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Experiences with licensing by autistic drivers: An exploratory study

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Abstract

Autistic individuals obtain their driver's licenses significantly less or significantly later than non-autistic peers. In the past, research has been done on what problems autistic individuals experience when (learning to) driv(e)ing. However, little research has been conducted on how they experience the preparation for and the actual driving tests (i.e., theoretical and practical). Therefore, the purpose of this study was to obtain preliminary insights into autistic persons' experiences with the tests to obtain a driver's license. Forty participants completed a few questions about their experiences during the licensing process. Four tentative conclusions could be drawn: (1) autistic persons seek more professional guidance than the general population, (2) the practical test is perceived to be more difficult than the theoretical test, (3) lack of predictability, communication problems, and time pressure are the most reported problems for autistic individuals, and (4) many of the reported problems could be linked to core autism traits. Moreover, after comparing the study participants' pass rates to the general pass rate in Flanders, a preliminary conclusion could be drawn that, although the participants experienced many difficulties during the practice period and the practical test, their success rates were not lower than those of the general population. These study results can be the basis for follow-up research to move towards a more autism-friendly licensing system.

Keywords: Autism, driver's license, driving licensing, experiences, driving exam, theoretical test, practical test

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1. Introduction

1.1. Autism

Autism is among the most commonly diagnosed developmental disorders worldwide, with prevalence still rising annually due to a better diagnostic process [1]. The WHO estimates that 1 child in 160 worldwide has autism [2]. In Flanders, Belgium, approximately 1 out of 150 children are diagnosed with autism [3]. Autism is often diagnosed using the DSM-V. This international classification system is an authoritative guide to diagnosing mental disorders. According to this guide, to meet the criteria for autism, a person must show the following symptoms: persistent deficits in social communication and social interaction across multiple contexts and restricted, repetitive patterns of behavior, interests, or activities [4]. Autistic individuals can experience significant problems that can severely limit their daily functioning (i.e., attention problems, difficulty making social contacts, etc.) [5]. An important part of this daily functioning is moving around independently or driving a car. This helps an adult in maintaining relationships, finding (and keeping) a job, and meeting the demands of certain roles [6]. Yet, it appears that autistic individuals often experience transportation problems, resulting in decreased self-confidence and feeling isolated and depressed [7]. Curry et al. (2018) found that autistic individuals were much less likely to obtain their driver's license than non-autistic peers. When they obtained their driver's license, it was also 9.2 months later, on average [8]. Furthermore, research also showed that autistic persons require more (sometimes twice as many) driving lessons and examination opportunities [9, 10]. To date, research mainly focused on autism-related difficulties when (learning to) driv(e)ing, and how this may affect obtaining a driver's license. Nevertheless, the actual licensing process (e.g., (preparing for) the exams) can also impact a person's chances of succeeding [11]. However, autistic individuals' experiences related to this licensing process have been studied considerably less.

1.2. Autism, driving, and licensure

In Belgium, cars are the most chosen means of transport, with public transport being very limited in rural areas [12]. Yet, despite the importance of driving, many autistic individuals continue to rely on friends, family, and/or public transportation for their travel needs [13]. This is because certain features of autism can interfere with (learning to) driv(e)ing. Autism is often characterized by difficulties with executive functions such as working memory, information processing speed, attention, etc. [14]. Executive functions are the higher cognitive processes that enable a person to perform goal-directed behaviors [15]. Multiple studies linked these difficulties to making more driving errors (e.g., decreased steering) [16, 17]. Furthermore, autistic individuals have more difficulties with hazard perception, particularly with detecting social hazards [18]. In terms of social communication and functioning problems, autistic individuals also estimate their abilities less accurately than non-autistic individuals [19]. However, it is crucial to assess one's abilities properly to adapt well to task demands. Not estimating accurately can lead to difficulties with maneuvering and uncertainty while driving [20]. It also takes autistic individuals longer to learn to drive and develop social communication skills in addition to driving skills (e.g., hand gestures from other drivers) [8]. Finally, autistic individuals sometimes have motor planning problems [21]. Anxiety is also a significant problem among autistic individuals, in general, and in relation to driving [22]. When autistic drivers are overloaded with input while driving, their coping capacity overloads, which then causes anxiety, stress, and frustration [23]. However, the relationship between autism and driving is not necessarily negative. Because autistic individuals are more rule-bound, they may engage in less reckless driving [24]. This was also confirmed in a recent study by Curry et al. [18] where the driving performance of non-autistic drivers was compared to autistic drivers. This showed that autistic drivers were only half as likely to have an accident due to speed. Ross et al. [25] and Cox et al. [26] showed that despite autistic drivers performing less on cognitive tasks or in the driving simulator, they could be considered capable drivers once the autistic people could obtain their license.

With regards to the experiences during licensure, the available literature remains scarce. A qualitative study by Silvi and Scott-Parker [27] examined the driving and licensing experiences of autistic youth and the barriers associated with licensure. Their study examined how the possible autism-related problems impacted learning to drive but did not explicitly focus on the licensure themselves. A study examining facilitators or barriers in driving education from learner and novice drivers with ADHD or autism showed that autistic individuals have to take more

on-road tests than the general population. Yet, again, little research was done on the experiences during the exams themselves [9]. Nevertheless, there are several reasons to believe that examinations (and the moments leading up to them) can be challenging for autistic individuals. On the one hand, there are difficulties with social interactions, yet communication is a crucial part of the exam. Communication with the examiner and other road users must occur during the exam [28]. On the other hand, autistic persons find it difficult to cope with unfamiliar and unpredictable situations [29, 30]. Previous research showed that exam moments (in general) could cause severe stress and anxiety in autistic persons [31]. Additionally, autistic individuals often find it challenging to cope with stress and anxiety [32, 33].

1.3. Licensing in Belgium

This study was conducted in Flanders, one of the three regions in Belgium, with approximately 6.6 million inhabitants [34]. From the age of 17, everyone can take a theoretical test in which the knowledge of traffic laws is assessed. When a person successfully passes, an apprenticeship period follows of a minimum of 3 months and a maximum of 36 months, during which a person may choose whether to take driving lessons with an accredited driving instructor and/or to learn to drive with free supervision (i.e., parents, grandparents, etc.). Afterward, a practical test consists of two parts: a risk perception test on the computer and a driving test on public roads. When a person passes this exam, they obtain a permanent driver's license, and they can drive the car alone [35].

1.4. Aim of the study

Despite the upsurge in research on experiences and/or difficulties of autistic persons while (learning to) driv(e)ing, studies on experiences during licensure remain scarce. Therefore, the purpose of this study was to obtain initial insights into autistic persons' experiences with the examination moments (i.e., theoretical and practical) to obtain a driver's license. This was done by administering a few questions regarding the licensing process.

2. Method

2.1. Participants and recruitment

Autistic adults with a driver's license were recruited through convenience sampling. The following inclusion criteria were used: an autism diagnosis, possessing a driver's license, 18 years or older, and Dutch speaking.

Table 1: Overview of characteristics participants

	N = 40
Gender (male – female)	21 – 19
Age (X ± SD)	29.87 (9.196)
Age range	18 – 51
AQ-score (X ± SD)	6.54 (2.368)
AQ-score range	2 – 10

Participants were recruited through an email to various patient organizations such as Autisme Limburg, Autisme Centraal, Limburg Stichting Autisme, etc. These are all organizations that have a large reach within the autistic community. They, in turn, shared the link to the online questionnaire with their members. In total, 40 respondents were included. Table 1 schematically shows the characteristics of the included participants.

2.2. Questionnaire

The current study was part of a larger study that investigated the impact of autism on the journeys that individuals make. Other components, such as experiences while commuting or during traveling while on vacation, are not further discussed in this paper. The questions regarding the driving tests included six themes: (1) help in preparing

for the tests, (2) experiences while preparing for the tests, (3) number of times the tests were taken, (4) experiences during the tests, (5) components in which difficulties were experienced during the theoretical test, and (6) components in which difficulties were experienced during the practical test. The questionnaire was created and completed in Qualtrics; respondents who could not complete the survey did so on paper. Afterward, their answers were digitized. Respondents who had no driver's license or did not complete this part of the survey were excluded. Because of the few respondents and the nature of the study (i.e., exploratory), descriptive statistics were chosen to describe the sample and reduce the data collected from the participants into a summary number [36]. Afterward, correlations between all questions were calculated on group level (i.e., not for individual cases) to measure associations between the questions [37].

3. Results

3.1. Descriptive statistics

Table 2: Help with preparations

	Parents (%)	Trustee (%)	Driving school (%)	Combination (%)	Other (%)
Who helped you prepare for your theoretical test?	30.8	10.3	33.3	0	25.6
Who helped you prepare for your practical test?	28.2	10.3	48.6	10.3	2.6

Responses to the question related to preparing for the theoretical test were somewhat mixed. A similar number of people prepared via the driving school or practiced with their parents. Most of those who used another method prepared themselves through self-study. In terms of practice for the practical test, it could be observed that about half of the respondents learned to drive with the help of a driving school.

Table 3: Experiences with tests and preparations

	Very difficult (%)	Difficult (%)	Neutral (%)	Easy (%)	Very easy (%)
How did you experience the preparations for the theoretical test?	7.5	15	30	30	17.5
How did you experience the preparations for the practical test?	17.9	25.6	30.8	23.1	2.6
How did you experience the theoretical test?	5	22.5	30	25	17.5
How did you experience the practical test?	13.5	37.8	32.4	13.5	2.7

Concerning the level of difficulty for the preparation for the exams, there is a noticeable difference between the theoretical and practical tests. 22.5% indicated that they found preparing for the theoretical test (very) difficult, in contrast to 43.5% who found the preparation for the practical test (very) difficult. The same percentages could also be found in the experience during the exams, where only 27.5% found the theoretical test (very) difficult compared to 51.3% who experienced the practical exam as (very) difficult. Furthermore, it showed that the vast majority (82.5%) passed the theoretical test on the first try. Approximately half of the participants passed the practical test on the first try.

Table 4: Problem experiences during tests

	Yes (%)	No (%)
Did you experience any time pressure problems during the theoretical test?	46.2	53.8
Did you have any problems with the way questions were asked during the theoretical test?	38.5	61.5
Did you have any other problems during the theoretical exam?	7.1	92.9
Did you experience any problems with the lack of predictability during the practical exam?	62.2	37.8
Did you experience any problems with the communication with the exam instructor during the practical exam?	48.6	51.4
Did you experience any problems other problems during the practical exam?	32.1	67.9

Participants reported the lack of predictability as the biggest problem during the exams. About half of the respondents experienced issues with time pressure during the theoretical test. Half of the respondents also indicated difficulties with communicating with the examiner. Some respondents also reported other problems. However, most respondents did not indicate which these problems were.

3.2. Correlations

After performing the descriptive statistics, the Pearson correlation coefficient was computed to calculate the correlations between the different questions. A total of seven significant correlations were found ($p < .05$) between the different questions. All significant correlations had a moderate to a high degree of correlation ranging from -.524 to .612. Table 5 shows the significant correlations between the different questions.

Table 5: Significant correlations between questions

Questions	r	Sig. (2-tailed)
Experience of preparation for theoretical test with number of times theoretical test was taken	-.513	<.001
Experience of preparation for theoretical test with experience during theoretical test	.612	<.001
Experience of preparation for practical test with number of times practical test was taken	-.415	.011
Experience of preparation for practical test with experience during practical test	.608	<.001
Number of times theoretical test was taken with experience during theoretical test	-.524	<.001
Number of times practical test was taken with experience during practical test	-.455	.005
Experience during theoretical test with time pressure problems during theoretical test	.423	.006
Time pressure problems with the way questions were asked during theoretical test	.325	.043

For both the theoretical and practical tests, it appeared that those who found the preparation for the tests more difficult also found the tests themselves more complex. In addition, it emerged that those who perceived the preparation for the exams as more difficult also had to take the tests themselves more often. Similarly, it appeared that the participants who found the tests easy actually had to take them fewer times to pass. Participants who experienced time pressure during the theoretical test also perceived the test itself as more difficult. Finally, the analyses also showed that those who experienced time pressure also had more issues with the way questions were formulated during the theoretical test.

4. Discussion

Participants in this study reported multiple difficulties with the (preparation of) the exams. Certain of these experienced difficulties can be linked to core traits of autism. For example, 62.2% of participants reported difficulties with the unpredictability of the exam. In fact, research shows that autistic individuals predict the environment differently than non-autistic individuals making everything highly unpredictable for them [38]. The same was found by Ross et al. [10], who found that reacting and dealing with unpredictable situations is one of the most commonly reported problems in autistic learner drivers. Furthermore, about half of the participants said they experienced communication problems with the examiner. Autism is often characterized by communicating in a different way [39] which can make communicating with others (i.e., the examiner) more difficult [9]. Autistic individuals often experience overall stress and anxiety [40]. Consequently, many experience the fear of exams, and they also find it harder to cope with this than non-autistic peers, leading to chronic stress. [41, 42]. The fact that many experienced the preparation for and the practical exam itself as (very) difficult can also partly be explained by the stress they experienced. Nevertheless, driving tests are stressful events for everyone with or without autism [43]. Finally, because of executive function problems, time management can be challenging for autistic persons [44], which may explain why nearly half of all respondents reported time pressure issues while taking the theoretical test.

When comparing the results on how autistic individuals learn to drive and how they experience between the current study to a recent questionnaire study in the general population, it appears that the percentage of individuals who have only learned to drive with free supervision (e.g., parents) is significantly lower among autistic individuals. The recent study showed that 47.9% of candidate drivers preferred to learn to drive with free guidance, while in the current target group, only 28.2% chose this. A possible explanation is that autistic individuals experienced difficulties learning to drive [16, 18] and therefore were more likely to seek professional help. However, other studies show that when they received customized lessons, they also get to the same level of non-autistic peers more easily and quickly [45]. Although many chose to take driving lessons, both the preparation for and the practical exam itself were rated as difficult to very difficult by many participants. This is in line with a study by Silvi & Scott-Parker [27], where autistic individuals frequently associated the word "difficult" with driving. Moreover, a study in which parents of autistic and non-autistic learner drivers were required to indicate their children's attitudes toward driving found that parents of autistic children reported more negative and less positive attitudes toward driving than those of non-autistic peers [22]. Finally, Almberg et al. [9] showed that autistic individuals require more driving lessons and find it difficult to translate theory into practice and adapt it to unfamiliar situations.

Despite the reported difficulties, it appears that autistic individuals do not perform worse during their driving tests. Recent data from the government shows that about 53% of all candidate drivers pass the practical driving test from the first time [46]. This is in line with the current study's findings, where 51.4% of the participants passed on the first try. A previous study also showed that 89.7% of autistic drivers who began obtaining a driver's license also succeeded in getting it, meaning that whoever started had a good chance of obtaining a driver's license [9]. This relates to previous studies by Ross et al. [25] and Cox et al. [26]. They showed that, despite autistic drivers experiencing more secondary problems, they can still be considered capable drivers after training.

5. Limitations

Some limitations were linked to the current study. Firstly, only a small group of participants were included. As this study was part of a more extensive study in which participants were not required to hold a driver's license, more than 50% of the participants did not meet the inclusion criteria for the current study. Therefore, these results may not be generalizable to the entire autistic population. Secondly, the questionnaire was only administered in Flanders, Belgium. However, it cannot be presumed that the findings in this study are also comparable for other countries due to cultural, organizational, and other differences [47]. Thirdly, no control group was included in the current study, which made a comparison with non-autistic peers not possible, so some of the results could only be verified with those of the general population. Fourthly, the questionnaire on the experiences of the participants was relatively short. It is advisable to expand this questionnaire in the future in a follow-up study, include a control group, and potentially add some open-ended questions so that answers can be further clarified, or conduct semi-structured interviews [23]. Finally, the licensing system in Flanders has changed over the years. Due to the wide age range, the difficulty of the tests may have differed between different participants. As a result, the comparison of the pass rates may not be completely accurate. Nevertheless, this study provides a first indication of how autistic individuals experience the (preparation of) their driving tests (theoretical and practical), providing avenues to focus on for follow-up studies (e.g., more thorough research on time pressure during the theoretical test, different age groups, including a control group, etc.).

6. Conclusion

Obtaining a driver's license is not always easy for autistic people. Until now, research mainly focused on problems autistic persons experience while (learning to) driv(e)ing, but less on how they experience (preparing for) licensure. This exploratory study assessed the experiences of autistic persons related to (driving) tests. Four tentative conclusions could be drawn from the questionnaire results. Firstly, autistic individuals relied more on professional guidance than non-autistic peers for obtaining their driving licenses. Secondly, the practical test is perceived by many participants as much more difficult than the theoretical test. Thirdly, the most common problems during the practical test were the lack of predictability and communication with the exam instructor. The time constraints were perceived as difficult for the current study's participants during the theoretical test. Fourthly, after comparing the

results to available literature, many reported problems could be linked to core autism traits, such as social communication and executive function difficulties. After comparing the pass rates of the participants with the general pass rates in Flanders, we could draw a preliminary conclusion that although autistic persons experienced many difficulties during the practice period and the practical test, their success rates were not lower than those of the general population.

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