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More than a Passenger: How parents shape young driver outcomes

Dr Elizabeth Box
RAC Foundation

September 2025

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About the Author

Dr Elizabeth Box is an accomplished transport researcher and commissioner with two decades of experience. She has an excellent track record in influencing and contributing to road safety policy outcomes at the national level.

Elizabeth is the Research Director at the RAC Foundation, an independent charity which researches the environmental, mobility, safety and economic issues relating to roads and their users. She is also a behavioural science consultant at Co-Pilot, a start-up which develops evidence-based road safety education, and is Director of ECM Research Solutions, a consultancy specialising in behavioural science, intervention design and evaluation.

Elizabeth has a PhD in Transport Psychology from Cranfield University, where she focused on developing and trialling pre-driver education interventions grounded in behavioural science. Elizabeth is an adviser to several road safety industry and government project boards and is a judge for the Prince Michael International Road Safety Awards. She is also a Fellow of the Chartered Institution of Highways and Transportation, a technical champion for the organisation, and a judge for the Institution's annual Road Safety Award.

About this Report

This report provides a rapid evidence synthesis examining the role of parental influence in young driver safety. It draws together a large and growing body of international research to support the development of practical, evidence-informed approaches to strengthen parental engagement in reducing young driver crash risk. The review was commissioned by the RAC Foundation to inform future policy and programme development in Great Britain, where national-scale parental interventions remain underutilised.

The review focuses on empirical studies published since 2015. It is intended for policymakers, road safety professionals, programme designers and wider stakeholders seeking to identify actionable opportunities for improving young driver outcomes through better parental support and engagement.

Disclaimer

This report has been prepared for the RAC Foundation by Dr Elizabeth Box. Any errors or omissions are the author's sole responsibility.

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Executive Summary

Young driver safety remains one of the most significant, yet persistently under-addressed, challenges in road safety.

The first months of independent driving present a disproportionate risk for newly-licensed drivers. Despite decades of research, and repeated calls for action, political and policy attention has too often stalled around adopting protective Graduated Driver Licensing (GDL), leaving a critical leverage point underutilised: the role of parents and guardians.

This rapid evidence review draws together an extensive international body of research and delivers one message with clarity:

> *When parents are effectively equipped and engaged, they can exert a sustained, positive and measurable influence on young driver risk far beyond the supervised learning phase.*

The evidence base demonstrates that:

- Parents' influence extends deep into the first years of independent driving, a period consistently linked to the highest crash risk.
- Parental supervision, rule setting, modelling, and vehicle access decisions all independently shape exposure to risk and the consolidation of safe driving behaviours.
- Structured, well-designed interventions, from parent coaching to feedback-based telematics, have been effective in broadening the range of driving situations young drivers experience during practice, enhancing hazard perception and promoting safer independent driving.
- Crucially, these interventions work most effectively *alongside*, not instead of, licensing frameworks such as GDL, enabling parents to reinforce licensing conditions in everyday decision making at home.

Great Britain lags behind international counterparts in developing coordinated national programmes to empower parents as safety partners. While Denmark, the US, Australia, Israel and other countries have trialled and embedded parental engagement frameworks, the system in Great Britain continues to rely heavily on informal, variable levels of parental involvement, often without guidance, support or integration into broader licensing and training structures.

At a time when wider GDL reform remains politically stalled, investing in parental engagement offers an immediate, pragmatic and evidence-based route to improving young driver safety. This should not, however, be seen as a substitute for comprehensive licensing reform. Leveraging parental involvement offers an opportunity to deliver meaningful safety

benefits, but it does not remove the need for systemic change. Failure to harness parental influence risks leaving a willing group of safety influencers unsupported, and young drivers unnecessarily exposed.

The policy opportunity is immediate and clear: strengthen, resource and embed parental engagement within Great Britain's young driver safety system, using proven models adapted to local conditions. This is not a call for large-scale new spending, but for a targeted redirection and amplification of safety efforts, leveraging a highly motivated group of safety partners. The evidence base leaves little justification for continued inaction.

1. Introduction

Young driver safety remains a persistent and significant public health issue, with newly licensed drivers consistently over-represented in crash and injury statistics worldwide. Elevated crash risk is particularly concentrated during the first months of independent driving, reflecting both limited driving experience and the ongoing maturation of cognitive, social and emotional regulatory systems that support safe driving. As such, effective approaches to managing young driver risk require attention to multiple interacting levers across the road safety system, including licensing policy; education and training; enforcement; technology; and family and peer influences.

Parents and guardians[1] represent one of the most proximal and modifiable influences within this broader system. Parents not only supervise practice driving during the learner phase but also shape young drivers' safety outcomes through modelling, rule setting, vehicle access decisions, monitoring, and ongoing communication once independent driving begins.

While international research has repeatedly demonstrated the central role of parents in shaping novice driver safety, much of this work has been conducted in countries with well-established Graduated Driver Licensing (GDL) frameworks, notably the US and Australia. Reviews of this international

1 All subsequent references to parents include guardians.

evidence have identified a range of intervention models targeting parents, including structured coaching tools, parent–teen driving agreements, telematics feedback systems, and brief interventions delivered via healthcare, schools and community programmes (Curry et al., 2015).

Despite this extensive international evidence base, there has been limited systematic application of parent-focused interventions within Great Britain. Although elements of GDL have been debated, progress towards adopting comprehensive evidence-based licensing reforms has stalled. In the absence of structural GDL protections, the need to strengthen and support the role of parents and guardians (where available to young drivers) becomes even more critical. Such interventions are not a substitute for effective licensing policies, but rather complementary mechanisms that can extend protective effects and enhance compliance with any licensing rules that may be in place.

In this context, there is growing policy interest in identifying scalable, evidence-informed approaches to equip parents with the knowledge, tools and confidence to support safe driving development during both the supervised learning phase and the high-risk period following independent licensure. This rapid evidence review has been conducted to synthesise recent empirical studies on parental influence and intervention models, with a view to informing potential application in Great Britain.

2. Evidence Base and Approach

2.1 Research question and objectives

This review aimed to answer the following research question:

> What is the role of parents in young driver safety, and how do parental supervision, driving behaviours and engagement interventions influence young driver risk and outcomes during both the learner and post-licensure phases?

To address this question, the review examined:

- The impact of parental supervision during the learning-to-drive phase on young driver safety.
- How parental driving behaviours and attitudes shape young drivers' driving habits.
- The effectiveness of interventions designed to enhance parental engagement in young driver safety.

- Parental influence during the post-licensure period, including monitoring of GDL compliance, reinforcement of safe driving habits, and support for ongoing skill development.
- Actionable recommendations for policymakers, practitioners and educators based on the evidence reviewed.

2.2 Scope of evidence included

This review synthesises recent international research published between 2015 and 2025, with a focus on empirical studies evaluating the influence of parents on young driver safety outcomes. Both learner and post-licensure phases were considered, recognising that parental influence extends well beyond initial licensure.

Studies were included if they:

- Examined young drivers (typically aged 16–25) and their parents.
- Reported empirical data on parental supervision, modelling, monitoring, or engagement interventions.
- Assessed safety-relevant outcomes such as crash risk, risky driving behaviours, hazard perception, or compliance with licensing restrictions.
- Were published in peer-reviewed journals in English.

Excluded were studies lacking empirical data, those focused exclusively on general driver education without parental involvement, or those that did not report measurable safety outcomes.

While the majority of included studies were drawn from high-income countries (notably the US, Australia, Israel and several European jurisdictions), findings were reviewed with consideration of their potential relevance and applicability to the context of Great Britain.

2.3 Evidence review process

A rapid evidence review approach was adopted, following established methodological guidance for synthesising emerging research to inform timely policy development.

The review process included:

- Structured searches of three key databases: PubMed, Scopus and TRID (Transport Research International Documentation), to ensure comprehensive but efficient retrieval of relevant studies.
- The use of targeted search terms related to young driver safety, parental involvement, supervision, monitoring and modelling, and parent–teen interventions.
- The screening of titles, abstracts and full texts against eligibility criteria.
- The inclusion of supplementary studies identified through reference list screening and the author's own research library.

The full search strategy, search terms, screening approach and study flow diagram are provided in Annex A.

2.4 Synthesis approach

Findings were synthesised narratively, grouped thematically into four domains reflecting key pathways of parental influence:

1. Parental supervision during the learner phase.
2. Parental influence post-licensure.
3. Parental modelling.
4. Parental engagement interventions.

Throughout, emphasis was placed on identifying converging themes, promising intervention models, and areas of practical relevance to policy and programme development.

2.5 Quality considerations

As a rapid evidence review, the analysis prioritised breadth and policy relevance while retaining methodological quality. Included studies were peer-reviewed, and light-touch appraisal of study design, sample size and outcome measures was undertaken to assess confidence in findings. Detailed quality scoring was not applied, as the objective was to extract actionable insights from the best available evidence rather than conduct formal meta-analysis.

A brief summary of review scope and limitations is provided in Annex B.

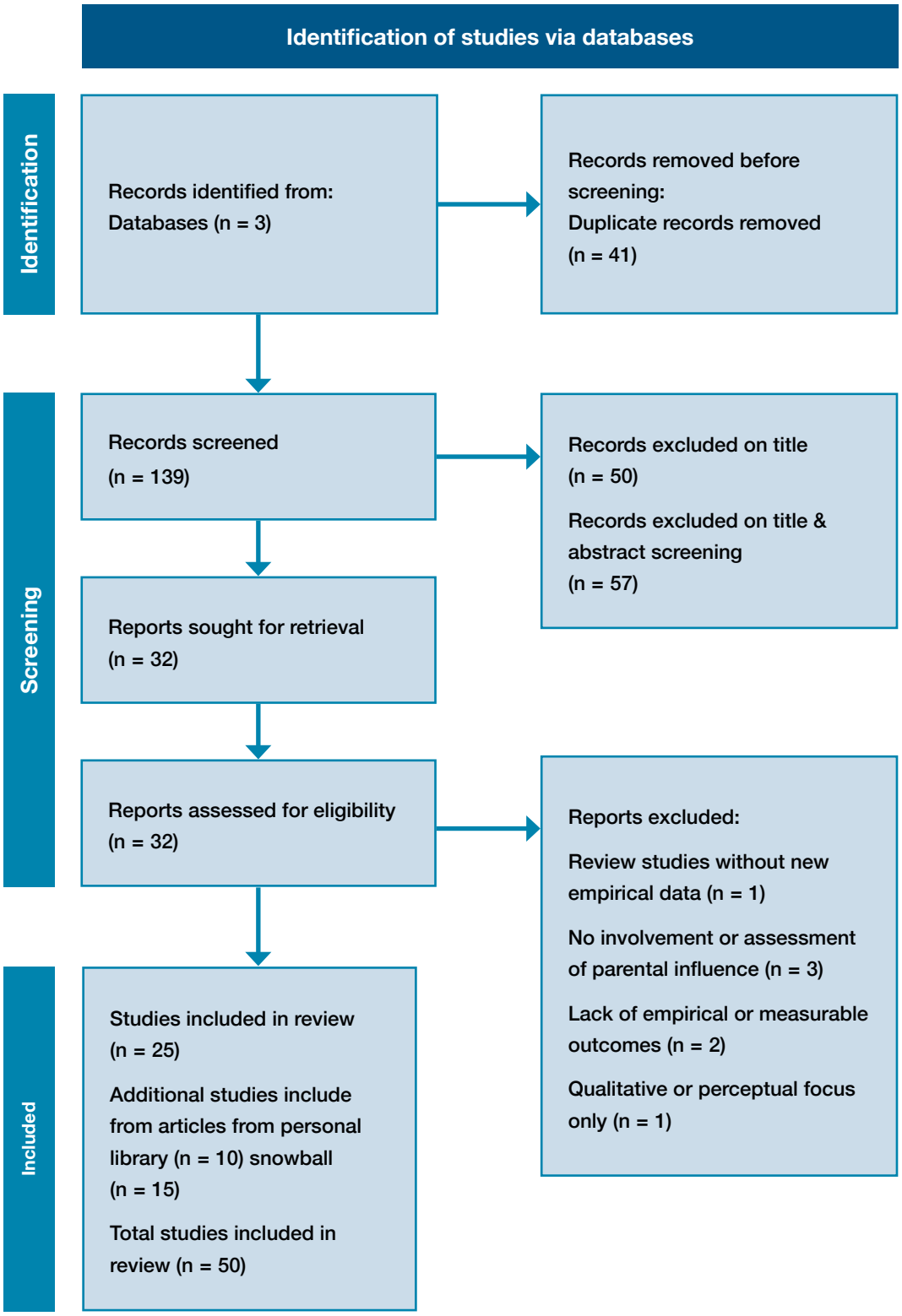
3. Results and Discussion

This section presents the findings from the rapid evidence review of the role of parents in young driver safety. A total of 50 studies were identified, screened and included in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) approach. These studies provide insight into the multiple ways in which parents influence young driver risk and outcomes, both during the learning-to-drive phase and in the post-licensure period.

3.1 Study selection process

Three academic databases (PubMed, Scopus and TRID) yielded 139 records after duplicate records were removed, and 57 studies were deemed relevant for title and abstract screening. Of these, 32 studies met the inclusion criteria for full text review, 25 of which were included in the review. An additional 25 additional articles were identified through the author's personal library (n = 10) and snowballing (n = 15), bringing the total to 50 studies included in the final analysis. The study selection process is outlined in the PRISMA flow diagram shown in Figure 3.1.

Figure 3.1: PRISMA flow diagram for systematic reviews



Source: Adapted from Page et al. (2021)

3.2 Parental supervision during the learner phase

A substantial body of research demonstrates the vital influence parents have during the learner driver phase. This influence extends beyond the duration of practice to encompass the quality of instruction, the emotional tone of interactions between parents and learners, and the contexts in which learners gain experience. Rather than being passive co-drivers, parents function as primary facilitators of learning, with their approaches to supervision shaping long-term safety outcomes.

3.2.1 The value of driving practice diversity

A growing body of evidence shows that the quality and diversity of supervised driving experience is just as important, if not more so, than the total number of hours behind the wheel. Exposure to a wide range of driving environments, including night-time driving, poor weather and unfamiliar routes, helps young drivers build technical skills and supports the development of confidence, resilience and self-regulation.

Both observational and intervention-based studies underscore the importance of practice diversity. A longitudinal observational study by Albright et al. (2021) followed 56 newly licensed teenagers in Alabama in the US. The researchers found that those who had gained more varied supervised experience during the learner phase were much less likely to avoid these situations once driving independently. Although the study did not include a formal intervention, it indicates that structured and diverse practice during the learner period plays a meaningful role in shaping later driving behaviour.

Intervention studies similarly demonstrate that structured tools can promote practice diversity, although sustaining engagement presents challenges. The TeenDrivingPlan, an online resource by the Children's Hospital of Philadelphia designed to guide parents through the supervised driving process, has been shown to increase the variety of driving experiences. Winston et al. (2015), evaluating the TeenDrivingPlan in a sample of 107 parent–teen pairs, found that families who accessed the tool within the first three weeks of the learner period were over three times more likely to engage in practice across five or more distinct driving conditions. However, engagement with the TeenDrivingPlan declined sharply after initial use, with most families discontinuing regular usage well before completing the recommended 24-week programme. These findings highlight the potential for digital tools to promote early practice diversity, while also demonstrating the challenges of sustaining engagement without ongoing reinforcement or system-level integration.

Taken together, these studies provide evidence that exposure to diverse driving situations under parental supervision plays a formative role in developing competent, self-regulated drivers. However, achieving sufficient practice breadth may require more than parental willingness alone. Accessible tools such as the TeenDrivingPlan can facilitate structured exposure but may require additional support mechanisms (such as integration with licensing frameworks, professional instructor collaboration or staged practice requirements) to sustain engagement across the full learner phase.

3.2.2 Improving parental decision making and feedback

Parental judgement plays a pivotal role in determining when adolescents transition from supervised to independent driving. However, evidence suggests that parents often base readiness decisions on informal impressions such as confidence, peer comparisons or subjective perceptions of skill, rather than on objective performance indicators. This can lead to premature licensure for some teens or a missed opportunity to tailor practice to individual developmental needs.

Mirman et al. (2017), in a randomised controlled trial evaluating the TeenDrivingPlan, examined these dynamics in detail. Their findings demonstrated that parents who perceived their teens as more skilled than peers were more likely to support earlier licensure, even when these perceptions were not necessarily linked to safer driving outcomes. In contrast, a more diverse range of supervised practice experiences, rather than general safety beliefs, was positively associated with readiness for licensure and subsequent driving competence. These findings highlight the need for interventions that help parents base licensure decisions on structured exposure and demonstrated capability, rather than instinctive confidence or informal social comparisons.

Further evidence underscores the value of performance-based feedback in improving both parental judgement and learner skill acquisition. In a follow-up study, Mirman et al. (2018a) compared the effects of the TeenDrivingPlan and the On-Road Driver Assessment, a structured pre-licensure evaluation involving a comprehensive on-road driving test conducted under varied traffic conditions, followed by standardised feedback to the learner and parent. While both interventions successfully increased the diversity of supervised practice, only the On-Road Driver Assessment demonstrated consistent associations with improved safety outcomes, suggesting that feedback grounded in specific driving performance metrics can meaningfully inform both parent and learner decision making.

Shared learning interventions may offer additional benefits by directly involving parents in skill development processes alongside their teens. Horswill et al. (2021), in a randomised controlled trial, evaluated an online hazard perception training programme designed for both learners and parents. Results indicated that while learners improved hazard detection and scanning abilities, parents simultaneously enhanced their own hazard prediction skills. This parallel skill acquisition highlights the potential for joint training interventions not only to support learner development but also to equip parents with greater insight into the complexities of novice driving, potentially improving both their coaching and readiness assessments.

These studies suggest that parental readiness judgements can be strengthened through interventions that combine diverse supervised practice, structured performance feedback, and shared parent–teen learning experiences. Moving beyond simple practice quantity, such tools support more informed licensure decisions grounded in demonstrated driving competence, enhancing the likelihood of young drivers being adequately prepared to manage the complex demands of independent driving.

3.2.3 Parent–teen collaboration and family climate

Beyond the quantity and variety of supervised practice, the relational dynamics between parents and adolescents play a critical role in shaping the quality of the learning experience and influencing driving safety outcomes. Emerging evidence suggests that supportive communication, joint decision making and emotional modelling within the parent–teen relationship may facilitate more effective learning during the supervised driving phase, though the translation of these relational gains into post-licensure crash reduction remains complex.

Interventions aimed at strengthening parent–teen collaboration have demonstrated benefits for the learning process. Buckley et al. (2018), in a randomised controlled trial involving 133 parent–teen dyads, evaluated the *Parent Guide for Coaching Teen Drivers*, a structured educational resource designed by the authors to improve parental coaching strategies and communication during supervised practice. The intervention successfully supported parents in delivering calmer, more structured feedback and encouraged greater variety in practice environments. However, despite improvements in the supervisory relationship, the programme did not yield significant reductions in risky driving behaviours after licensure. This suggests that while enhancing the emotional quality of supervision may improve the practice experience, additional components may be needed to sustain behavioural safety gains over time.

Similar patterns emerge from larger-scale interventions. Hafetz et al. (2023), evaluating the Drivingly programme in a randomised trial of 1,200 parent–teen dyads, found that the intervention fostered joint planning, increased parental awareness of driving risks and supported compliance with GDL requirements. Yet, as with the *Parent Guide for Coaching New Drivers*, the extent to which these relational improvements translate into measurable reductions in crash risk remains to be fully determined, with safety outcome data not yet available to determine whether relational gains translate into measurable crash reductions. These findings underscore that while collaborative dynamics are central to the learning process, their influence on independent driving safety likely interacts with other factors such as practice diversity, feedback and adolescent development.

Individual parental characteristics may further shape the effectiveness of collaborative supervision. Taubman–Ben-Ari et al. (2015), in a study examining parental personality traits, found that parental sensation seeking and anxiety were associated with increased risk in teen driving outcomes. However, the adverse effects of these traits were moderated by family cohesion and emotionally supportive interactions, suggesting that structured, emotionally aware approaches can buffer the transmission of risk-prone behaviours and foster safer driving habits. This highlights the role of the family climate not only as a logistical context for supervised driving but also as an emotional and psychological environment in which safety-related norms and behaviours are modelled and internalised.

Taken together, these studies suggest that while parent–teen collaboration and supportive family climates enhance the quality of the supervised driving experience, their direct influence on post-licensure crash risk is likely indirect and dependent on their interaction with other intervention components. Programmes that build communication, promote shared planning and encourage emotional regulation may create stronger foundations for

safe driving development, even if relational improvements alone do not fully account for reductions in risk. As such, fostering effective collaboration remains a key component of a broader, multifaceted approach to promoting young driver safety.

3.2.4 Supporting parents in their instructional role

While parents play a central role in supervising their teenagers' driving practice, many report feeling unprepared for the instructional demands of this responsibility. Unlike driving instructors, parents often lack structured training on how to coach novice drivers, leaving them to rely on personal experience or intuition, which may not always align with contemporary safety recommendations or best practices.

Qualitative research highlights both the challenges and opportunities within parental supervision. Naz & Scott-Parker (2017), in interviews with 23 Australian parents, found that many of them struggled to meet the demands of GDL schemes, particularly when navigating the emotional complexities of adolescence and their own knowledge limitations. While they frequently employed verbal instruction and commentary driving, few had received structured guidance on how to apply these techniques effectively, contributing to feelings of uncertainty and stress during supervised practice.

Building on these insights, Rodwell et al. (2021) applied the internationally recognised Goals for Driver Education (GDE) framework, a hierarchical model used to structure driver training across different cognitive and behavioural levels, to examine how parents engage with different levels of driver training. In Australian focus groups with 14 Queensland parents, participants expressed reluctance to teach basic vehicle control and traffic navigation skills (GDE Level 1 and 2), often deferring these tasks to driving instructors to avoid inadvertently teaching outdated methods or triggering parent–teen conflict. In contrast, parents reported feeling more comfortable addressing higher-order learning goals, including trip planning, peer influence management, and values-based decision making (GDE Level 3 and 4). These findings suggest that while parents may not always serve as primary technical instructors, they occupy a valuable role in facilitating the motivational, cognitive and emotional aspects of safe driving development.

The evolving role of parents also intersects with ongoing challenges in driving instructor training. Senserrick et al. (2023) in a comprehensive review, identified substantial gaps in instructors' preparation for delivering higher-order instruction and engaging parents as partners in the learning process. Although instructors are increasingly tasked with addressing complex topics such as hazard perception, emotional self-regulation and in-vehicle technology, many lack formal training to deliver this content effectively. In response, the authors propose the HOT-CAR model (Higher Order Training supporting Competence, Autonomy and Relatedness), a framework designed to support instructors in building not only technical competence but also stronger collaboration with families. This approach recognises the complementary roles that parents and driving instructors can play in a more integrated instructional system.

Cross-cultural evidence further illustrates how the nature of parental supervision may vary depending on societal context. Taubman–Ben-Ari et al. (2018), using the Family Climate

for Road Safety Scale (FCRSS), compared parental involvement between Israeli and Queensland families. While parental modelling and open communication were most strongly linked to safer driving outcomes in the Israeli sample, feedback and direct monitoring played a more significant role among Queensland teens. These findings highlight that the optimal configuration of parental involvement may be context dependent, suggesting that interventions should account for both cultural norms and family dynamics when supporting parents in their supervisory role.

Taken together, the evidence suggests that while many parents are highly motivated to support their teens' learning, they require clear guidance on how to structure their involvement most effectively. Interventions that define distinct parental and professional roles, promote higher-order coaching and encourage parent–instructor collaboration may enhance both parent confidence and learner preparedness. Embedding such approaches within comprehensive training frameworks like GDE and HOT-CAR offers a promising avenue for strengthening the overall safety culture surrounding novice driver education.

3.2.5 Technology-supported supervision

The use of digital tools to support parental supervision during the learner phase has grown rapidly in recent years, offering new avenues for structuring practice, delivering feedback and assessing readiness for independent driving. Rather than replacing parents, these tools are designed to augment supervision by providing evidence-based guidance, by helping families diversify practice conditions and by identifying skill deficits that may otherwise go unnoticed. However, emerging evidence also suggests that the long-term effectiveness of technology-supported interventions is highly dependent on sustained engagement and integration within broader systems of driver training.

The TeenDrivingPlan represents one of the most extensively studied digital resources targeting supervised practice. Winston et al. (2015), in an evaluation of 107 parent–teen dyads, found that early adoption of the TeenDrivingPlan, particularly within the first three weeks of the learner period, was strongly associated with increased practice diversity. Families who engaged with the tool early were more than three times as likely to practice in five or more distinct driving environments compared to non-users. These findings suggest that structured, technology-supported planning can promote exposure to a wider range of driving scenarios, a factor linked to stronger post-licensure driving competence. However, the study also documented a steep decline in platform usage over time, with most families discontinuing engagement well before the end of the recommended 24-week programme. This rapid falloff highlights a common challenge for digital interventions: initial uptake may be high, but without ongoing reinforcement or integration into licensure requirements, long-term adherence often diminishes.

Other digital approaches have sought to directly assess driving readiness by identifying persistent skill deficits even after supervised practice. Dong et al. (2024) in their evaluation of the Virtual Driving Assessment, a 15-minute, computer-based driving simulation developed by the University of Pennsylvania and deployed through the Children's Hospital of Philadelphia, examined the performance of 441 learner permit holders in Pennsylvania in the US. While any adult-supervised practice was associated with a reduced likelihood of major skill deficits, the

Virtual Driving Assessment revealed that approximately 75% of learners continued to exhibit serious performance deficiencies despite having completed supervised practice. These findings suggest that conventional parental supervision alone may not fully prepare all learners for the complex demands of independent driving and that targeted assessment tools may be required to identify and address residual gaps, particularly in higher-order cognitive skills such as hazard perception, situational awareness and decision making.

These studies highlight both the promise and limitations of technology-supported supervision. Digital tools such as the TeenDrivingPlan and the Virtual Driving Assessment can offer scalable mechanisms for promoting practice diversity, guiding parental involvement and assessing readiness, but their benefits may be short-lived without deliberate efforts to sustain engagement. Embedding these tools within licensing frameworks, school-based education or healthcare-based delivery systems may be necessary to maintain participation across the full learner period. In addition, the findings underscore that while digital resources can complement parental supervision, they are unlikely to substitute fully for the relational, emotional and developmental aspects of learning to drive, which remain deeply embedded in the parent–teen dynamic.

3.2.6 Implications for practice

The accumulated evidence reviewed across this section underscores the central, multifaceted role that parents play in shaping the learning-to-drive experience and influencing long-term driving safety outcomes. Far from being passive supervisors, parents function as both facilitators of skill acquisition and as emotional, cognitive and behavioural role models. To maximise the protective potential of parental involvement, interventions must move beyond a narrow focus on supervised driving quantity and instead address the quality, structure and support systems that enable parents to engage most effectively.

Central to these efforts is the promotion of diverse practice experiences across a range of driving environments. Exposure to varied conditions, including night driving, adverse weather and unfamiliar routes, appears to be essential for developing transferable driving skills, adaptive decision making and self-regulation. However, families are unlikely to achieve sufficient practice diversity without structured guidance. Digital planning tools such as the TeenDrivingPlan show promise in scaffolding this process, though evidence also highlights challenges in sustaining engagement over time without broader system reinforcement.

Equally important is the need to support parental readiness judgements and coaching practices. Studies suggest that many parents rely on subjective perceptions of their teen's skill when determining licensure readiness, rather than objective performance indicators. Interventions that incorporate structured performance feedback (e.g. the On-Road Driver Assessment) and shared parent–teen training experiences (e.g. joint hazard perception training) may strengthen parental decision making by providing concrete evidence of learner competence while also improving parents' own coaching abilities.

Family relational dynamics further shape the effectiveness of supervision. Supportive, communicative parent–teen relationships (characterised by joint planning, emotional regulation and collaborative problem solving) enhance both the learning process and teens'

openness to feedback. However, evidence also indicates that relational improvements alone may not fully translate into measurable post-licensure crash reductions unless combined with sufficient practice breadth, performance feedback and developmental tailoring.

Clarifying parental instructional roles relative to professional instructors is another critical component. Many parents feel ill-equipped to teach technical vehicle control skills yet are well positioned to support higher-order learning goals such as managing peer influence, emotional reactions and safe trip planning. The GDE framework provides a useful structure for defining these complementary roles. At the same time, gaps in professional instructor training, particularly around higher-order competencies and parent–instructor collaboration, underscore the value of systemic models such as HOT-CAR to promote integrated supervision across both home and formal instruction contexts.

The evidence also highlights the importance of adapting interventions to reflect individual learner needs and broader cultural contexts. Cross-national comparisons suggest that different aspects of family climate (e.g. parental modelling versus monitoring) may exert differential influence depending on cultural norms. For example, Myers et al. (2019), in interviews with specialist driving instructors, found that autistic learners often benefit from up to four times the typical amount of practice, with structured support such as commentary driving, life skills checklists and regular feedback identified as valuable in reinforcing readiness. The role of parents was particularly emphasised as long-term practice partners, highlighting the need for supervision models that are adaptable, responsive and inclusive of different cognitive and developmental needs.

Finally, policy frameworks have a key role to play in supporting effective parental supervision. Graduated licensing systems that incorporate accompanied driving phases (e.g. Denmark's L17 scheme) create valuable opportunities for extended supervised practice. For example, Møller et al. (2021) found that while L17 participants reported positive experiences with their accompanying drivers and a supportive emotional climate, practice variety was often limited, with most trips occurring on familiar, routine routes. These findings underscore that without clear guidance on practice diversity, structured feedback mechanisms and parental support resources, such opportunities may not be fully optimised.

Improving young driver outcomes requires interventions that are structured, multi-component, and sustained throughout the learning process. When parents are provided with clear role definitions, performance feedback, training resources and system-level support, they can serve as highly effective partners in preparing teens for independent driving. To be maximally effective and equitable, such programmes must be developmentally informed, culturally sensitive and adaptable to the diverse needs of learners and their families.

3.3 Parental influence post-licensure

While much attention in young driver safety focuses on the supervised learner phase, a growing body of evidence highlights that parental influence extends well beyond initial licensure. Even as adolescents gain legal driving independence, parents continue to shape driving safety outcomes through ongoing monitoring, vehicle access decisions, and relational dynamics. These forms of sustained involvement serve as important protective mechanisms during the high-risk early years of independent driving.

3.3.1 Continued monitoring and feedback

Parental monitoring following licensure remains a key influence on adolescent driving safety, though maintaining effective oversight during this transition presents notable challenges. As teens gain autonomy, parental supervision often declines, with engagement affected by shifting family dynamics, developmental changes and reductions in perceived control (Jewett et al., 2016; Knezek et al., 2018).

Structured interventions that embed monitoring into routine family practice have shown promise in sustaining parental involvement. Shope et al. (2016), for example, evaluated the Checkpoints™ programme, a US intervention which encourages families to establish parent–teen driving agreements. Although initial uptake was modest (3%), families who adopted parent–teen driving agreements often continued to revise them over time (61%), suggesting that once activated, structured agreements may promote ongoing engagement. Embedding such interventions within healthcare settings, for example during paediatric visits, may increase accessibility and support early adoption.

Technology-enhanced feedback systems offer additional avenues for extending parental involvement into the post-licensure period. The Teen Driver Support System (TDSS), a smartphone-based driver monitoring and coaching application developed as part of a field operational test in Minnesota, was designed to detect risky driving behaviours in real-time (e.g., speeding, hard braking, aggressive turning). In a long-term follow-up of the TDSS, Tian et al. (2021) found that teens whose parents received real-time alerts about their risky driving events exhibited lower rates of speeding and aggressive driving, as well as fewer traffic citations, over five years post-licensure. Similarly, in-vehicle data recorders provide objective driving performance data that can inform both parent and teen feedback. Taubman–Ben-Ari et al. (2015, 2016) demonstrated that combining in-vehicle data recorder feedback with parental communication training produced the most pronounced reductions in risky driving events, highlighting the synergistic value of pairing behavioural feedback with parent-focused skill development.

Sustained parental monitoring also plays a protective role beyond driving-specific behaviours. Haegerich et al. (2016) found that parental oversight was associated with lower rates of drinking and driving and riding with drinking drivers, with protective effects extending into young adulthood. These findings suggest that continued parental engagement can influence not only immediate driving risks but also broader patterns of adolescent substance use and risk taking.

However, multiple studies underscore that parental vigilance often erodes over time. Jewett et al. (2016) identified a sharp decline in parental concern following licensure, with fewer parents reporting ongoing worry or using written driving agreements as adolescents gained driving independence. Similarly, Knezek et al. (2018), in their evaluation of the US Share the Keys programme, found significant reductions in parental rule setting and authoritative parenting styles over a 12-month period, alongside declines in teen compliance with licensing restrictions. Li et al. (2015) further demonstrated that parental monitoring may be vulnerable to reciprocal effects, as adolescent engagement in impaired driving appeared to suppress subsequent maternal, but not paternal, oversight.

Despite these challenges, long-term benefits of sustained parental involvement remain evident. Vaca et al. (2020), in a nationally representative US cohort, found that strong parental monitoring and consistent alcohol-opposing messaging during high school predicted lower engagement in risky driving behaviours and substance-related harm up to four years post-graduation. Notably, maternal support appeared especially protective.

These findings highlight that while parental monitoring can substantially reduce post-licensure risk, its sustainability depends on both structural support (e.g. feedback systems or written agreements) and relational factors (e.g. communication quality or family norms). Interventions that combine real-time feedback, parent coaching and long-term engagement strategies offer the strongest potential to extend the protective influence of parents into the independent driving period.

3.3.2 Vehicle access

Beyond direct supervision, parental control over vehicle access constitutes a distinct but often under-recognised mechanism influencing young driver safety during the post-licensure period. Decisions regarding whether teens own a personal vehicle or share access to a family car can substantially shape both driving exposure and opportunities for ongoing parental oversight, with effects extending well into early adulthood.

Evidence from large-scale longitudinal research highlights the long-term protective effects of shared vehicle access. In a cohort of over 20,000 young drivers in New South Wales, Australia, Chen et al. (2024) found that teens who shared access to a family car were at significantly lower risk of hospitalisation and fatal crashes compared to those who owned their own vehicle. Importantly, these risk reductions persisted for up to 13 years post-licensure, suggesting that shared access operates as an indirect form of sustained parental involvement, allowing parents to retain partial control over driving frequency, timing and context during the early independent driving period.

In contrast, early full vehicle ownership was consistently associated with elevated crash risk and riskier driving profiles (Chen et al., 2024). Young drivers who owned personal vehicles were more likely to drive unsupervised, at riskier hours, and under less controlled conditions at a developmental stage where driving skills and judgement remain immature. Vehicle ownership may therefore amplify exposure to high-risk situations by granting adolescents greater autonomy before adequate self-regulation has fully developed.

These exposure effects are further compounded by the relationship between vehicle access and engagement in risky driving behaviours. Gershon et al. (2017) using naturalistic driving data, demonstrated that teens with access to their own vehicle were 50% more likely to engage in secondary task distractions, such as mobile phone use and peer-related distractions, compared to those without exclusive vehicle access. This suggests that vehicle ownership not only increases driving frequency but may also lower situational attentiveness, further elevating crash risk.

Vehicle access decisions are a subtle but powerful extension of parental influence into the post-licensure period. By controlling not only whether but when, where and how often teens drive, parents can indirectly limit exposure to high-risk situations and preserve opportunities for guidance and feedback during a period of heightened crash vulnerability. Interventions and policies that encourage delayed personal vehicle ownership or promote conditional vehicle access may serve as effective, low-cost mechanisms for supporting safer developmental trajectories as teens transition into independent driving.

3.3.3 Relational dynamics

Beyond supervision and vehicle access, the emotional quality of the parent–teen relationship remains a critical determinant of driving behaviour during the post-licensure period. Accumulating evidence demonstrates that supportive parent–teen dynamics (characterised by warmth, open communication and autonomy support) not only shape the adolescent learning process but also moderate risk taking once independent driving begins. In contrast, relational strain, poor emotional modelling and weak family engagement have been linked to elevated crash risk and maladaptive driving styles.

Multiple studies show that relational context moderates the effectiveness of parental rule setting. Zeringue and Laird (2018), in a US longitudinal study, demonstrated that parental restrictions on driving (e.g. peer passenger limits, curfews or night driving bans) significantly reduced risky driving only when embedded within a broader climate of parental support. Teens who experienced rule enforcement in the absence of relational warmth, structure and autonomy support were less likely to comply, and for some, restrictions may have paradoxically increased risk taking, particularly among males during the critical early licensure period. These findings suggest that behavioural controls are most effective when accompanied by strong parent–teen emotional bonds.

The relational foundations established during the supervised learner phase may also yield enduring protective effects after licensure. Taubman–Ben-Ari et al. (2017), in a longitudinal Israeli sample, found that higher perceived relatedness, defined as emotional connection, mutual understanding and trust, predicted fewer reckless driving behaviours 15 months post-licensure. Conversely, relationships marked by tension, disapproval or poor communication were associated with elevated risk taking once independent driving commenced. This suggests that supportive relationships during the learning phase may strengthen internalised safety norms, while strained dynamics may erode young drivers' receptivity to ongoing guidance.

Even outside formal monitoring contexts, clear parental expectations continue to exert a protective influence on attentional control. Gershon et al. (2017), using naturalistic driving data, demonstrated that teens subject to stronger parental driving limits engaged less frequently in secondary tasks such as mobile phone use and peer-related distractions while driving. This finding underscores that relationally embedded rule setting can influence not only intentional risky driving but also attentional failures and distraction management.

Importantly, the influence of relational dynamics appears to vary across individual adolescent characteristics. Ehsani et al. (2015) found that teens scoring lower on conscientiousness exhibited elevated crash and near-crash involvement, primarily through risky driving behaviours. Risk taking, rather than distraction, partially mediated this association, suggesting that impulsive decision making may limit the protective influence of external parental controls even when monitoring and rule setting are present. These findings highlight the need for relationally grounded, personality-tailored interventions that prioritise emotional regulation and consistent behavioural boundaries for youth with heightened dispositional risk.

Relational influences also extend beyond the immediate parent–teen dyad to broader family and peer systems. In a cross-cultural comparison, Skvirsky et al. (2017) found that low family engagement (characterised by weak communication, limited parental modelling and poor feedback) was associated with maladaptive driving styles, including reckless, anxious and hostile behaviours, across both Israeli and Australian (Queensland) samples. Conversely, families characterised by open dialogue, shared safety norms and emotional support fostered more patient and careful driving patterns. Peer influences further amplified these dynamics: strong peer pressure and perceived social costs of cautious driving elevated risky behaviours, whereas safety-supportive peer groups exerted protective effects. Notably, peer disapproval of risky driving may represent an underutilised protective factor, suggesting the potential value of interventions based on peer norms alongside family strategies. In addition, difficulties in how teens separate from their parents (such as being overly dependent or overly self-focused) were linked to higher crash risk, while teens who developed a healthy sense of independence showed better self-control behind the wheel.

The evidence indicates that relational processes operate through multiple, interacting pathways, including parenting style, adolescent personality traits, peer norms, and family system functioning, to shape driving safety during the early independent driving years. Interventions that strengthen parent–teen communication, build shared safety norms, support healthy autonomy development and account for both individual and contextual vulnerabilities are likely to be most effective in promoting sustained safe driving trajectories across adolescence and emerging adulthood.

3.3.4 Implications for practice

Parental influence remains a critical yet underutilised protective factor during the high-risk transition into independent driving. Post-licensure interventions should therefore adopt a sustained, multi-component approach that reflects the diverse ways in which parents continue to shape adolescent driving behaviour, through monitoring, vehicle access decisions and relational dynamics.

Scalable monitoring tools that combine real-time feedback with structured parental engagement offer considerable promise for extending parental supervision beyond the learner phase. Interventions such as the TDSS (Tian et al., 2021) and in-vehicle data recorder feedback combined with parental coaching (Taubman–Ben-Ari et al., 2015, 2016) and structured driving agreements like Checkpoints™ (Shope et al., 2016) have demonstrated that objective behavioural data can empower parents to maintain oversight and provide timely corrective guidance. Embedding such tools within existing infrastructures such as licensing systems, insurance platforms or primary healthcare services may enhance accessibility and normalise extended parental involvement as an expected component of licensure.

Policies and government messaging should also more directly address the long-term protective role of vehicle access decisions. Evidence from Chen et al. (2024) and Gershon et al. (2017) consistently shows that delayed full vehicle ownership and structured access to shared family vehicles limit unsupervised exposure and reduce both crash risk and distraction-related behaviours well into early adulthood. Promoting conditional or shared access models may serve as a relatively simple, low-cost mechanism for indirectly sustaining parental influence while adolescents consolidate their driving skills.

Interventions also need to move beyond prescriptive rule setting alone to explicitly target the relational context in which parental controls are delivered. As demonstrated by Zeringue & Laird (2018), Taubman–Ben-Ari et al. (2017) and Skvirsky et al. (2017), parental rule adherence is strongest when embedded within a climate of warmth, autonomy support and open communication. Programmes that strengthen these relational dynamics, for example through parent–teen communication training, collaborative planning tools or emotional regulation coaching, may yield stronger and more durable behavioural outcomes, particularly for male adolescents who appear more sensitive to relational context in early licensure.

Sustained engagement remains a persistent challenge, as parental monitoring frequently diminishes during precisely the period when crash risk remains elevated (Li et al., 2015; Jewett et al., 2016; Knezek et al., 2018). Interventions should therefore incorporate mechanisms for maintenance over time, such as booster sessions, graduated support models, and structured frameworks for responding to adolescent risk-taking setbacks. Particular attention may be warranted for maternal engagement, which appears especially vulnerable to erosion following teen risk violations (Li et al., 2015).

Finally, tailoring interventions to reflect individual and contextual variability will likely improve intervention effectiveness. Evidence from Ehsani et al. (2015) and Skvirsky et al. (2017) highlights how adolescent dispositional traits (e.g. conscientiousness or impulsivity), parent–teen separation processes and peer climate all interact to influence post-licensure safety outcomes. Interventions that incorporate individualised risk screening, family system assessments and peer norm reinforcement may offer greater precision in addressing those drivers most vulnerable to elevated crash risk.

These research findings support a necessary reframing of post-licensure road safety strategy: licensure should not mark the endpoint of parental involvement but rather serve as a transition into a new phase of guided autonomy. Through ongoing relational support, vehicle

access structures, sustained monitoring and targeted coaching, parents can continue to serve as active partners in scaffolding safe driving trajectories well into early adulthood.

3.4 The impact of parental modelling

In addition to direct supervision and rule setting, parents exert a powerful indirect influence on adolescent driving behaviour through the norms and behaviours they model. Modelling can function as either a protective or a risk-amplifying mechanism depending on the quality, consistency and perceived meaning of parental driving conduct. A growing body of evidence suggests that adolescents' perceptions of parental driving behaviour, whether accurate or not, play a central role in shaping their own driving styles.

3.4.1 Modelling risk and safety

When parents model risky behaviours behind the wheel (e.g. mobile phone use, adjusting in-vehicle systems or driving while impaired), these behaviours are frequently replicated by teens. For example, Bingham et al. (2015), in a US study of 403 parent–teen dyads, found that teens' perceptions of their parents' distracted driving were more strongly associated with their own distraction behind the wheel than parents' self-reported behaviours, suggesting that adolescents' perceptions may more accurately capture parental modelling than parental self-reports, which may underestimate these behaviours. This highlights the importance of perceived parental norms in shaping adolescent behaviour, suggesting that what teens believe their parents do often carries greater weight than what parents report.

Namoos et al. (2024) further demonstrated that exposure to parental alcohol-impaired driving and permissive attitudes was associated with more permissive adolescent attitudes towards driving under the influence. Even when teens did not overtly replicate these behaviours, observing parents violate safety norms appeared to erode the perceived seriousness of such risks. This suggests that modelling exerts influence not solely through behavioural mimicry but also by shaping adolescents' internal safety attitudes.

By contrast, when parents model safe and responsible driving, protective effects emerge. Gil et al. (2016), in a study of 242 Israeli father–son pairs, demonstrated that adolescents who viewed their fathers as careful, patient drivers were more likely to adopt safer self-reported driving styles themselves. The strength of this protective modelling effect was amplified within cohesive, supportive family environments, highlighting the importance of relational context. A positive family safety climate (characterised by consistent parental rule adherence, emotional warmth and open communication) further reinforces these protective pathways (Taubman–Ben-Ari, 2015, 2016). In addition, parental modelling of emotional regulation during supervised practice may contribute to safer driving behaviours once independent driving begins (Myers et al., 2019). By demonstrating calm coping strategies in potentially stressful driving situations, parents may help teens internalise self-regulatory skills that persist beyond the learner phase.

Social learning may also be subject to misperception. Adolescents have been found to frequently overestimate their parents' engagement in risky behaviours. In a simulator-based

study, Merrikhpour and Donmez (2017) demonstrated that correcting these misperceptions through feedback, particularly when feedback was framed in relation to same-gender parental norms, led to measurable reductions in distracted driving behaviours, including reduced off-road glance duration and improved lane positioning. These findings suggest that feedback interventions which directly address teens' normative beliefs about parental behaviour may offer an innovative avenue for modifying driving risk.

3.4.2 Long-term modelling influence and developmental moderators

Parental modelling does not diminish immediately after licensure but continues to shape driving behaviour into early adulthood. Longitudinal studies by Burns et al. (2020, 2022) involving over 4,000 US college students demonstrate that family safety climate, particularly parental modelling, consistent feedback and open communication, remains predictive of young adult driving behaviours. Notably, these effects are particularly salient for young drivers with neurodevelopmental vulnerabilities. Among youth with ADHD symptoms, structured feedback and warm parental role modelling was found to help mitigate tendencies towards aggressive or emotionally dysregulated driving. Longitudinal work also suggests these modelling influences persist into emerging adulthood, with parental driving styles continuing to predict young adult driving behaviours beyond licensure (Taubman–Ben-Ari et al., 2018)

However, findings also suggest that parental involvement can have unintended consequences when implemented in overly controlling ways. For adolescents with ADHD, higher levels of parental monitoring were linked to greater emotional reactivity and more aggressive driving, implying that excessively controlling strategies may sometimes exacerbate rather than reduce risk. These findings highlight the need for supportive, developmentally sensitive parental engagement that balances structure with autonomy support, particularly for teens with elevated self-regulation challenges.

3.4.3 Inconsistency undermines credibility

Inconsistent parental behaviour (e.g. where parents punish risky driving while simultaneously engaging in it themselves) can undermine the credibility of parental guidance. Scott-Parker et al. (2015), in a large mixed methods study of over 1,500 Australian learner and provisional drivers, found that young drivers who perceived parental hypocrisy were significantly more likely to report higher risky driving behaviours, as measured by the Behaviour of Young Novice Drivers Scale (BYNDS). Adolescents who knew their parents had histories of road offences or minimised their own past infractions were less likely to respect or internalise road safety rules. Such histories directly weakened parental moral authority, further diminishing the effectiveness of parental limit setting. This perceived inconsistency not only weakened parental influence during the high-risk early licensure period but also eroded young drivers' receptivity to rule enforcement.

Importantly, these family modelling influences also interact with peer influences. The same study by Scott-Parker et al. (2015) found that peer disapproval of risky driving exerted a strong protective effect, while peer endorsement of risk reinforced unsafe behaviours. This suggests that interventions may need to address both parental and peer norm systems simultaneously to achieve sustained reductions in risky driving.

3.4.4 The amplifying role of family climate

The broader family environment further moderates the strength of parental modelling effects. Family climates characterised by warmth, emotional support, cohesion and open communication strengthen the protective influence of positive modelling, while family dysfunction or poor communication can amplify the transmission of risky norms. Gil et al. (2016) and Taubman–Ben-Ari (2015, 2016) consistently demonstrate that modelling effects do not operate in isolation but are embedded within these wider relational and emotional systems. Cohesive families appear better able to reinforce safe driving expectations and buffer adolescents from peer pressures or impulsive tendencies that may otherwise override parental influence.

3.4.5 Implications for practice

Parental modelling plays a central role in shaping adolescent driving behaviour, both directly through behavioural imitation and indirectly through the formation of safety-related attitudes and normative beliefs. Interventions targeting parental modelling should move beyond simple educational messaging to explicitly engage parents in reflecting on their own driving behaviour and aligning their practices with the expectations they set for their adolescents.

Programmes that help parents model safe driving, maintain consistency between rules and behaviour and create warm, communicative family climates are likely to yield the most durable protective effects. Strategies that address adolescents' misperceptions of parental behaviour, such as feedback interventions targeting perceived norms, may offer an innovative approach to modifying risky driving patterns. Importantly, interventions should also recognise the compounded risk created by inconsistent parental modelling and unsupportive family dynamics, particularly when combined with peer influences or neurodevelopmental vulnerabilities. Tailoring interventions to reflect these intersecting pathways may significantly enhance the long-term effectiveness of young driver safety programmes.

3.5 Effectiveness of parental engagement interventions

A growing body of evidence demonstrates that structured interventions actively involving parents offer significant potential to improve young driver safety. Interventions that equip parents with communication tools, feedback strategies and practical resources appear more effective than teen-only approaches in shaping both driving behaviour and safety outcomes. Importantly, successful interventions extend parental involvement beyond passive supervision, instead positioning parents as active partners across both the learner and early independent driving phases.

A tabulated summary of the key parental engagement interventions reviewed, including their delivery models and observed impacts, is provided in Annex C.

3.5.1 Health and clinic-based models

Healthcare and clinical settings offer promising delivery points for parent-focused interventions, particularly as opportunities to engage parents during key developmental transitions. Brief interventions delivered in healthcare settings have demonstrated potential for initiating and sustaining parent engagement. One such example is the Checkpoints™ programme, an evidence-based US intervention designed by NIH researchers to support parents in managing their teens' early driving experience by promoting driving agreements and adherence to Graduated Driver Licensing (GDL) principles. In a dissemination study, Shope et al. (2016) partnered with primary care practitioners to introduce the programme to parents during routine adolescent health visits. Primary care practitioners were trained to conduct short motivational interviews, after which families were referred to a website featuring tools such as the parent–teen driving agreement. While overall engagement with the online materials was modest, only 10% of parents registered on the website and fewer (3%) completed a parent–teen driving agreement, the intervention succeeded in raising awareness and promoting conversations about driving safety. These findings highlight the feasibility of brief, scalable interventions within primary care to initiate parent involvement, but also underscore challenges in sustaining longer-term engagement.

Other clinic-based approaches that focus explicitly on strengthening parent–teen communication have also shown positive effects. Mirman et al. (2018b) evaluated a brief coaching intervention delivered during healthcare visits which successfully increased parental discussions of critical safety topics such as GDL laws, crash scenarios and passenger risks. Even with contact times as short as 10 to 23 minutes, the intervention strengthened foundational safety conversations early in the learning-to-drive process. These findings demonstrate that even brief early coaching can enhance parental safety communication during the critical early learner period.

However, evidence also points to persistent gaps in clinical practice. In a national survey of US healthcare providers, Dellinger and West (2014) found that while most clinicians discussed at least one driving safety topic, critical risk factors such as night-time driving and peer passengers were often omitted, and few providers incorporated structured tools such as parent–teen driving agreements. These findings suggest that embedding targeted resources, decision aids and electronic prompts into clinical workflows may increase the consistency and comprehensiveness of anticipatory guidance.

Healthcare delivery models may also be extended to non-clinical institutional settings. Harland et al. (2021) successfully translated the Steering Teens Safe programme (originally developed as an individual, parent-focused intervention grounded in motivational interviewing) into a group-based workplace wellness format across three businesses in the US. The adapted programme involved communication training sessions delivered during the workday and online driving safety lessons for parents to complete with their teens. The study found that the workplace-delivered Steering Teens Safe Programme significantly enhanced the quality of parent–teen conversations about driving, particularly increasing perceived affection, receptivity, and equality in communication. Parents reported that the training helped them better engage their teens through open-ended questions and reflective

listening, and over two-thirds discussed 16 or more of the 23 provided driving topics. Notably, parents also reported reductions in their own risky driving behaviours, suggesting an added benefit to employers. This successful adaptation illustrates the potential of employer-based platforms to promote teen driving safety while supporting family wellbeing and workforce health initiatives.

3.5.2 In-vehicle feedback and coaching

Technological feedback systems that combine behavioural monitoring with structured parental involvement have demonstrated particularly strong effects in reducing risky driving. Real-time in-vehicle feedback alone can offer meaningful safety benefits, but multiple studies suggest that pairing feedback with parent coaching substantially amplifies impact.

Peek-Asa et al. (2019), in a randomised controlled trial, evaluated a combined intervention integrating real-time driving feedback with the Steering Teens Safe parent training programme in Iowa, US. Parents received motivational communication training alongside in-vehicle data, producing a 79% reduction in risky driving events compared to controls and a 40% reduction compared to feedback-only conditions. This underscores the importance of equipping parents with supportive coaching strategies that enable them to interpret feedback constructively rather than punitively.

Similarly, Creaser et al. (2015), evaluating the TDSS in the US, demonstrated that combining in-vehicle monitoring with real-time parent alerts enabled parents to adapt driving privileges and initiate timely corrective discussions. This two-tiered approach reduced key risky behaviours including speeding, mobile phone use and harsh braking.

Importantly, effective interventions appear to support parental supervision while avoiding perceptions of overcontrol. Shimshoni et al. (2015), in a randomised controlled trial of a 'vigilant care' model, trained parents to scale involvement based on observed risk. This adaptive approach yielded significant reductions in risky driving without triggering resistance, particularly among teens at higher baseline risk, suggesting that flexible, autonomy-supportive supervision may optimise both safety and adolescent acceptance, particularly in higher-risk drivers.

3.5.3 Communication, trust and motivational interviewing

The quality of parent–teen communication has consistently emerged as a central factor influencing intervention effectiveness. Programmes that strengthen open dialogue, trust and collaborative problem solving appear to enhance both short- and long-term safety outcomes.

Hamann et al. (2019) found that family communication styles moderated Steering Teens Safe intervention success. Families characterised by laissez-faire communication benefited most from combined feedback and coaching interventions, while more protective families achieved improvements with feedback alone. These findings reinforce the need to tailor interventions to family relational dynamics.

Motivational interviewing (MI), a structured, evidence-based counselling method developed to elicit and strengthen intrinsic motivation for behaviour change by helping individuals explore and resolve ambivalence, may offer particular promise in fostering constructive

parent–teen conversations around driving risk. ProjectDRIVE, evaluated by Rose et al. (2024), applied MI strategies within a court-referred intervention for high-risk teens in Ohio, US. Parents reported improved confidence, reduced conflict and greater willingness to engage in sustained supervision following the programme. Similarly, Yang et al. (2024 designed a large-scale MI-based intervention integrating in-vehicle feedback (Azūga™) with virtual parent training, booster sessions and structured communication guides in Ohio, US. While outcome data remain forthcoming, the trial reflects growing interest in blending real-time feedback with affirming, autonomy-supportive communication models.

However, for some high-risk teens, particularly those who frequently text while driving, technology-centred deterrents may be more salient than parental monitoring alone. Delgado et al. (2018) found that high-frequency texters were more receptive to behavioural incentives (e.g. financial rewards or phone locking apps) than to parental concern or rule setting. These findings suggest that integrating behavioural incentives alongside parental communication may help reach teens who are otherwise resistant to parental rule setting.

3.5.4 Parenting styles and support

Intervention effectiveness also depends on the broader parenting style in which supervision occurs. Consistent with broader adolescent development literature, authoritative parenting characterised by warmth, structure and autonomy support appears to enhance the impact of driving interventions.

Zeringue and Laird (2018) found that parental restrictions on driving (e.g. curfews or peer passenger limits) only reduced risky driving when embedded within a climate of emotional support and autonomy granting. When imposed without relational warmth, restrictions were less effective and, in some cases, counterproductive, particularly among male adolescents during early licensure.

This relational sensitivity is further reflected in interventions targeting youth with neurodevelopmental vulnerabilities. Fabiano et al. (2016), evaluating the Supporting the Effective Entry to the Roadway (STEER) programme for teens with ADHD, demonstrated that combining behavioural parent training with driving simulation and contingency management produced short-term improvements in both parenting practices and teen-reported risky driving, though effects did not persist at 12-month follow-up. These findings highlight both the short-term feasibility of delivering combined behavioural parent training and simulation-based driving interventions for teens with ADHD, and the need for sustained booster supports to maintain long-term effects in higher-risk subgroups.

Consistent with a strength-based approach, Haegerich et al. (2016) demonstrated that effective parental monitoring is most protective when embedded within a broader context of family assets, including responsible decision-making skills and strong family communication, suggesting that multilevel strategies combining parental, school-based and community interventions may produce more durable outcomes.

Finally, Simons-Morton and Ehsani (2016) argue for a broader conceptualisation of parental involvement that extends beyond driving to encompass higher-order skills such as hazard

recognition, attentional regulation and emotional self-control. This developmental perspective situates parents as long-term partners in the cultivation of driving competence rather than as short-term supervisors during licensure acquisition.

3.5.5 Implications for practice

The value of structured, parent-inclusive interventions across diverse delivery contexts is consistently supported by the evidence. Programmes that incorporate parental engagement consistently outperform teen-only interventions in reducing risky driving and fostering safer developmental trajectories. Successful interventions share several core features: they equip parents with concrete coaching tools, they integrate behavioural feedback with communication training, and they adapt flexibly to family relational styles and adolescent developmental needs.

Importantly, interventions that empower parents as active, developmentally sensitive partners, rather than passive rule enforcers, appear most effective. Embedding parent-focused interventions within primary care, workplace wellness, judicial diversion or insurance-based programmes may enhance reach and scalability. In addition, recognising heterogeneity in adolescent profiles, including neurodevelopmental risk, family communication patterns and peer influence, will be critical to tailoring interventions for optimal long-term safety gains. Future policy frameworks may also benefit from integrated approaches that align professional instructor training with structured parent engagement, as reflected in models such as HOT-CAR (Senserrick et al., 2023).

Overall, these findings support a policy shift that positions parental engagement not as peripheral but as central to effective young driver safety programming. Equipping parents with the tools, knowledge and confidence to guide novice drivers through the full learning-to-drive process and beyond represents a key opportunity to reduce preventable crashes and promote safe driving well into early adulthood.

4. Conclusions and Policy Recommendations

The accumulated international evidence reviewed across this report demonstrates that parental involvement represents a central, modifiable influence on young driver safety. Far from being limited to the supervised learner phase, parental influence extends well into the post-licensure period and operates through multiple, interacting pathways including supervision, vehicle access decisions, role modelling, communication and relational dynamics. These mechanisms not only shape immediate driving behaviours but also contribute to the longer-term consolidation of safe driving habits into adulthood.

While many parents are highly motivated to support their teenagers, the evidence consistently shows that parents require clear guidance, structured resources and ongoing support to engage effectively across the full learning-to-drive process. Interventions that recognise the developmental, relational and contextual factors influencing young driver safety are most likely to produce lasting risk reductions.

While the evidence base strongly supports the value of structured parental engagement, this should not be interpreted as an alternative to comprehensive GDL reform. Instead, parental engagement offers a complementary and immediately actionable strategy that can work alongside, and strengthen the effects of, licensing frameworks. In contexts where wider licensing reforms remain politically delayed, parental involvement represents a modifiable influence that can deliver tangible safety benefits, but it does not remove the case for structural policy change.

Drawing on the findings of this report, the following policy-relevant recommendations emerge:

Reframe licensure as a transition point, not an endpoint

Licensure should not be viewed as the conclusion of parental involvement, but rather as the transition into a new phase of guided autonomy. Sustained parental engagement remains critical during the high-risk early independent driving period. Policy frameworks should encourage continued parental monitoring, guidance and rule setting beyond the driving test.

Integrate structured parental engagement within driver training systems

Parents serve as essential partners in novice driver development when equipped with evidence-based tools, coaching resources and clear role definitions. Programmes that embed parental guidance into broader licensing, healthcare, education or judicial frameworks offer scalable opportunities to extend parental influence. Frameworks such as HOT-CAR highlight the potential for better alignment between driving instructor training and structured parent involvement, strengthening collaborative supervision across home and formal instruction contexts.

Leverage multiple delivery platforms for parent engagement

Sustainable parental involvement can be supported through diverse delivery channels, including:

- Healthcare settings (e.g. adolescent health visits)
- Judicial diversion and referral programmes
- Workplace wellness schemes
- Insurance-based safety incentives

Embedding parental support within these existing systems may enhance both reach and long-term engagement.

Position vehicle access decisions as a policy lever

Decisions regarding vehicle access remain a powerful, often under-recognised influence on early independent driving risk. Shared vehicle access, rather than early full vehicle ownership, has been associated with lower crash risk, reduced exposure to high-risk driving conditions and improved attentional control. Policy and public messaging should explicitly highlight these risks and promote shared access models as a simple, effective strategy for reducing exposure during early licensure.

Build relationally sensitive interventions

Parental rule setting is most effective when embedded within a broader climate of relational warmth, autonomy support and open communication. Interventions that strengthen parent–teen communication, foster collaborative planning and build emotional regulation skills are likely to yield stronger and more durable behavioural outcomes. Motivational interviewing, structured communication guides and family-based coaching programmes provide practical models for supporting these relational processes.

Develop targeted approaches for higher-risk adolescents

The interaction between adolescent personality traits (e.g. impulsivity), family dynamics and peer influences creates distinct vulnerability pathways for some young drivers. Interventions should incorporate individualised risk screening, family system assessment, and peer norm reinforcement to better address elevated risk profiles, particularly for youth with neurodevelopmental vulnerabilities or challenging family environments.

Invest in GB-specific translational research and piloting

While international models demonstrate clear effectiveness, Great Britain lacks coordinated, national-scale parental interventions. Adapting and evaluating evidence-based frameworks such as Checkpoints™, Drivingly, TDSS, Steering Teens Safe and HOT-CAR within healthcare, licensing, education and judicial settings in Great Britain represents a practical and timely opportunity for system-wide improvement.

Embed a simple organising framework for public messaging

The guiding role of parents can be distilled for public and policy audiences into three complementary domains:

- Model: Demonstrate safe, consistent driving behaviours.
- Mentor: Provide calm, supportive coaching throughout the learning period.
- Monitor: Remain actively engaged with appropriate supervision, feedback and oversight during early independent driving.

This ‘Model, Mentor, Monitor’ framework provides a clear, actionable message that can underpin national communication campaigns, practitioner training and resource development.

While the evidence reviewed offers a strong and coherent basis for policy action, it also highlights areas where further research is needed to refine delivery models, optimise engagement strategies and ensure that interventions are appropriately tailored across diverse family, cultural and developmental contexts. Nevertheless, the consistency of findings across multiple international studies provides a clear opportunity: enhancing parental engagement offers a practical and evidence-informed approach to further reducing crash risk during the high-risk early years of independent driving.

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Annex A: Search Strategy and Study Selection

Search strategy

The rapid evidence review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, with modifications to streamline study selection and synthesis for policy relevance.

Databases searched

- PubMed
- Scopus
- Transport Research International Documentation (TRID)

Searches were conducted using targeted search terms designed to capture studies examining parental influence on young driver safety. Searches focused on supervised driving, parental engagement, risk-taking behaviours, parental modelling and post-licensure monitoring.

Search timeframe

- 2015 to 2025
- Peer-reviewed, English-language studies

Search terms included

Terms were adapted for each database but generally focused on combinations of:

- Young drivers: *teen driver, novice driver, adolescent driver*
- Parental involvement: *parental supervision, parent monitoring, parent driving style*
- Safety outcomes: *risky driving, safe driving, crash risk, hazard perception*
- Interventions: *parent–teen driving agreement, parental coaching, GDL compliance*

These database searches were supplemented by reference list screening of included articles and the author's personal library.

Eligibility criteria

Included studies met all of the following criteria:

- Population: young drivers aged 16–25 and their parents
- Design: experimental, quasi-experimental, or observational
- Outcomes: empirical data on parental influence on supervised driving, monitoring and modelling, or parent-focused interventions

- Publication type: peer-reviewed journal and government funded studies
- Language: English
- Publication years: 2015–2025

Studies were excluded where they:

- Lacked empirical data (e.g. commentaries or conceptual models)
- Focused solely on general driver education without parental involvement
- Lacked quantifiable safety outcomes

Study selection process

Following removal of duplicates, 139 records were screened. Title and abstract screening resulted in 57 eligible studies, of which 32 were selected for full text review. From these, 25 studies were included. An additional 25 studies were identified via the author's library (n = 10) and snowballing (n = 15), yielding a final sample of 50 studies. The selection process is summarised in the PRISMA diagram in Figure 3.1.

Annex B: Study Scope and Limitations

While this rapid evidence review synthesised a large and diverse international evidence base, several limitations should be noted:

- **Heterogeneity of studies:** Included studies varied in design quality, sample size, populations studied and outcome measures. Not all interventions were evaluated using crash or long-term outcome data.
- **Geographic concentration:** The majority of studies originated from high-income countries, particularly the US, Australia, Israel and several European jurisdictions. Direct generalisability to policy and practice in Great Britain may require adaptation and piloting.
- **Time-limited scope:** Although the review applied comprehensive search strategies, the search was restricted to peer-reviewed publications between 2015 and 2025, which may not fully capture emerging unpublished or grey literature.
- **Rapid review approach:** A streamlined quality appraisal was applied to balance rigour with timeliness for policy use. Formal meta-analytic techniques were not employed.

These limitations reinforce the importance of GB-based piloting and translational research to test how international findings apply in the driving and licensing context in Great Britain.

Annex C: Parental Interventions

Intervention	Country	Studies	Description	Impacts
Parent Guide for Coaching Teen Drivers	USA	Buckley et al. (2018)	Structured guide for parent–teen driving practice, aiming to improve communication and coaching.	More diverse practice and improved communication; no significant reduction in risky driving.
Supporting the Effective Entry to the Roadway (STEER)	USA	Fabiano et al. (2016)	Training for teens with ADHD; included parent involvement to reduce risky driving.	Improved parenting behaviours and reduced self-reported risky driving at six months.
Drivingly	USA	Hafetz et al. (2023)	Parental coaching, supervision plans and trust-building to support Graduated Driver Licensing (GDL) compliance.	Reduced crashes, improved parent-teen communication, increased parental monitoring and enhanced hazard perception.
Steering Teens Safe	USA	Harland et al. (2021); Peek-Asa et al. (2019)	Parental communication training including structured discussions and rule setting.	Improved parental communication and reduced risky driving event rates.
Hazard perception training	Australia	Horswill et al. (2021)	Six-session online course with supervised training for both parents and learners.	Improved hazard detection and reduced risky following behaviour.
TeenDrivingPlan	USA	Mirman et al. (2017, 2018a); Winston et al. (2015)	Parental tool to support diverse practice during learner phase.	Increased practice diversity; no consistent effect on licensure timing or crash rates.
On-Road Driver Assessment	USA	Mirman et al. (2018a)	Supervised practical assessment with parental involvement.	Reduced crash risk and increased supervised practice.
Event recorder feedback and Steering Teens Safe	USA	Peek-Asa et al. (2019); Hamann et al. (2019)	In-vehicle event recorder plus parent communication training.	Reduced event rates; effectiveness moderated by family communication style.
Vigilant care training	Israel	Shimshoni et al. (2015)	Parent training to deliver feedback and adjust involvement based on risk.	Reduced driving risk for high-risk teens, without being controlling.
Teen Driver Support System (TDSS)	USA	Creaser et al. (2015); Tian et al. (2021)	Smartphone-based system providing in-vehicle feedback and optional parental notifications; evaluated through a 12-month field operational test with a 5-year follow-up.	Parental notification enhanced reductions in speeding, risky manoeuvres and phone use; long-term follow-up showed sustained reductions in traffic violations and estimated cost savings.

Intervention	Country	Studies	Description	Impacts
Share the Keys	USA	Knezek et al. (2018)	Community-based behavioural training programme delivered via high schools to support parental supervision, GDL rule enforcement, and practice driving engagement across licensing phases.	Initially improved GDL understanding and parental commitment to practice; however, both authoritative parenting and teen GDL compliance declined over time, highlighting the need for ongoing reinforcement post-licensure.
Talking with Teens About Traffic Safety	USA	Mirman et al. (2018b)	Brief parent-targeted health coaching intervention delivered during primary care well-child visits, supported by printed materials and physician endorsement, designed to promote early parent–teen safety conversations.	Significantly increased frequency of parent–teen discussions on GDL laws, crash response, police stops and driving motivations; high feasibility and acceptability demonstrated in clinical setting.
Checkpoints™ primary care adaptation	USA	Shope et al. (2016)	Adaptation of the Checkpoints™ parent–teen driving agreement programme for delivery via brief physician counselling and referral to a web-based parent–teen driving agreement tool during paediatric visits.	High fidelity primary care practitioner delivery; 42% of parents accessed the website; parent–teen driving agreement completion was limited, but some users engaged in ongoing rule setting; scalable model for healthcare integration.

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