Driving risk is defined as a potential threat that may cause vehicle crashes or other accidents (Zheng, Wang et al. 2014), and its assessment is undoubtedly necessary as is shown by the dramatic traffic accident statistics. There is a perennial quest about assessing driving behavior and predicting crash risk potentials in driving (Shi, Wong et al. 2019). ——定义，已经有过一系列的研究

In the past decades, several studies have assessed various contributing factors in driving risks. They can be roughly divided into subjective and objective ones, including but not limited to drivers’ driving behaviors, traits, the road condition, environment state and vehicle failures (Donovan and Marlatt 1982, Donovan, Umlauf et al. 1988, McMillen, Pang et al. 1992, Cai, Wang et al. 2016, Rolison, Regev et al. 2018) . ——大家把原因归为主观和客观

From the perspective of drivers themselves, researches often distinguishes between driving skills and driving style (Rolison, Regev et al. 2018). The skills component includes practice, exposure to the diversity of traffic situations, reaction time, and tracking as limits to optimal performance (Groeger and Brown 1989, McMillen, Pang et al. 1992, Lajunen and Summala 1995, Boyce and Geller 2002, Özkan and Lajunen 2006, Li, Yan et al. 2016). Driving style, or habits, includes the ways an individual chooses to drive based on attitudes, beliefs, personality traits and time perspective (Quimby and Watts 1981, Donovan, Umlauf et al. 1988, Rolison, Regev et al. 2018). ——总的主观原因=style+ skill

More researchers devoted to discovering an identification of driving styles. Since the self-assessment can definitely reflect part of the drivers’ driving style, Dennis M. Donovan and G. Alan Marlatt divided the driving-while-intoxicated (DWI) offenders into 5 groups based on a specially designed questionnaires (Donovan and Marlatt 1982), for conducting education and correct guidance for people under potential risk. And given the evidence that angry and aggressive driving assessment can help avoid serious negative consequences, the experts have sought for a better understanding of the potential risk factors and ways of assessing and helping individuals reduce their risk for road rage incidents (Sharkin 2004). As for adolescent drivers and young novice driver, their driving styles are concluded to several types to explore possible traffic safety interventions (Deery and Fildes 1999, Harré 2000, Williams 2003). In addition to certain groups of people, generally, gender, age, and even the driving style of parents and peers have been tested to see whether having effects on a driver’s driving characteristic. After many efforts, researchers validate previous findings regarding the importance of the peer norms as contributors to risky driving (Lee, Simons-Morton et al. 2011) and convinced that age and the parents’ driving behavior, the family climate and the family members’ attitude toward road safety significantly contributes to teens’ driving behavior (Wilson, Meckle et al. 2006, Taubman–Ben-Ari, Kaplan et al. 2015). But the influence of gender should be considered more carefully (Harré 2000, Rhodes and Pivik 2011, Li, Yan et al. 2016). Some found that gender to be an important factor of risky driving behaviors. However, although gender differences were observed in numerous studies, some researchers failed to find any significant differences between men and women in terms of risky or aggressive driving (Deffenbacher, Huff et al. 2000, Deffenbacher, Deffenbacher et al. 2003). ——主要介绍style的文献

And for all researches in this area, some explains driving characteristics a complex interaction of diving skills and styles. According to an analysis using drivers’ self-assessment, driving experience was confirmed to be a significant predictor of safety and skill-oriented driving (Lajunen and Summala 1995), for which researchers explains that practice and increased exposure to the diversity of traffic situations could be expected to improve skills, but also increase subjective control over driving and reduce concerns about safety (Näätänen and Summala 1976, Spolander 1983). And of course, age may be related to driving experience, thus many of the younger drivers (ages 16–25) tend to have higher risk of driving than older drivers (Sharkin 2004). ——两种 style+ skill原因综合考虑

To assess the driving risk, it is far from enough depending on drivers’ self-assessment or some historical crash/near-crash data. With the development of technology, to break the limit of methods, more approaches for measuring driving behaviors and assessing driving risk come up. These approaches are commonly used to test external factors in driving risks, such as assessing vehicles states, road conditions and other driving environment. —— 技术精进，讨论客观因素

Researchers simulated the real scene and collected dynamic data. They considered comprehensive naturalistic driving experiments to collect data under potential threats on actual Chinese roads, then found vehicle status, potential crash objects, driving environment, weather condition, and driver information and actions could influence the drivers’ ability to avoid incidents (Drobot, Benight et al. 2007, Zheng, Wang et al. 2014, Wang, Zheng et al. 2015, Cai, Wang et al. 2016, Ma, Qi et al. 2019, Shi, Wong et al. 2019). And most of them developed a certain model to predict the risk. Others discovered that the collision risk in cell phone use conditions was still higher than that without the phone use (Li, Yan et al. 2016). ——总的客观原因有很多

In order to achieve more accurate identification of driving risk, Wang Jianqiang, Huang Heye, etc. not only use naturalistic driving study but also combining questionnaires to conduct research (Wang, Huang et al. 2020). While exploring the combination of subjective and objective risks, some studies introduced artificial potential field theory to describe the relation between vehicles and driving environment, including pedestrians and cyclists (Gerdes and Rossetter 2001, Tu, Zhang et al. 2016, Moreau, Melchior et al. 2017). Probabilistic approach is also capable of dealing with uncertainties when modeling the environment as well as detecting and tracking dynamic objects. The analysis and interpretation of traffic scenes rely on evaluation of driving behaviors to estimate and predict collision risks for the ego-vehicle for a short period ahead, can efficiently alert the driver and help improve the safety of car driving (Laugier, Paromtchik et al. 2011).

——客观原因探索过程中，采用了实时探测/环境模拟等等办法

Many efforts have been taken to improve the driving risk assessment. However, driving risk is still difficult to be identified perfectly now by those traditional approaches and traditional criteria. We may assess the risk through objective and subjective methods, from different angles including drivers, road and vehicles, but we may ignore the applicability of the criteria*.* For instance, the safe speed in some section of a freeway may be dangerous in others (Yan, Sheng et al. 2011), not to mention in the cities; and the drivers’ habit of driving (always drive at when, where, what state of mind) can always influence the assessment of their driving risk. But all these mentioned above have not been discussed well till now. Thus, in this paper, we will try to fill in these research gaps.

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