QR2-1/aronson.html

Boorman, S. (1999). Reviewing car fleet performance after advanced driver training. *Occupational Medicine*. 49(8), pp.559-561.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology.* 3(2), pp.77-101.

Brown, I.D. (1982). Exposure and experience are a confounded nuisance in research on driver behaviour. *Accident Analysis and Prevention*. 14(5), pp.345-352.

Clark, D.D., Ward, P., Bartle, C. & Truman, W. (2005). An In-depth study of Work-related Road Traffic Accidents. Department for Transport. Road safety research report no. 58. Retrieved on 18 March 2010 from http://www.orsa.org.uk/guidance/pdfs/indepth_study_work_related_road_accidents.pdf

Defence Driving Examiner Regulations (2009). Ministry of Defence. No.JSP449.
Defence Instructional Techniques Manual (2009). Retrieved on 3 March 2010 from:
http://cabmonsta.tripod.com/sitebuildercontent/sitebuilderfiles/ditprecisbooklet.doc

Defence Annual Road Safety Report (2008). Ministry of Defence. No.JSP485.
Dorn, L. & Barker, D. (2005). The effects of driver training on simulated driving performance. *Accident Analysis and Prevention*. 37, pp.63-69.

Dorn, L. & Brown, B. (2003). Making sense of invulnerability at work: a qualitative study of police drivers. *Safety Science*. 41(10), pp.837-859.

Dorn, L. (2005). Driver coaching: driving standards higher. In Dorn, L. (Ed). *Driver Behaviour and Training* Vol. 2. Ashgate Publishing.

Passmore, J. & Rehman, H. (2012). Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis. *International Coaching Psychology Review*, 7(2), 166-184.

Driving Standards Agency (DSA) (2007). *The Official DSA Guide to Driving Goods Vehicles*. Scotland: Crown Copyright.

Driving Standards Agency (DSA) (2008): *Learning to Drive, A Consultation Paper. Department for Transport*. Retrieved on 29 November 2009 from http://dsa.gov.uk/Documents/Consultation/ltd/FINAL%2020080508.pdf

EU Hermes Project (2007). *State of the art report on: 'Coaching and optimal communication skills for driving instructors*. Retrieved on 3 March 2010 from: http://www.alles-fuehrerschein.at/HERMES/index.php?page=documentation

EU MERIT Project (2005). *Minimum standards for driving instructors.* Retrieved on 16 February 2010 from http://www.efa-eu.com/Files/99/08_Minimum_requirements_for_driving_instructors_June_FINAL_en.pdf

Feggetter, A.J.W. (2007). A preliminary evaluation of executive coaching: does executive coaching work for candidates on a high potential development scheme? *International Coaching Psychology Review*. 2(2), pp.129-136.

Grant, A.M. (2001). *Coaching for enhanced performance: Comparing cognitive and behavioral approaches to coaching*. Paper presented to Spearman Seminar: Extending Intelligence: Enhancement and New Constructs, Sydney. Retrieved on 18 January 2010 from http://www.psych.usyd.edu.au/psychcoach/CBT_BT_CT_Spearman_Conf_Paper.pdf.

Grant, A.M., Passmore, J., Cavanagh, M. & Parker, H. (2010). The state of play in coaching today: a comprehensive review of the field. *International Review of Industrial and Organizational Psychology*. 25, pp.125-168.

Gregerson, N.P. (1996). Young drivers' overestimation of their own skill-an experiment on the relation between training strategy and skill. *Accident Analysis and Prevention*. 28(2), pp.243-250.

Gregerson, N.P. & Bjurulf, P. (1996). Young novice drivers: towards a model of their accident involvement. *Accident Analysis and Prevention*. 28(2), pp.229-241.

Gregerson, N.P. (2005). *EU MERIT Project: Driving instructors' education in Europe: a long-term vision. Working paper for workshop 1: the content of driving instructor training with regard to driving behaviour and safety, based on the GDE matrix*. EU:Brussels.

Gregory, J.B., Levy, P.E. & Jeffers, M. (2008). Development of a model of the feedback process within executive coaching. *Consulting Psychology Journal: Practice and Research.* 60(1), pp.42-56.

Passmore, J. & Rehman, H. (2012). Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis. *International Coaching Psychology Review*, 7(2), 166-184.

Green, S., Grant, A. & Rynsaardt, J. (2007). Evidence-based life coaching for senior high school students: building hardiness and hope. *International Coaching Psychology Review*. 2(1), pp.24-32.

Hattaka, M., Keskinen, E., Gregerson, N.P., Glad, A. & Hernetkoski, K. (2002). From control of the vehicle to personal self-control: broadening the perspectives to driver education. *Transportation Research Part F*. 5, pp.201-215.

Hutton, K.A., Sibley, C.G., Harper, D.N. & Hunt, M. (2002). Modifying driver behaviour with passenger feedback. *Transportation Research Part F.* 4, pp-257-269.

Ker, K., Roberts, I., Collier, T., Beyer, F., Bunn, F. & Frost, C. (2005). Post-licence driver education for the prevention of road traffic crashes: a systematic review of randomised controlled trials. *Accident Analysis and Prevention*. 3(2), pp.305-313.

Kolb, D.A. (1984). *Experiential Learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall.

Kolb, A.Y. & Kolb, D.A. (2005). Learning styles and learning spaces: enhancing experiential learning in higher education. *Academy of Management Learning and Education*. 4(2), pp.193-212.

Lonero, L.P. (2008). Trends in driver education and training. *American Journal of Preventative Medicine*. 35(3), pp.316-323.

Lund, A.K. & Williams, A.F. (1985). A review of the literature evaluating the defensive driving course. *Accident Analysis and Prevention*. 17(6), pp.449-460.

Molina, J.G., Sanmartin, J., Keskinen, E. & Sanders, N. (2007). Post-license education for novice drivers: evaluation of a training programme implemented in Spain. *Journal of Safety Research*. 38, pp.357-366.

National Statistics (2008). *Great Britain: Annual Report. Department for Transport - Reported Road Casualties.* Retrieved on 10 January 2010 from http://www.dft.gov.uk/adobepdf/162469/221412/221549/227755/rrcgb2008.pdf

Olivero, G., Bane, K.D. & Kopelman, R.E. (1997). Executive coaching as a transfer of training tool: effects on productivity in a public agency. *Public Personnel Management*. 26(4) pp.461-469.

Parker, D. & Stradling, S. (2001). Influencing driver attitudes and behaviour (no. 17). Available:
http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme2/influencingdriverattitudesan4749

Passmore, J. & Rehman, H. (2012). Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis. *International Coaching Psychology Review*, 7(2), 166-184.

Passmore, J. (2010a). *Coaching in driver development*. Paper presented to Coaching & driving conference. University of East London, UK.

Passmore, J. (2010b). A grounded theory study of the coachee experience: The implications for training and practice in coaching psychology. *International Coaching Psychology Review* 5(1), 48-62.

Passmore, J. & Mortimer, L. (2011). The experience of using coaching as a learning technique in learner driver development: An IPA study of adult learning. *International Coaching Psychology Review*. 6(1), 33-45.

Passmore, J. & Townsend, C. (2012). The role of coaching in police driver training – An IPA study of coaching in a blue light environment. *An International Journal of Police* Strategies. 35(4), 785-800.

PLD, (2008a). *Coaching for Performance: Coaching Programme*. Wiltshire, UK.

PLD, (2008b). *Peak Performance & Coaching: A Training Development Resource for Peak Performers, Performance Coaches & Attitude Change Technology Practitioners*. Performance Learning & Development Ltd: Shrivenham.

Rakoczy, M. & Money, S. (1995). Learning styles of nursing students: a 3-year cohort longitudinal study. *Journal of Professional Nursing*. 11(3), pp.170-174.

Rismark, M. & Solvberg, A.M. (2007). Effective dialogues in driver education. *Accident Analysis and Prevention*. 39, pp.600-605.

Rosenbloom, T., Shahar, A., Elharar, A. & Danino, O. (2008). Risk perception of driving as a function of advanced training aimed at recognizing and handling risks in demanding driving situations. *Accident Analysis and Prevention*. 40, pp.697-703.

Senserrick, T.M. & Swinburne, G.C. (2001). *Evaluation of an insight driver-training program for young drivers*. Monash University Accident Research Centre. Report No. 186. Retrieved on 29 November 2009 from http://www.monash.edu.au/muarc/reports/muarc186.pdf.

Senserrick, T. & Haworth, N. (2005). *Review of literature regarding national and international young driver training, licensing and regulatory systems*. Monash University Accident Research Centre. Report No. 239. Retrieved on 29 November 2009 from http://www.monash.edu.au/muarc/reports/muarc239.pdf.

Spence, G.B. & Grant, A.M. (2007). Professional and peer life coaching and the enhancement of goal striving and well-being: an exploratory study. *The Journal of Positive Psychology*. 2(3), pp.185-194.

Passmore, J. & Rehman, H. (2012). Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis. *International Coaching Psychology Review*, 7(2), 166-184.

Stanton, N.A., Walker, G.H., Young, M.S., Kazi, T. & Salmon, P.M. (2007). Changing drivers' minds: the evaluation of an advanced driver coaching system. *Ergonomics*. 50(8), pp.1209-1234.

Tee, S.T., Jowett, R.M. & Bechelet-Carter, C. (2009). Evaluation study to ascertain the impact of the clinical academic coaching role for enhancing student learning experience within a clinical masters education programme. *Nurse Education in Practice*. 9, pp.377-382.

Walklin, L. (2000). *Instructional Techniques and Practice for Driving Instructors*. United Kingdom: Nelson Thornes.

Wedge, T. (2004). *EU MERIT Project Case Studies: Driving instructor access criteria, training and testing in Finland, Germany, Great Britain, Latvia, Netherlands and Norway*. DSA: Bedfordshire, UK.

Whitmore, J. (2010). *Coaching and driving*. Paper presented to Coaching & driving conference. University of East London, UK.

Passmore, J. & Rehman, H. (2012). Coaching as a learning methodology – a mixed methods study in driver development using a Randomized Controlled Trial and thematic analysis. *International Coaching Psychology Review*, 7(2), 166-184.