Access to Transport Services and Participation in Traffic for People with Mental Health Diseases – Challenges to meet the UN Sustainable Development Goals (SDGs) to provide an overall inclusive Transportation System

Georg Hauger¹, Alessandra Angelini¹, Matthias Nagler¹, Ulli Rohsner², Christian Dominoko², Christopher Schlembach¹

¹Technische Universität Wien, Centre of Transportation System Planning, Augasse 2-6, 1090 Wien, Austria
²MAKAM Research GmbH, Hietzinger Hauptstraße 34, 1130 Wien, Austria
³Roosevelt Platz 2, 1090 Wien, Austria
georg.hauger@tuwien.ac.at

Abstract. Engineers and planners are always jointly responsible for the usability of their interventions. In the transport sector, universal design is a planning imperative to ensure that all user groups participate equally in traffic. Usually, only physical impairments are in the foreground. However, there is an ever-increasing group of people with psychological impairments. Mental health diseases, especially phobias, anxiety, and compulsory disorders, are one of the most prevalent diseases in industrial countries – one-year prevalence rates are estimated at 10 up to 15%. Although rules, regulations, policies and action plans have been established to create an overall inclusive transportation system, the needs of people with mental impairments are mostly not considered. At the same time, participation in traffic is important for people with mental impairments to satisfy their daily needs and to reach therapeutic institutions. In addition, social interaction and the mastery of everyday tasks strengthens self-confidence and supports the healing process. Not least for that reason, the UN SDGs have been formulated. By conducting an exploratory study, the behaviour and needs of people with phobias, anxiety and compulsory disorders and the effects on their participation in traffic were explored. The paper shows general aspects concerning the traffic behaviour of people affected in the course of the disease. Furthermore, different forms of mobility barriers for people with phobias, anxiety and compulsory disorders were identified, distinguishing between infrastructural barriers, social barriers and organisational barriers. As a result, several approaches to support the participation in traffic of people with phobias, anxiety and compulsory disorders, based on coping strategies used by the target group, are mentioned. In addition, the paper identifies potential future challenges in context with mobility trends, concerning the accessibility of the transportation system for affected people, as well as further research needs.

1. Introduction

Accessibility of the transportation system has become an important aim within the last decades in Austria and other countries worldwide. Huge efforts have been made concerning the diminution of physical barriers or the accessibility for people with visual impairments. The UN Convention on the
Rights of Persons with Disabilities states that people with long-term physical, mental, intellectual or sensory impairments shall gain access to transportation on an equal basis with other transport users [1]. In addition, the UN 2030 Agenda for Sustainable Development intends to provide an overall inclusive transportation system by paying attention to the special needs of people with disabilities [2]. However, existing rules, regulations, policies and action plans are still not sufficient to provide an overall inclusive transportation system as the needs of people with mental impairments (e.g. anxiety, depression) are mostly not taken into account, when it comes to planning practice. This fact seems to be incomprehensible as the number of affected people is high in comparison with other diseases in industrial countries. According to several studies, every tenth adult suffers from anxiety or a phobia once in his lifetime [3, 4]. Furthermore, the prevalence of anxiety disorders is expected to grow [5].

At the same time, participation in traffic is especially important for people with mental impairments. On the one hand, it is necessary to satisfy their daily needs, to reach therapeutic institutions, self-help groups or to keep social contacts. On the other hand, participation in traffic itself can support the healing process of people affected by social interaction and the mastery of every-day tasks strengthens self-confidence.

To explore the behaviour and needs of people with phobias, anxiety and compulsory disorders and the effects on their participation in traffic, the exploratory study “PHOBILITY” was conducted. It has been the first study in Austria analysing this topic.

2. Methodical approach

The study addressed people with ICD-10 diagnoses F40-49 as well as people with anxiety or depression which has not been diagnosed so far. The exploratory study “PHOBILITY” was conducted in order to gain knowledge about the mobility behaviour of people with phobias, anxiety and compulsory disorders. Only very little empirical research has been conducted on this specific topic so far, so the use of different methods seemed to be appropriate.

The core of the project were single case studies which contained problem-focused interviews, GPS-based mobility surveys and walks to explore the mobility behaviour in context with the course of the disease, challenges of participating in traffic and personal coping strategies. Also, group-discussions were held. As mental diseases occur in individual stages, qualitative methods, and a group of 20 participants seemed appropriate for the exploratory study. Participants could choose if they wanted to attend all types of surveys or only certain ones. The results were discussed with experts in interviews and workshops.

3. Participation in traffic of people with phobias, anxiety and compulsory disorders

3.1. General aspects

Although phobias, anxiety and compulsory disorders appear in different forms, affected people can be clustered into two main reference types, depending on the way they perceive the environment [6]. One reference type is characterized by the loss of the ability to recognize a situation/or a minor irritation as harmless. That signifies that affected persons do not perceive ordinary situations like other people, but persistently expect possible frightening outcomes instead, e.g. they become scared of getting stuck when using an elevator. This condition is especially increasing in situations where there is no physical way to leave the place. In many cases, affected people work themselves up in such a condition of panic, already in advance of a situation.

The other reference type is characterized by being unable to reclaim territorial space in public areas. Affected people fear of getting in contact with others in routine situations, e.g. when they wish to get off the bus and someone is sitting next to them or standing in front of the doors. Furthermore, they feel
unwell if other people are looking at them or are scared of potential stigmatization by others in case of any – from their point of view – “unusual” behaviour.

In transportation system planning, a distinction is made between people who have the ability to choose their mode of transport (“choice riders/drivers”) and people who are dependent on a certain mode of transport due to limited resources, a lack of appropriate supply or restrictions regarding the personal health (“captive riders/drivers”). A transformation from one type to the other can be observed regularly in the course of mental disease. Figure 1 displays a typical course of participation in traffic in five phases, showing the connection between anxiety disorders and mobility. In this case, the lack of appropriate transportation modes is mainly a result of personal constraints due to the disease. The total loss of mobility, shown in the third phase, only exists in hard cases and implies that affected people do not leave their homes at all. At the same time, the fifth phase does not mean that the original condition is regained, but that someone arranges himself with the situation and the own capabilities after a phase of constraints [6].

| Full Mobility | Constraint | Loss | Extension | Full Mobility or Stabilisation |
|---------------|------------|------|-----------|------------------------------|
| Free usage of Transport Modes (choice) | Coping with the Situation despite Strains (choice → captive) | Retreat from the Situation (neither choice, nor captive) | Coping with the Situation despite Strains (choice → captive) | Free usage of Transport Modes (choice) or Arrangement between supply and own capabilities |

![Figure 1. Transformation of mobility in the course of anxiety disorders](image)

3.2. Mobility barriers
Depending on the stage of the disease, people with phobias, anxiety and compulsory disorders are confronted with several mobility barriers while participating in traffic. In general, those barriers can be clustered into (1) infrastructural barriers, (2) social barriers and (3) organisational barriers [6].

Infrastructural barriers commonly occur in context with public transportation. Especially, the fact that in general, passengers can only enter or exit the vehicle at designated stops or stations, creates a stressful situation for people with mental health diseases, as there is no way to escape. Also, the vehicle-related equipment can lead to discomfort, for example, if there are not enough single-seats on board and affected people must sit close to someone else. Automatic doors may be a barrier as the passenger is not capable to control them. In addition, narrow aisles or rooms, as well as stations without possibilities to escape, can contribute to the avoidance of certain modes of transport by the target group.

At the same time, social barriers exist in the form of other traffic participants. Particularly in public transport, the presence of other passengers may cause anxiety as they might impede an escape or because people with phobias, anxiety and compulsory disorders feel observed by them. For that reason, many affected people try to avoid rush hour traffic.

Organisational barriers occur due to the fact that people with phobias, anxiety and compulsory disorders have a high need to plan their activities or trips and to get informed sufficiently. Therefore, all unexpected events like constructions, road closures, accidents, delays or service interruptions of public transport may cause anxiety situations. Also, the lack of information, like the absence of timetables, bad signage or missing advices to certain circumstances, makes affected people believe, that they cannot control the situation anymore. This is intensified in situations when there are no officials present, as affected people recently do not dare to talk to strangers and ask for help.
4. Ways to gain access to transport services for people with phobias, anxiety and compulsory disorders

4.1. Coping strategies used by people with phobias, anxiety and compulsory disorders
People with phobias, anxiety and compulsory disorders frequently use strategies to cope with the mobility barriers they are facing while participating in traffic [6]. The effectiveness of those strategies depends on many factors, e.g. the reference type, the stage of the disease, the mode of transport or personal preferences. In general, strategies should be practicable in different situations and in a decent way, as the affected people do not want to attract attention to their behavior. One main strategy is to distract or concentrate on oneself by using methods to cool down in case of unpleasant situations. Affected people often use music, videos, books, games or photos to distract themselves. Especially music and photos may help to create a familiar atmosphere. At the same time, public electronic devices displaying news or commercials often seen at stations or airports might have a negative impact as they might unintentionally show disturbing content. Other people tend to meditate or do breathing exercises to calm down and avoid to work themselves up into an anxiety attack. Another strategy is to prepare oneself for the trip in advance, using available information as far as possible. This helps affected people to keep control over the situation. Some people also define themselves some sort of “points of help” along their route. For those cases, there are institutions where they can go to in case of an anxiety attack during the trip, e.g. to seek help, like ambulance stations or hospitals or to seek refuge at a hotel room to calm down in a comfortable atmosphere without the presence of other people. Even if people affected finally do not need to interrupt their trip, and go to such a point, they feel safe as they are prepared for such an event.

The use of prescribed medication can be helpful at severe stages of the disease, but it requires discipline to avoid negative impacts, e.g. addiction. Driving under the influence of medication can be dangerous and should, therefore, be omitted. In some cases, it can be sufficient to carry prescribed medication around, even without actually using it, as the knowledge about it might give a sense of security.

4.2. Measures proposed by health experts and people with phobias, anxiety and compulsory disorders
During the interviews with health experts and affected people, several measures to support participation in traffic of people with phobias, anxiety and compulsory disorders could have been identified [6]. Experts consider most of the existing coping strategies as useful and especially recommend using coping strategies in the form of self-distraction and self-manipulation. Apart from this, they recommend a simple and clear layout of paths and facilities. This can help affected people to keep orientation and feel safe. Clear signage supports them to avoid asking strangers for help. At the same time, bright and aesthetic design of facilities creates a friendly and comfortable atmosphere.

Both health experts and affected people propose to create special rooms or facilities in public transportation to calm down, in case of stressful situations or impending anxiety attacks. As this is expected to cause high costs, or in many cases existing facilities not even possible to adapt, like washrooms on board of vehicles or stations, could be designed more comfortable to create a relaxing environment. Another element recommended to support participation in traffic are people who exude a sense of security and calm, like employees of the transportation company or people in a trusting relationship for the affected person. They can provide information or help in acute situations. It is necessary to train those people to ensure them they can deal with people with mental diseases appropriately. In the same way, it is recommended to support awareness among the broad population to prevent stigmatization and create an understanding of the special needs of the target group. This could reduce the anxiety of the affected people in social interactions with strangers. To fulfill the need of information of people with phobias, anxiety and compulsory disorders, the provision of sufficient travel
information seems to be appropriate. Announcements and dynamic displays do not only support them in exceptional situations, but also in normal environments. A conceivable solution to avoid the information overload for normal travelers could be the integration in smartphone-based applications.

5. Results and discussions

The study has shown that the needs of people with phobias, anxiety and compulsory disorders differ massively from the needs of people with other mobility constraints. Therefore, it is not surprising that existing measures to provide all-inclusive access to transport services (e.g. low floor vehicles, elevators or guiding systems for the blind) are not sufficient for this group of people and subsequently not enough to meet the UN Sustainable Development Goals, as well as the Convention on the Rights of People with Disabilities. To make the participation in traffic for the target group easier, strategies to support self-distraction and self-manipulation are highly recommended, as well as infrastructural and organizational improvements.

At the same time, it has to be admitted that several limitations impede the full-scale implementation of recommended measures. First, it is difficult to develop strategies that fit for all people in the same way. The effectiveness of implemented measures depends on the type, curse, and stage of the disease and the environment. Personal applications which are individually adjustable could be an effective way to meet those needs sufficiently. Furthermore, specific rooms or facilities are often not feasible from a technical and financial point of view. The situation is nearly the same regarding specially trained people. Currently, the trend is towards the reduction of employees on board of public transport vehicles or stations as they are more expensive than automated machines or electronic devices. On the other hand, many measures supporting people with phobias, anxiety and compulsory disorders would help people without such diseases as well. Improvements in signage and information make traveling more comfortable, as well as bright and clear layouts of transportation facilities.

Social and technological changes may lead to further challenges in the oncoming years. Due to more flexible working-time models, the classic rush hour times are steadily blurring. On the one hand, people with phobias, anxiety and compulsory disorders may profit, as they can choose their working hours, and do not have to travel when everyone else does. On the other hand, it may be more difficult to avoid congestion or high frequency of passengers in the traffic. Also, developments concerning automated mobility bring unexpected impacts. The use of automated vehicles could make it easier for people affected to travel independently in a private and calming atmosphere at manageable costs. At the same time, they may feel uncomfortable as they may not have control over the vehicle anymore. Especially in context with public transportation, the consequences for the target group depend on how companies will deal with the redundancy of drivers. The total absence of personnel on board will lead to degradation compared with the present condition. On the other hand, if former drivers will be employed for extended customer service, people with phobias, anxiety and compulsory disorders may benefit as there will be more people available to help or inform them.

6. Conclusions

In order to fulfill the UN Sustainable Development Goals and the Convention on the Rights of People with Disabilities, further actions are required to make the transportation system accessible for people with phobias, anxiety and compulsory disorders. As the present study points out, affected people have different needs depending on the disease’s form. In general, measures should concentrate on strategies to support self-distraction and self-manipulation (e.g. personal entertainment, breathing exercises), as well as on infrastructural and organizational improvements (e.g. relaxing environment, improvement of layouts and signage, trained service personnel, raising of public awareness). The target group may get confronted with additional challenges or barriers due to the social and technological developments (e.g. automated driving) in the near future. At the same time, they might benefit from more extensive and individual support based on these upcoming developments.
Acknowledgment(s)
The project “PHOBILITY” was funded by the Austrian Ministry of Transportation, Innovation and Technology (BMVIT). The project was processed by the Austrian Research Promotion Agency (FFG) in the course of the program “Mobility of the Future”.

References
[1] United Nations, „Convention on the Rights of Persons with Disabilities and Optional Protocol“, A/RES/61/106, 2008.
[2] United Nations, „Transforming our world: the 2030 Agenda for Sustainable Development“, A/RES/70/1, 2015.
[3] J. Wancata, M. Freidl, and F. Fabrian, „Epidemilogie der Angststörungen.“, Journal für Neurologie, Neurochirurgie und Psychiatrie, 12 (4), pp. 332-335, 2011.
[4] R. Lieb, A. Schreier, and N. Müller, „Epidemiologie von Angststörungen“, Psychotherapie, 8 (1), pp. 86-102, 2003.
[5] Hauptverband der österreichischen Sozialversicherungsträger, „Psychische Gesundheit – Strategie der österreichischen Sozialversicherung“, 2012.
[6] G. Hauger (Ed.), “PHOBILITY-Handbuch, Verkehrsteilnahme von Menschen mit psychischen Erkrankungen – insbesondere Phobien, Angst- und Zwangsstörungen“, IVS-Schriften, Band 39, 2016.