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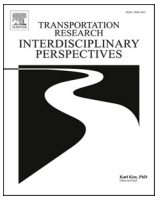

# Experienced processes and outcomes of driving license withdrawal due to visual field loss: A Swedish survey study of trust in authorities

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ABSTRACT

Citizen perceptions of justice, regarding both processes and outcomes, are closely related to the perceived legitimacy of the authorities involved and are thus significant for trust. This study investigates how a withdrawn driving license due to visual field loss might affect trust in the authorities involved in withdrawal processes and outcomes: the health-care system, the Swedish Transport Agency, and the judicial system. The factors influencing trust were investigated as was whether the withdrawal experience had changed the trust in other authorities not involved in the withdrawal process. Also, the aetiology of the visual field loss and gender were investigated.

A survey study was conducted in which 402 Swedish respondents with visual field loss and a withdrawal experience participated. Variance, regression, and content analyses were conducted. The following conceptual factors were used in understanding trust: Benevolence, Openness, Integrity, Ability, and Value Congruence.

The results revealed that processes and outcomes affected the overall trust in all three authorities, although the highest trust was in the health-care system (but still low). Diagnosis, but not gender, was important for the experienced trust. Differences in levels of trust in each authority were related to the aetiology of the diagnosis. Benevolence and Ability were the trust factors most important for overall trust in the health-care system and the Swedish Transport Agency. For some respondents (46%), the negative experiences of the withdrawal had worsened their trust in other, not involved authorities, as well.

## Introduction

Research has shown that a withdrawn driving license (WDL) can have major negative transport-related consequences for the individual: if no alternative or satisfactory transport solutions are available, the WDL might lead to reduced access to needed and desired activities (e.g., Davey, 2007; Marottoli et al., 2000; Nyberg et al., 2019) and decreased independence and quality of life (e.g., Liddle et al., 2008; Nyberg et al., 2019; Rapport et al., 2008). Such consequences refer to everyday life situations. If the process and outcome of WDL are perceived as unfair, this might also lead to decreased trust in the authorities involved in the WDL process and outcomes (e.g., Nyberg et al., 2019, 2021).

The Swedish Transport Agency (STA) is the authority that makes decisions concerning WDL (SFS 1998:488) from a traffic safety perspective. One example of WDL for personal car use is due to visual field loss (VFL). People with VFL may, for example, have difficulty reacting in time to hazards that occur in the periphery of the visual field, posing a risk to traffic safety. However, studies have demonstrated that drivers with VFL might be able to compensate for their visual deficit, so drivers with VFL comprise both individuals who can drive safely and individuals who drive less safely (e.g., Andersson & Peters, 2019; Bowers, 2016; BrO & Andersson, 2021; Ungewiss et al., 2018; Wood et al., 2021). The problem with discriminating between safe and unsafe drivers with VFL creates a problematic situation both for the individual drivers and for the authorities involved in the WDL process. For the authorities, the situation might, for example, lead to conflicts between traffic safety and accessibility goals; for the individual driver, it might affect trust in the authorities involved in the WDL process (cf. Nyberg et al., 2019, 2021).

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### *The importance of trust*

Trust has been defined in many ways (Hamm et al., 2016), but it is agreed to be a subjective phenomenon concerning individuals' own experiences (Bijlsma-Frankema & Rousseau, 2012). One broadly used definition is that trust is "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al., 1998, p. 395).

Citizens' perceptions of justice, in terms of both process and outcomes, are closely related to the perceived legitimacy of the authorities involved and are thus very significant for trust (Tyler, 2010). If people consider themselves to have been treated fairly during a process, their likelihood of accepting a negative outcome is greater than, for example, if they feel unfairly treated (Kumlin, 2002; Tyler, 2010). Citizens' trust in authorities and institutions is important for facilitating decision-makers' implementation of regulations (Svendsen & Svendsen, 2015) and for citizens' compliance with regulations and co-operation in administrative matters (Bornstein & Tomkins, 2015; Hamm et al., 2016). Also, since authorities – here, institutions of public administration – are linked to the state and government, citizens' trust in authorities is important from a general perspective, as it might affect trust in society as a whole (Kumlin, 2002; Rothstein & Steinmo, 2002).

From a gender perspective and in a Swedish context, nationwide surveys over the years have found that women, in general, have slightly higher trust in institutions than men (e.g., police, the judicial system, and the health care) (Holmberg & Weibull, 2017). The international context comparison reveals a more mixed pattern with higher trust values for men in some countries and higher for women in others (Brezzi, 2021). The diagnoses underlying VFL are often age related (Falkenstein et al., 2020; World Health Organization, 2021), and research on the elderly has found that driving can be more connected to personal identity in men than women, meaning that men might have greater difficulty coping with WDL (Baur et al., 2003; Davey, 2007; Gilhooly et al., 2003; Musselwhite & Haddad, 2010). Relatedly, studies have shown that elderly women drive their own cars more seldom than do elderly men (Fristedt et al., 2014; Hakamies-Blomqvist et al., 2004; Rosenbloom, 2006) and are more satisfied with transport means other than car driving (Levin, 2019, 2012). From the diagnosis perspective, different diagnoses have different aetiologies, differentiating the medical histories as well as contacts and relationships with health care. Common reasons for VFL are glaucoma, stroke, and diabetes (Patterson et al., 2019), and other reasons for VFL could be related to comorbidity. Additionally, the type of diagnosis might influence how the WDL processes and outcomes are received, which in turn could affect trust.

### *The process of WDL due to VFL*

The WDL process can be seen as relating to three involved authorities: the health-care system, STA, and the judicial system. The WDL process usually begins with a patient meeting with health care; if it is suspected that the VFL does not meet the medical requirements for holding a driving license, the physician is obliged to report the VFL to STA (SFS 1998:488). STA will then start to investigate whether the driving license should be withdrawn, based on the medical requirements for holding a driving license and the outcomes of perimetry (TSFS, 2010). If the decision is not accepted by the individual, it can be appealed. Furthermore, it is possible to apply for a dispensation allowing one to drive only under certain circumstances (SFS 1998:980). Dispensation decisions are made by STA, and the rejection of a dispensation application can be appealed as well. Thus, if appeals are made, the judicial system is to be involved in the WDL process as well. In addition, authorities other than STA can be involved in the WDL process, which can affect individuals' trust in all involved authorities. This makes the issue of trust complex, and STA should not be the only authority investigated regarding trust and experiences of WDL processes and outcomes, in this case related to VFL.

### *Conceptual framework*

Several key factors have been identified as important for understanding how citizens' trust arises and changes (Bouckaert & Van de Walle, 2001). Stahl et al. (2011) cited the following factors: (1) Benevolence—whether the authority understands the individual's situation, conditions, and needs; (2) Openness—whether the authority understandably explains and justifies its regulations, methods, and criteria for decisions; (3) Integrity—whether the authority performs its tasks independently, fairly, and consistently; (4) Ability—whether the authority performs its job professionally; and (5) Value Congruence—whether the authority's values and cultural characteristics are shared with citizens. These five trust factors constitute the conceptual framework of the study, used as a tool for formulating the questionnaire and analysing the results (cf. OECD, 2017).

### *Rational and aim*

There is a need for complementary knowledge both of prevalence and of whether there are differences in perceptions of the WDL process due to gender and/or the diagnosis causing the VFL. Such knowledge can show which trust factors are of most concern and whether it is important to, for example, understand and handle the WDL process in different ways depending on gender and/or diagnosis, from a trust perspective. As the relation between issues of trust and authorities constitutes a fundamental part for a functional modern society (c.f. Kumlin, 2002; Tyler, 2010), action on the problem is important on both individual level (e.g., trust in authorities) and organisational level (e.g., the agencies and the managers).

The aim of this study was to investigate how a WDL due to VFL affects trust in STA, health care, and the judicial system from a gender and a diagnosis perspective, and whether experiences of the WDL process and outcomes affect trust in other authorities not involved in the specific WDL process. The research questions are as follows:

Q1: What differences are seen in overall trust in the three authorities, respectively, from the gender and diagnosis perspectives?
Q2: What factors affect trust in the three authorities, respectively?
Q3: Have individuals' experiences of the withdrawal caused a change in trust in other authorities in general?

## Material and methods

### *Study design*

The empirical material was gathered using a web survey. Due to confidentiality legislation, it was impossible to make a stratified random selection of people with WDL due to VFL, so a convenience sampling process was conducted.

### *Respondents and recruitment procedure*

As glaucoma, diabetes, and stroke are common reasons for VFL, web survey participants were recruited via the websites of the Swedish Diabetes Association, Swedish Glaucoma Association, and Swedish Stroke Association. Recruiting was also done via the print magazines of the Swedish Stroke Association and Swedish Glaucoma Association and via Facebook groups representing the Swedish Glaucoma Association and Swedish Diabetes Association, respectively. Furthermore, an emailed invitation to participate in the study was sent via the Swedish National Road and Transport Research Institute (VTI), which provided contact information for 729 people with VFL. Also, advertisements about the project were published on the VTI website. A reminder to those recruited by email was sent two weeks before the deadline for participation. The data were collected between December 2020 and January 2021. In total, 402 respondents participated in the study (see

**Table 1**
Variance analyses of differences depending on Gender and Diagnosis; mean value and standard deviation (in parentheses) for overall trust in three authorities, responses given on a five-point scale ranging from very high trust (5) to very low trust (1).

| Variables | Health Care, mean value of trust (SD) | STA, mean value of trust (SD) | Judicial System, mean value of trust (SD) | Age, mean | *n* |
|---|---|---|---|---|---|
| *Gender* | | | | | |
| Male | 2.63 (1.21) | 1.92 (1.05) | 2.36 (1.35) | 67 | 317 |
| Female | 2.70 (1.41) | 2.01 (1.14) | 2.39 (1.38) | 61 | 85 |
| *Total* | *2.65 (1.25)* | *1.94 (1.07)* | *2.37 (1.36)* | *66* | *402* |
| *Diagnosis* | | | | | |
| Stroke | 2.54 (1.24) | 2.21 (1.20) | 2.52 (1.48) | 63 | 114 |
| Glaucoma | 2.81 (1.21) | 1.91 (0.99) | 2.40 (1.38) | 71 | 149 |
| Diabetes | 3.02 (1.44) | 1.68 (0.92) | 2.38 (1.26) | 62 | 45 |
| Comorbidity[†] | 2.64 (1.18) | 1.65 (0.98) | 2.15 (1.16) | 57 | 46 |
| Unclassified[‡] | 2.76 (1.18) | 1.70 (1.02) | 2.09 (1.23) | 72 | 23 |
| *Total* | *2.74 (1.26)* | *1.84 (1.07)* | *2.31 (1.37)* | 66 | *377* |

[†] Comorbidity refers to respondents declaring more than one diagnosis.
[‡] Unclassified refers to respondents declaring a diagnosis other than stroke, glaucoma, or diabetes.

Table 1). Besides diabetes, glaucoma, and stroke, the respondent group also included individuals with other diagnoses. For example, the VFL might have occurred due to macular degeneration or a birth defect. However, these other diagnoses were not always identified in the data, so diagnoses other than diabetes, glaucoma, and stroke are referred to as "Unclassified" in the study. Furthermore, the study included respondents who stated that they had multiple diagnoses, and where it was impossible to determine which diagnosis(es) caused the VFL, this diagnosis group is referred to as "Comorbidity".

According to a decision of the Swedish Ethical Review Authority (reference no. 2019/0100:3, 2019–10-14), an ethics review was unnecessary for this study.

### *Survey*

According to the results of a previous interview study on the same subject (Nyberg et al., 2021), questions were asked about three authorities that can be seen in the WDL process, regarding different phases (phases in parentheses below):

- Health Care (the announcement of reporting the VFL to STA; perimetry assessment)
- STA (case processing; applying for dispensation)
- The Judicial System (appeals of WDL; appeals of dispensation rejections)

The questions were formulated based on the trust factors described above (i.e., Ability, Integrity, Benevolence, Openness, and Value Congruence). These trust factors were adapted to suit the specific authority. The questionnaire was constructed as follows:

1. A question about trust in general, related to each of the three authorities: "How much or little trust do you have, overall, in the following authorities as related to the WDL?" (Health Care, STA, the Judicial System). The answers were given on a five-point scale: Very high trust (5), High trust (4), Neither high nor low trust (3), Low trust (2), and Very low trust (1). The possibility of answering "Not relevant" was also given.
2. A question about whether experience of the WDL process and outcomes had affected trust in other authorities/social institutions, the answer alternatives being: "Yes, I have gained less trust in other authorities/social institutions"; "Yes, I have gained more trust in other authorities/social institutions"; "No, it has not affected my trust in other authorities/social institutions"; and "Do not know/do not want to answer".
3. Statements about the three authorities, respectively, related to the first four trust factors in the conceptual framework (Ability, Integrity, Benevolence, and Openness). For example, regarding the trust factor Benevolence, related to Health Care and the announcement of reporting the VFL to STA, three items captured whether the physician: i) showed an understanding of the respondent's situation, ii) behaved in a friendly way and iii) was helpful regarding information. Altogether, regarding each authority, Ability was captured by four items, Integrity by two items, Benevolence by two to six items (varied depending on authority), and Openness by four items. Responses were given on a five-point scale, ranging from Strongly disagree (1) to Strongly agree (5) (example statement: "I perceive that the physician /health care behaved in a friendly way when informing me of the notification to STA"). The respondents were also asked whether they had been informed by Health Care of the notification to STA. Similar statements were used about information received from STA, regarding an initiated investigation, and received written information on a WDL decision. The fifth trust factor, Value Congruence, was formulated as an open-ended item: "Here you have the opportunity to leave comments about whether you think that STA fulfils an important function in society". This item only considered STA, as most people were assumed to perceive that the health-care system and the judicial system do fulfil important functions in society, so items about Value Congruence would appear unnecessary in these cases.
4. A question about perception of one's own driving ability, the answer alternatives being: "I consider that I can drive a car in a safe manner"; "I consider that I cannot drive a car in a safe manner"; and "I do not know/I do not want to answer".
5. Background data and questions regarding gender, year of birth, diagnosis (i.e., Stroke, Diabetes, Glaucoma, and Other), year of WDL, year of dispensation, and WDL status (i.e., current withdrawal, dispensation, got the driving license back [i.e., without dispensation], and status of any applicable simulator tests and/or dispensation [e.g., waiting for decision]). To avoid an overly comprehensive survey, questions about, for example, education and income were not included.

### *Analyses*

#### *Assessment of overall trust related to gender and diagnosis (Q1)*

Variance analysis was conducted to analyse whether there were any differences depending on gender and/or diagnosis regarding overall trust in the three authorities (i.e., Health Care, STA, and the Judicial System). Additionally, the main and interaction effects of Gender, Diagnosis, and Authorities were investigated. Gender, Diagnosis, and Authorities were the independent variables, and the responses to the statements regarding overall trust in the authorities, respectively, were the dependent variables.

#### *Assessment of factors that affect trust and the creation of a trust factor index (Q2)*

Before further regression analyses of how different trust factors were related to overall trust in each authority, an index was created for each of the four trust factors: Ability, Integrity, Benevolence, and Openness (four trust factors × three authorities for 12 index values in all); the fifth factor, Value Congruence, was analysed by means of content analysis (see below). Internal consistency was assessed using Cronbach's alpha. All the survey items for a specific trust factor and unique authority were summed and divided by the number of items to create an index for further analysis. At least two items were used to formulate each of the twelve indexes, the maximum number of items being six. For example, the index value for Ability was based on four items in the questionnaire

concerning Health Care.

One linear regression analysis was performed for each of the three authorities to investigate what causes trust, using the index values for the four trust factors (i.e., Ability, Integrity, Benevolence, and Openness), and to examine how these factors were related to the main matter of overall trust. The regression analyses also included control variables (dummy variables) to pinpoint how these were related to trust. Age, Diagnosis, and Dispensation (approved or rejected) were always included in the regression analysis. In the analysis of Health Care, whether the respondent had been informed by Health Care of the reporting of the VFL to STA was included as a control variable. In the analysis of STA, whether the respondent had received information about the STA's investigation of WDL was included as a control variable.

The comments in the open-ended comment field concerning the Value Congruence item were analysed using quantitative manifest content analysis, with the manifest content referring to the visible and obvious components of the text. The content analysis followed the commonly used steps presented by Graneheim and Lundman (2004) concerning the manifest content. The comments were first read and reread to gain an overall sense of the material. Sentences and phrases were then sorted out, forming "meaning units". To label the meaning units, codes were created. The labelled meaning units were then organized into categories reflecting the manifest messages of the comments, each of which was assigned to a category. Finally, the numbers of respondents responding in accordance with the various identified categories were counted. Two researchers reached a consensus for all responses.

*Assessment of affected trust in other authorities in general (Q3)*

The analysis of whether trust in other authorities was influenced by the experience of the WDL process and outcomes was assessed by the following single question: "In total, has your experience of the WDL led to a general change in trust in other authorities/social institutions? This was treated as an independent measure and related to the following response options: Worsened Trust, Better Trust, and No Change. Chi-square and variance analyses were conducted for Diagnosis, Gender, Age, and Dispensation (approved or rejected), but were also based on the overall trust rating of a specific authority. The Dispensation variable was used in these analyses as it can be assumed that the outcome of applications for dispensation might have affected trust.

## Results

*Overall trust related to Gender and Diagnosis (Q1)*

Univariate factorial variance analyses were performed to detect any differences depending on Gender and/or Diagnosis regarding overall trust in Health Care, STA, and the Judicial System; the results are presented in Table 1. Two separate analyses, one for Gender and another for Diagnosis, were conducted to maximize the number of respondents, so two two-way variance analyses were conducted instead of one three-way analysis.

The analyses on "Diagnosis and Authorities" and "Gender and Authorities" were affected by a lower response rate for the Judicial System (not all participants had any experience of that authority). A number of analyses were computed. In the reported analyses presented below, Authorities was treated as a between-participants variable. The same pattern emerged when Authorities were treated as a within-participant variable, or when missing values were replaced by the mean value for the specific condition.

The two (Gender) × three (Authorities) factorial ANOVA revealed insignificant main ($p = 0.656$) and interaction ($p = 0.830$) effects of Gender, whereas Authorities had a significant main effect ($F[2, 1200] = 37.32$, $p < 0.05$, $MSE = 1.53$). Pairwise comparisons revealed that trust in Health Care was higher than trust in the Judicial System with STA with the significant lowest ratings (see Table 1).

The five (Diagnosis) × three (Authorities) factorial ANOVA revealed a significant main effect ($F[2,1116] = 36.84$, $p < 0.05$, $MSE = 1.51$) of Authorities (again) and significant interaction effect ($F[8, 1116] = 2.98$, $p < 0.05$, $MSE = 1.51$) of Authorities by Diagnosis. The main effect of Diagnosis was not significant. Pairwise comparisons revealed that trust in Health Care was higher than trust in the Judicial System, and that STA had the significant lowest ratings (see Table 1).

A number of significant pairwise comparisons was obtained for the interaction effect concerning different authorities. Second, the unclassified group will not be reported, as this group is i) problematic to interpret, ii) had larger variation and finally, iii) and was the smallest group (n = 23).

Concerning Health Care: The Diabetes respondents had higher trust than Stroke and Comorbidity respondents. Glaucoma respondents had also higher trust than Comorbidity respondents (but not Stroke respondents).

Concerning STA: The Stroke respondents had higher trust than Diabetes, Glaucoma and Comorbidity respondents (no difference between the other groups of respondents).

Concerning Judicial System: The only significant pairwise comparisons were that Stroke respondent had a higher trust than Comorbidity respondents (see Fig. 1).

Taken together, Health Care was experienced as the most trustworthy authority overall. However, the degree of trust in different authorities varied depending on the diagnosis; especially Diabetes but also Glaucoma respondents differed in their ratings of the different authorities.

*Factors that affect trust (Q2)*

Internal consistency, assessed by Cronbach's alpha, revealed 0.892, 0.870, 0.902 and 0.822 for Ability, Benevolence, Openness, and Integrity, respectively. One regression analysis was performed for each of the three authorities, to analyse the causes of trust (i.e., Ability, Integrity, Benevolence, and Openness) (Table 2); control variables were included (Table 3).

The results of regression analyses are presented in Table 4. The models were significant for Health Care and STA. Note that the number of respondents varied between the different analyses. Regarding Health Care and STA, the trust factors Ability and Benevolence were significant for overall trust. The control variables confirmed the main effects of the variance analyses of Diagnosis, namely, that Diabetes and Glaucoma respondents' answers differed from those of Stroke respondents. The control variable Received Information was significant in the analysis of Health Care, but not of STA. The number of respondents declaring that they were unsafe drivers was extremely low and the insignificant effect of perception on "Perception of Own Driving Ability" should not be

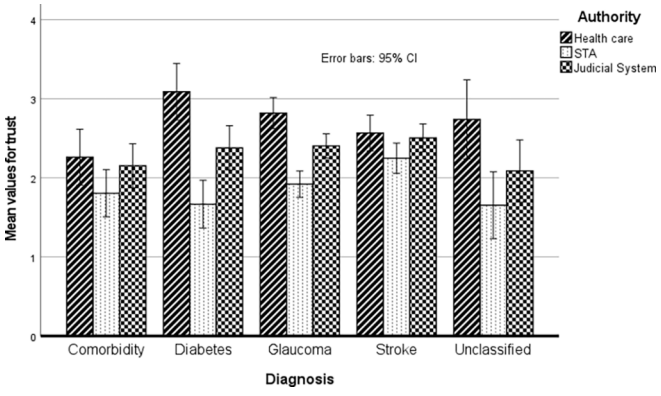


**Fig. 1.** Mean values that reveal differences in trust in authorities, depending on diagnosis; responses given on a five-point scale ranging from very low trust (1) to very high trust (5).

**Table 2**
Descriptive data (12 index values) for regression analyses of factors affecting trust in the three authorities (a high value indicates high trust).

| | Health Care | STA | Judicial System |
|---|---|---|---|
| *Trust factors* | | | |
| Ability | 3.09 | 2.79 | 2.27 |
| Integrity | 2.34 | 2.62 | 2.14 |
| Benevolence | 2.76 | 2.56 | 1.34 |
| Openness | 2.81 | 2.55 | 2.01 |

**Table 3**
Descriptive data for regression analyses of control variables; n and percentages (in parentheses).

| Control variables | | | | Included in the regression |
|---|---|---|---|---|
| Dispensation | Approved 91 (36.2) | Rejected 123 (49.0) | Do not know* 37 (14.7) | All three authorities |
| Perception of Own Driving Ability | Safe driver 340 (89.5) | Unsafe driver 24 (6.3) | Do not know 16 (4.2) | All three authorities |
| Information received from Health Care about the reporting to STA | Yes 294 (70.8) | No 96 (23.1) | Do not know 25 (6.0) | Health Care |
| Information received from STA about an initiated investigation | Yes 177 (44.8) | No 140 (35.4) | Do not know 78 (19.7) | STA |

*Do not know/do not remember; awaiting notification of dispensation decision.

overemphasized.

To capture Value Congruence, respondents were asked to use an open-ended comment field to say whether they thought that STA fulfils an important function in society. The comment field was used by 217 respondents. The manifest content analysis of the answers resulted in six categories (Table 5).

Taken together, categories 1 and 2 show that STA does have an important function in society according to 41 % of respondents; however, category 2 also implies criticism of WDL processes and outcomes. Category 3 consists of responses that exclusively express the respondents' own experiences and perceptions of WDL processes and outcomes, not referring to the specific item. Thus, categories 2 and 3 concern experiences and perceptions of the WDL, and taken together, 53 % of the respondents used the comment field for this purpose. According to category 4, 11 % of the respondents responded that STA does not fulfil an important function in society.

### *Affected trust in other authorities (Q3)*

Regarding affected trust in other authorities, chi-square analyses were conducted for Diagnosis, Gender, and Dispensation (approved or rejected), respectively, revealing insignificant effects in all three comparisons. However, as can be seen in Table 6, approximately half of the respondents stated that the WDL process had influenced their trust in other authorities, regardless of Diagnosis, Gender, and Dispensation (approved or rejected). A one-way ANOVA was conducted for Age, and an MANOVA for overall trust in the different authorities, with change in trust as an independent measure (i.e., Worsened Trust, Better Trust, or No Change) (see Table 1 for descriptive data). The analysis revealed that Age was unrelated to change in trust in other authorities (Worsened trust mean age was 65 and No change mean age was 67, $p = 0.13$). The group of respondents reporting Worsened Trust in other authorities had lower

**Table 4**
Regression estimates regarding causes of trust in the three authorities.

| | Health Care | | | STA | | | Judicial System | | |
|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | Std. error | *p*-value | Coefficient | Std. error | *p*-value | Coefficient | Std. error | *p*-value |
| *Trust factors* | | | | | | | | | |
| Ability | 0.530 | 0.165 | 0.002 | 0.300 | 0.116 | 0.011 | 0.293 | 0.168 | 0.085 |
| Integrity | 0.002 | 0.153 | 0.991 | 0.070 | 0.090 | 0.437 | 0.125 | 0.168 | 0.463 |
| Benevolence | 0.351 | -0.161 | 0.031 | 0.276 | 0.070 | 0.000 | -0.138 | 0.197 | 0.488 |
| Openness | -0.185 | 0.162 | 0.255 | 0.047 | 0.091 | 0.604 | 0.021 | 0.183 | 0.911 |
| *Diagnosis* | | | | | | | | | |
| Stroke | Reference | | | Reference | | | Reference | | |
| Glaucoma | 0.202 | 0.227 | 0.376 | -0.382 | 0.145 | 0.009 | -0.058 | 0.316 | 0.856 |
| Diabetes | 0.921 | 0.386 | 0.018 | -0.644 | 0.209 | 0.002 | -0.406 | 0.447 | 0.367 |
| Comorbidity | 0.173 | 0.292 | 0.554 | -0.037 | 0.191 | 0.847 | -0.540 | 0.387 | 0.169 |
| Unclassified | 0.158 | 0.427 | 0.712 | -0.136 | 0.279 | 0.626 | 0.377 | 0.497 | 0.451 |
| *Age* | -0.009 | 0.010 | 0.375 | -0.001 | 0.006 | 0.866 | 0.021 | 0.012 | 0.092 |
| *Received Information** | | | | | | | | | |
| No | Reference | | | Reference | | | Reference | | |
| Yes | −2.495 | 1.066 | 0.021 | -0.095 | 0.115 | 0.411 | | | |
| *Dispensation* | | | | | | | | | |
| Approved | Reference | | | Reference | | | Reference | | |
| Rejected | -0.409 | 0.186 | 0.29 | 0.224 | 0.134 | 0.096 | 0.218 | 0.289 | 0.454 |
| *Perception of Own Driving Ability* | | | | | | | | | |
| Not a safe driver | Reference | | | Reference | | | Reference | | |
| Safe driver | -0.062 | 0.404 | 0.879 | -0.093 | 0.253 | 0.713 | 0.174 | 0.929 | 0.852 |
| *Constant* | 3.441 | 1.421 | 0.017 | 5.423 | 0.545 | 0.000 | 6.397 | 0.1.300 | 0.000 |
| $R^2$ | 0.423 | | 0.000 | 0.447 | | 0.000 | 0.260 | | 0.080 |
| *N* | 141 | | | 202 | | | 68 | | |

*Regarding Health Care, the question concerned whether the respondents had been informed by Health Care of the reporting to STA; regarding STA, the question concerned whether the respondents had been informed of an initiated investigation.

**Table 5**
Manifest content analysis of the open-ended responses about whether STA fulfils an important function in society; categories, numbers (percentages in parentheses), and example responses.

| Category | *n* (%) | Examples from the comment fields |
|---|---|---|
| 1. STA fulfils an important function in society | 46 (21.2) | "STA fulfils a major function in society regarding traffic on roads, railways, maritime traffic, and aviation." |
| 2. STA fulfils an important function in society, but not regarding WDL due to VFL | 42 (19.4) | "Of course, they do, but besides this about vision, they should also take into account other driving license holders." |
| 3. Comments only regarding WDL | 72 (33.2) | "There should be more alternatives when investigating visual field loss. The vision test does not resemble how one perceives different traffic situations when driving a car." |
| 4. No, STA does not fulfil an important function in society | 23 (10.6) | "No, it needs to be reformed. It is completely out of date!" |
| 5. I do not know whether STA fulfils an important function in society | 22 (10.1) | "I know too little about their role to be able to have any opinion". |
| 6. No relevant answers | 12 (5.5) | "Feel discriminated against because I am Polish." |
| Missing values | 198 (47.7) | *No answers on the open-ended question* |
| *n* | 217 (100) | |

overall trust in Health Care, STA, and the Judicial System than did respondents reporting No Change or Better Trust ($F[3, 313] = 7.28$, MSE $= 1.42$, $p < 0.05$; $F[3, 313] = 27.12$, MSE $= 0.80$, $p < 0.05$; and $F[3, 313] = 14.16$, MSE $= 1.01$, $p < 0.05$) (see Table 6 for details). Pairwise comparisons revealed that respondents reporting Worsened Trust in other authorities had lower overall trust in each one of the three authorities than did respondents who reported No Change in trust in other authorities.

Taken together, the analyses of changes in trust in other authorities, due to the WDL process, revealed that approximately half of the respondents stated that their trust in other authorities had been negatively affected. The respondents who reported Worsened Trust in other authorities also had lower values for trust in Health Care, STA, and Judicial System than did the respondents not reporting Worsened Trust in other authorities. Age, Diagnosis, Dispensation, and Gender were not relevant to the proportion of respondents reporting Worsened Trust. For example, no more respondents who received a rejected dispensation application reported Worsened Trust in other authorities than did respondents who received an approved dispensation.

## Discussion

The aim of this study was to investigate how a WDL due to VFL affected trust in STA, health care, and the judicial system from a gender and a diagnosis perspective, and whether experiences of the WDL process and outcomes affected trust in other authorities not involved in the specific WDL process.

### *Overview of findings*

#### *Overall trust from the Gender and Diagnosis perspectives (Q1)*

Gender had no significance regarding overall trust in any of the three authorities. Thus, this result is not in line with results from nationwide surveys showing that women, in general, have slightly higher trust in

**Table 6**
Affected trust in other authorities; number of participants in each of the categories (percentages in parentheses) and overall trust mean values (SD in parentheses) for the variables regarding authorities.

| Variable | *n* (%) | Worsened Trust in other authorities *n* (%) | Better Trust in other authorities *n* (%) | No Change in trust in other authorities *n* (%) | Do not know/do not want to answer *n* (%) |
|---|---|---|---|---|---|
| *Gender* | | | | | |
| Male | 317 (78.9) | 148 (46.7) | 6 (1.9) | 147 (46.4) | 16 (5.0) |
| Female | 85 (21.1) | 30 (35.3) | 0 | 51 (60.0) | 4 (4.7) |
| *Total (included in the analysis)* | 402 (100.0) | 178 (44.3) | 6 (1.5) | 198 (49.3) | 20 (4.9) |
| *Diagnosis* | | | | | |
| Stroke | 114 (30.2) | 45 (39.5) | 3 (2.6) | 61 (54.0) | 5 (4.4) |
| Glaucoma | 149 (39.5) | 64 (42.9) | 1 (0.7) | 76 (51.0) | 8 (5.3) |
| Diabetes | 45 (11.9) | 21 (46.7) | 0 | 22 (48.9) | 2 (4.4) |
| Unclassified | 23 (6.1) | 14 (60.9) | 0 | 9 (39.1) | 0 |
| Comorbidity | 46 (12.2) | 28 (60.9) | 0 | 17 (36.9) | 1 (2.2) |
| *Total (included in the analysis)* | 377 (100.0) | 172 (45.6) | 4 (1.1) | 185 (49.1) | 16 (4.2) |
| *Dispensation* | | | | | |
| Approved dispensation | 91 (36.2) | 38 (41.7) | 0 | 48 (52.7) | 5 (5.5) |
| Rejected dispensation | 123 (49.0) | 65 (52.8) | 0 | 49 (39.8) | 9 (7.3) |
| Other* | 37 (14.7) | 21 (56.8) | 1 (2.7) | 13 (35.1) | 2 (5.4) |
| *Total* | 251 (100.0) | 124 | 1 | 110 | 16 |
| *Authorities (overall trust values for each category)* | | Worsened Trust in other authorities | Better Trust in other authorities | No Change in trust in other authorities | Do not know/do not want to answer |
| Health Care (Mean values and SD) | | 2.36 (1.2) | 3.25 (1.0) | 2.99 (1.2) | 2.86 (0.9) |
| STA (Mean values and SD) | | 1.44 (0.7) | 2.5 (1.0) | 2.35 (1.0) | 2.14 (0.8) |
| Judicial System (Mean values and SD) | | 1.98 (1.0) | 2.5 (0.6) | 2.74 (1.0) | 2124.43 (0.8) |

*Do not know/do not remember; awaiting notification of dispensation decision.

institutions than men (Holmberg & Weibull, 2017). Also, the assumption that there might be gender differences after all (with personal identity as a driver) related to the WDL (e.g., Baur et al., 2003) could not be confirmed here.

The degree of trust in different authorities varied depending on the diagnosis. Both the Diabetes and Glaucoma respondents reported higher trust in Health Care than did the other diagnosis groups, and Stroke respondents had higher trust in STA and in the Judicial System (compared to Comorbidity respondents). The Stroke respondents had the lowest trust in Health Care, compared with the other diagnosis groups. These results can be linked to the aetiology of the diagnoses. Diabetes and glaucoma are diagnoses that entail frequent contact with Health Care, unlike the situation for stroke patients, so those with diabetes or glaucoma might be more prepared for a potential WDL. Studies have also shown that people who are prepared for a probable WDL can accept an eventual WDL better than those who are unprepared (Charlton et al., 2006; Rapport et al., 2008; Whitehead et al., 2006). According to the understanding that it is easier to reduce than to create trust (Blumberg et al., 2012; Kampen et al., 2006), this finding suggests that even though the trust might have been reduced, a long-term trusting relationship is less vulnerable to change than is a short-term-trusting relationship: the very low values for overall trust suggest that a negative shift to lower trust has occurred, but to a lesser degree in respondent groups with a long-term relationship with Health Care. However, this speculative hypothesis would need a different study design to be verified, i.e., a classical before-and-after assessment design. Nevertheless, Stroke respondents had greater trust in STA than did Diabetes respondents. This difference might be because of the Diabetes respondents' previous experiences of Health Care, and because they expected similar treatment from STA regarding the WDL; when this expectation is not met, it leads to a decline in trust. Furthermore, Diabetes respondents reported greater trust in Health Care than did Comorbidity respondents. One hypothesis regarding this result is that those with comorbidity diagnosis might have "fallen between the cracks" regarding their contacts with Health Care. Comorbidity respondents had the same trust in all authorities. Altogether, a pattern can be seen, forming three groups: 1) those with a long-term relationship with Health Care (i.e., the Diabetes and Glaucoma respondents); 2) those with a short-term relationship with Health Care (i.e., the Stroke respondents; and 3) those who might have fallen between the cracks (i.e., the Comorbidity respondents).

Overall, the respondents trusted Health Care more than STA or Judicial System. Trust is strongly context dependent (Hamm et al., 2016; Kumlin, 2002), which might explain the differences in results between the authorities studied here. In a Swedish context, Kumlin (2002) divided institutions into three categories based on the level of empowerment they offer citizens: 1) customer-based institutions (e.g., library and cultural events); 2) user institutions (e.g., kindergarten and health care); and 3) client institutions (e.g., social assistance, public job agencies, and elder care). The last category offers low control and no options to the individuals needing these institutions (compared with the first two categories), and Kumlin (2002) stated that "client institution contacts increase the risk of negative welfare state experiences more than contacts with user institutions, which in turn increase the risk more than customer institution contacts" (p. 282). STA and the case of WDL can be related to the category of client institutions, as can the Judicial System. Thus, as Health Care can be regarded as a user institution rather than a client institution, this might explain the higher level of trust in this authority than in the other two. Regarding STA, one explanation for the low trust might be related to the Swedish regulations on WDL due to VFL, STA being the authority responsible for WDL decisions. These regulations are based on the European Commission's directive on driving (Commission Directive 2009/113/EC 2009) but have been considered too strict compared with the directive's minimum requirements (BrO & Lindblom, 2018). Also, from both the national and international perspectives, the validity of perimetry testing has been questioned, as it does not measure VFL in relation to individual driving ability (e.g., Andersson & Peters, 2019; Bowers, 2016; BrO & Andersson, 2021; ECOO, 2017). Additionally, previous Swedish interview studies (Nyberg et al., 2019, 2021) have revealed that respondents perceived the WDL process as unfair, as it was not based on individual driving ability, thus had negative experiences of the authorities involved in the WDL process in terms of performance and information. When it comes to the judicial system, previous findings (Nyberg et al., 2021) indicated that the respondents lacked a clear understanding of the role of the judicial system in the WDL process. The respondents believed that "their case" was on trial, but the process actually concerned whether the STA had or had not followed the directives pertaining to the WDL decision (cf. Bendz, 2010). This might also explain the present results regarding the WDL process and outcomes related to the Judicial System.

*Factors that affect trust (Q2)*

For both Health Care and STA, Ability (i.e., whether the authority performs a professional job) and Benevolence (i.e., the authority's understanding of the individual's situation, conditions, and needs) were the most important factors negatively affecting trust. So, even though previous studies have shown that the WDL decision is perceived as wrong and unfair (Nyberg et al., 2021; Whitehead et al., 2006) — in Sweden strongly related to STA, as this is the authority that makes WDL decisions — the other trust factors (i.e., Integrity and Openness) were subordinated. The great importance of Benevolence has been highlighted in previous research (Boyd-Swan & Molina, 2019; Melander & Claréus, 2019; OECD, 2017; Tyler, 2010). For example, a study of trust in the Swedish Social Insurance Agency showed that the respondents perceived that the treatment and benevolence by the Agency was important regardless of the decision made (Melander & Claréus, 2019). Also, it is considered that strategies to increase trust in authorities/institutions must take account of Benevolence to be successful (Försäkringskassan, 2014; Melander & Claréus, 2019). Regarding Ability, this factor was important for overall trust in Health Care and STA, i.e., respondents who reported low overall trust did not perceive that these authorities performed a professional job.

The open item regarding the trust factor Value Congruence only concerned the STA. The results indicated that 11 % of respondents perceived that the STA does not fulfil an important function in society. Additionally, 53 % of respondents used the comment field to convey their negative experiences and perceptions of the WDL process as related to the STA. Although this was not the purpose of this survey item, it strengthened the finding that a WDL process might affect trust in authorities, in this case STA. This might in turn be related to the high level of trust in society and government in Sweden (Svendsen & Svendsen, 2015), and to the assumption that the welfare state should "do good" for the individual. However, this assumption was not supported, since the STA should "do good" for *all* citizens by reducing the number of unsafe drivers on the roads, but on fair grounds.

None of the four factors was important for trust in the Judicial System, even though the analyses of overall trust showed that respondents had less trust in the Judicial System than in Health Care, regarding WDL processes and outcomes. For Stroke respondents, the Judicial System was the least trusted authority. Thus, regarding the Judicial System, there are other factors affecting trust that are not apparent from the present results. Nevertheless, it seems surprising that, in addition to whether one considers the WDL decision justified, the trust factor Openness had no bearing on trust in the Judicial System. In a previous interview study of the same target group, the respondents perceived dispensation application rejections as unfair and wrong, and expressed dissatisfaction with not having received explanations of the rejection decisions (Nyberg et al., 2021). However, these inconclusive results for the Judicial System might be due to the low number of respondents ($n = 68$), as not all respondents had appealed the WDL-decision, and therefore should not be overemphasized.

In recent years, social media has played a role of influence of non-

authorities' information. Such initiative may lead to misunderstanding of authorities' intention of information (cf. Chiou & Tucker, 2018) but may also lead to strengthening the common voice of the group (cf. Rafferty & Sullivan, 2017). For instance, a previous study showed that respondents with WDL due to VFL had created their own Facebook-group, giving the opportunity to share experiences and perceptions (Nyberg et al., 2021).

*Affected trust in other authorities (Q3)*

Regardless of the Diagnosis, Gender, Age, and Dispensation results, 46 % of respondents perceived that the WDL process had negatively affected their trust in other authorities, not involved in the WDL-process. The respondents who had Worsened Trust in other authorities had also very low overall trust in all authorities regarding the WDL process and outcomes. It therefore seems that if trust in a specific authority falls below a specific threshold (very low trust values in this case) in connection with WDL due to VFL, this will affect general trust in other authorities as well. These results suggest a spill-over effect, whereby experiences of a specific case and of specific authorities can affect trust in other authorities, which is critical from a broader societal and democratic perspective. This study does not have baseline values of trust in either the authorities studied or authorities in general. However, the very low values obtained for trust, the large proportion of respondents (46 %) who reported Worsened Trust in other authorities, and the finding that respondents with Worsened Trust in other authorities also had lower trust in the studied authorities together support this spill-over hypothesis. An investigation of decreased trust in the Swedish Social Insurance Agency (Försäkringskassan, 2014) revealed that respondents had a mean trust value of 2.13 on a five-point scale, i.e., similar to the value of trust obtained in this study. It was also clear that Gender, Age, Diagnosis, and Dispensation results were not related to Worsened Trust in other authorities. The present results confirm that negative personal experiences of a specific institution, in a specific case, might affect trust in other societal institutions as well (cf. Kumlin, 2002; Rothstein & Steinmo, 2002).

*Methodological considerations*

The open question on Value Congruence was answered by only about half of the respondents, possibly indicating that the question was perceived as difficult to answer. For example, people might not have insights into STA's overall objective from a broader perspective, even though some respondents declared this in the survey (see Table 5). However, the results revealed that 53 % of the respondents who answered this question used the comment field to express their experiences and perceptions of the WDL. Although this was not the aim of this survey question, it strengthens the finding that a WDL might affect trust in authorities, in this case, STA.

In this study, trust was measured by asking both a direct question on trust (see chapter 2.3) and indirect questions (i.e., items related to the trust factors). The combination of these two measurement approaches could help determine whether any other unknown factors affect trust, beyond those used (Bouckaert & Van de Walle, 2001). The result regarding the Judicial System is a clear example of this, as the trust factors (and connected items) used did not significantly affect trust, while the direct question about trust revealed low trust.

There is the risk that most survey responders might have been people critical of the WDL process and outcomes (i.e., response bias). Even if so, the results have improved our knowledge of the reasons for decreased trust in authorities, in this case regarding WDL due to VFL.

This study was based on a convenience sample, meaning that it is difficult to generalize the results. This was compensated for by the distribution of surveys via the websites of three large disability organizations in Sweden, giving individuals of various sociodemographic backgrounds the opportunity to participate in the study.

Although the subject of the study concerns a specific case (WDL due to VFL), the results might be applicable for individuals having WDL due to other impairments (e.g., traumatic brain injury; dementia; Parkinson's disease). Further, the results might be transferable to other social sectors dealing with decisions and processes that can affect individuals' trust, both in Sweden and in other countries (e.g., social insurance agencies; employment agencies).

## Conclusions

Experiences and perceptions of the processes and outcomes of WDL due to VFL affected overall trust in the authorities involved in the WDL process, i.e., Health Care, STA, and the Judicial System. The very low values for overall trust support this conclusion, even though a baseline is lacking. Diagnosis, but not Gender, was important for the experienced trust. It was hypothesized that the history of interaction between the individual and the authority in question might explain the effect of Diagnosis, since Diabetes and Glaucoma respondents responded somewhat differently from the other three Diagnosis category respondents. Further, Ability and Benevolence were the trust factors deemed most important for overall trust in Health Care and STA.

Results revealed that low trust due to experiences related to WDL process and outcomes can lead to lower trust (on the part of 46 % of respondents) in other authorities in general, not involved in the WDL processes. This was valid regardless of Diagnosis.

This study builds on previous research as it examines how trust in different authorities can be affected in different ways. To obtain citizens' trust, different authorities need to focus on different trust factors due to their different roles and functions. This study concerns a specific context, i.e., WDL due to VFL. However, the results might extend our understanding of citizens' needs and experiences, helping in generating, for example, more targeted services (cf. OECD, 2017). One example of this concerns diagnosis, i.e., patients with stroke might have different needs regarding Benevolence from Health Care than do patients with diabetes, since stroke patients often lack the long-term relationship with that authority.

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## CRediT authorship contribution statement

**Jonna Nyberg:** Conceptualization, Methodology, Data curation, Formal analysis, Funding acquisition, Investigation, Writing – original draft, Writing – review & editing. **Jan Andersson:** Formal analysis, Methodology, Data curation, Investigation, Writing – original draft, Writing – review & editing. **Thomas Strandberg:** Conceptualization, Methodology, Funding acquisition, Investigation, Supervision, Project administration, Writing – review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

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