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The effect of human-centered administration on administrative burden in the Dutch tax authority:

A vignette-based experiment

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Lugéshané Paris

Abstract

This thesis explores whether human-centered administrative communication reduces citizens' perceived administrative burden in the context of automated communication by the Dutch Tax Authority. Using Human-Centered Administration theory, a 2 × 2 vignette experiment (N = 195) examined the effects of empathy and transparency on learning, compliance, and psychological costs. The findings indicate that empathetic communication significantly lessens overall AB, mainly psychological costs. Transparency shows no significant independent effect and does not influence the impact of empathy. These results are consistent across various demographic groups. The study suggests that incorporating empathetic language into automated government communication can significantly improve citizens' experiences while maintaining administrative outcomes.

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List of abbreviations

Abbreviation	Definition
AB	Administrative burden
DCBS	Dutch childcare benefits scandal
DTA	Dutch tax authority
E x T	Empathy and transparency interaction
H1	Hypothesis 1
H2	Hypothesis 2
H3	Hypothesis 3
H4	Hypothesis 4
HCA	Human-centered administration
HE/HT	High empathy / high transparency
HE/LT	High empathy / low transparency
LE/HT	Low empathy / high transparency
LE/LT	Low empathy / low transparency

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Chapter 1: Research motivation

1.1. The Scandal

In 2020, the Dutch childcare benefits scandal (DCBS) painfully revealed how severely citizens can be affected when bureaucratic rules, digitalization, and strict enforcement practices undermine human involvement (Tweede Kamer der Staten-Generaal, 2024). Thousands of parents were wrongly labeled as fraudsters, often without a clear explanation or individual assessment (Zijlstra, 2021). The DCBS demonstrated that formally correct procedures can still harm citizens when communication comes across as harsh, unclear, or impersonal.

The Dutch tax authority (DTA) is a clear example of this tension. The organization relies heavily on automated and standardized communication processes (Mur, 2025). While these processes improve performance, they also increase the risk of distant, difficult-to-understand interactions. The National Ombudsman warned as early as 2015 that citizens were not receiving sufficiently clear and understandable information in interactions with agencies administering social benefits (Verpaalen et al., 2015). These signals were only taken seriously after the scandal had fully escalated. Even after the DCBS, internal investigations showed that employees recognize the importance of the human dimension in the Dutch language, called ‘De Menselijke Maat’, but often lack the time, space, or discretionary authority to implement it (Belastingdienst, 2023; Joosse et al., 2023).

Recent incidents confirm that the tension between rules and humanity persists. Reports of discriminatory recovery practices and the persistence of problematic algorithms emphasize that digitalization does not automatically make enforcement agencies more human (NU.nl, 2025; Strop & Davidson, 2025). At the same time, it remains unclear how this human dimension should be implemented in practice. Policy documents emphasize empathy, clarity, transparency, and accessible language, but it is uncertain to what extent citizens recognize these elements in their interactions with enforcement agencies. This is particularly true for the DTA’s debt collection, where citizens often receive standardized payment requests that can cause confusion, stress, or uncertainty. Although empirical research is still limited, recent studies indicate that citizens sometimes experience automated government communication as distant, impersonal, or difficult to understand (Gaozhaoa et al., 2023).

Besides this practical uncertainty, there is a significant gap in the academic debate. Researchers within the human-centered administration (HCA) literature emphasize empathetic, understandable, and user-friendly government communication.

In contrast, the administrative burden (AB) literature focuses on the learning, compliance, and psychological costs citizens experience from unclear or formal communication. Although both literatures address citizen perceptions, they were primarily developed independently. Consequently, little is known about how specific HCA elements, such as empathy and transparency, influence the perceived AB in automated implementation practices.

The urgency of this question is increasing as more decisions are made or supported by algorithms and automated systems. Traditional theoretical frameworks, such as procedural justice, have primarily been developed in contexts where citizens interact with human authorities and engage in direct, face-to-face interactions. This literature assumes that citizens can make their voices heard, that the quality of interpersonal treatment is central, and that the decision-maker's intentions can be assessed (Newman, 2020). These assumptions are only partially applicable to digital, standardized communication, where the human dimension is mainly absent, and algorithmic processes play a central role. It also shows that procedural justice is difficult to apply in algorithmic decision-making contexts, because important elements such as voice, respect, and discretionary judgment are less visible or absent (Newman, 2020; Van Den Bos et al., 2014).

HCA better reflects this digital reality because it does not focus on interpersonal interaction, but on citizens' experiences with the communication itself: tone, clarity, empathy, transparency, and the extent to which they feel seen and heard by combining HCA with AB theory, an analytical framework is created to investigate how HCA can reduce Dutch citizens' AB in digital implementation processes (Bason, 2022; OECD, 2024). Collectively, these developments show a clear research problem: there is little empirical insight into whether citizens experience automated communication as Human-centered, and to what extent specific communication characteristics, such as empathy and transparency, contribute to reduced AB. This research focuses on filling this gap in the DTA's digital collection practices.

1.2. Research objective and question

This study aims to understand how citizens experience empathy and transparency in the DTA automated debt collection system, and to what extent these communication characteristics relate to their perceived AB. This aligns with the policy ambition to restore a human dimension within highly digitalized implementation processes and the scientific need to link HCA to AB. Although many policy documents emphasize that communication must become more empathetic, more transparent, and more accessible, little research has examined how citizens experience these changes. Especially in the DTA's digital collection processes, where communication is often standardized and automated, empirical evidence on whether a more HCA approach reduces perceived burden is lacking (Mur, 2025). By combining insights from HCA and AB theory, this study examines how empathy and transparency can support citizens in digital interactions with the government. Based on this objective, the study addresses the following central research question:

Central research question: How do empathy and transparency in the Dutch tax authority debt collection system influence citizens' perceived administrative burden*?*

Citizens experience administrative processes differently. Research on ABs shows that social and demographic characteristics, such as education level, age, and gender, can influence how people understand and emotionally experience government communication. Differences in cognitive and digital skills, life experience, and perceived vulnerability can lead to certain groups experiencing higher learning, compliance, or psychological costs than others (Herd & Moynihan, 2018; Carcelén-García et al., 2023). For example, previous research shows that citizens with less human capital are more likely to struggle to understand complex administrative procedures, while other studies show that digital government communication can have unequal effects across different age groups (Christensen et al., 2020; Gaozhao et al., 2023). In highly digitalized implementation practices, where communication is largely standardized and automated, such differences can become evident (OECD, 2024).

Against this background, it is therefore relevant not only to investigate whether communication that reflects principles of HCA, such as empathy and transparency, reduces perceived AB, but also to explore whether these effects differ between different

social demographic groups. This implies that the impact of HCA communication on perceived AB may vary across societal groups. To systematically examine these potential differences, this study formulates the following sub-question:

Sub Question: Do the effects of empathy and transparency on perceived administrative burden differ between citizens with different social and demographic characteristics?

1.3. Scientific and social relevance

This research is scientifically relevant because it addresses a clear gap in the literature. Two important areas of research, HCA and AB, both focus on citizens' experiences in their interactions with government but have thus far been mainly studied independently. HCA emphasizes the importance of empathy, transparency, and an HCA approach, while AB theory provides insight into the cognitive, learning, and psychological costs citizens experience when communication is complex, formal, or distant. Despite this shared focus on citizen experience, both literatures rarely discuss how HCA can reduce AB. This research explicitly connects these two theoretical perspectives. Furthermore, empirical research on the effects of empathy and transparency in automated government communication remains scarce, which makes this study a valuable contribution to a stronger theoretical and empirical foundation for human-centered digital implementation.

Besides this scientific contribution, the research is also socially relevant. Since the DCBS, restoring the human dimension has been central to Dutch implementation practice. However, digitalization and automation have led to communication that citizens often experience as distant, impersonal, or difficult to understand (Gaozhaoa et al., 2023). This is particularly true in DTA debt collection, where citizens face financial consequences and stress. Although policy documents emphasize the need for more empathetic and clear communication, little empirical evidence exists on which communication elements reduce perceived AB.

1.4. Structure of the thesis

This thesis is divided into five chapters. Chapter 1 introduces the societal context, the theoretical problem, and the research question. Chapter 2 follows this chapter with the theoretical framework. It elaborates on key concepts and relevant theories and formulates the hypotheses to be tested. Chapter 3 describes the methodology used throughout this thesis and the data collection process. Chapter 4 presents the research analysis and results, and Chapter 5 discusses the conclusions, limitations, and further implications.

Chapter 2: Theoretical framework

2.1. Digitalization and the human dimension in public administration

An emphasis on formal rules and standardized practices has historically characterized public administration. Implementation processes are therefore largely organized around fixed rules and professional routines, to ensure equal treatment and legal certainty. In recent decades, this organizational logic has been further reinforced by the increasing use of digital technologies in public service delivery. Executive agencies now increasingly rely on algorithms, automated workflows, and data analytics to support or partially replace administrative decision-making.

While digitalization promotes speed and consistency, it also introduces new challenges. As implementation processes become more standardized and technology-driven, the risk of rigidity and impersonal decision-making increases (Autoriteit Persoonsgegevens, 2023; Issar & Aneesh, 2021). Automated systems can reduce opportunities for human deliberation and discretionary judgment, making administrative decisions less sensitive to individual circumstances. In digital implementation environments where citizens primarily interact with automated systems, it becomes increasingly complex to account for how citizens experience administrative processes and communication.

This challenge is often discussed in terms of the human dimension. The human dimension refers to the extent to which implementing organizations consider the person behind the case, rather than acting solely according to standardized rules. It emphasizes that administrative decisions should not only be legally sound but also implemented in a way that is

understandable, reasonable, and empathetic (Verhoef et al., 2011). This tension between rules and humanity is not new. Weber already warned in the early twentieth century that bureaucratic organizations, while efficient and predictable, risk becoming rigid and impersonal, leading citizens to feel like numbers (Raadschelders, 2019). Within Dutch administrative traditions, safeguarding the dignity of the citizen has therefore remained a recurring concern (Paters-Prins, 2024).

The relevance of the human dimension became particularly visible during the DCBS. In this case, thousands of parents were wrongly labeled as fraudsters, with insufficient consideration of their personal circumstances (Zijlstra, 2021). Earlier warnings from the National Ombudsman regarding the lack of individualized assessment and tailored solutions were mainly ignored (Verpaalen et al., 2015). Following the scandal, restoring the human dimension became a normative guideline for public sector reforms. The Algemene Rekenkamer (2024) identified professional discretion, simpler regulations, and more human-centered communication as key conditions for rebuilding citizens' trust in government.

Although there is strong support for it, the human dimension often remains difficult to operationalize in practice. While it stresses the importance of addressing citizens as individuals rather than as files or cases, it provides limited guidance on the design of large-scale, digitalized implementation processes (Canoy et al., 2021; OECD, 2024). As a result, the human dimension primarily serves as a normative principle rather than a concrete framework for modern public administration. For this reason, recent literature in public administration points to HCA as a more applicable analytical perspective for current implementation practices. HCA places citizens' experiences and needs at the center of policy design, service delivery, and administrative communication, rather than prioritizing internal organizational logic or purely legal-technical considerations (Bason, 2022). The OECD (2024) similarly argues that the legitimacy of public service provision increasingly depends on whether citizens feel heard, understood, and treated fairly, even when interacting with digital or automated systems.

HCA shares similarities with the concept of procedural justice, which emphasizes respectful treatment, neutrality, voice, and clear explanations in interactions between citizens and public officials. However, procedural justice was developed primarily for contexts involving direct, interpersonal contact, such as counter services or inspections (Newman et al., 2020). In

highly digitalized implementation practices, such interpersonal contact is largely absent. Citizens mainly receive automatically generated letters, emails, or digital messages in which the system determines the tone, style, and content of communication (Ranchordás, 2022; Lindgren & Madsen, 2025). Consequently, procedural justice offers only limited explanatory power for understanding how citizens experience digital government communication. Against this background, HCA provides a more suitable and supportive framework for analyzing digital decision-making and implementation processes. Whereas procedural justice focuses on interpersonal interactions, HCA focuses on the design of system-generated communication and administrative processes. In digital contexts, human values are embedded in linguistic and structural elements such as tone, clarity, and transparency, rather than conveyed through direct dialogue. This perspective is particularly relevant for automated domains such as the DTA debt collection practices, where citizens primarily receive standardized messages and have limited opportunities for personal interaction.

2.2. Empathy and transparency in administrative communication

Within HCA, empathy and transparency are among the most important ways digital systems can demonstrate their human-centeredness (OECD, 2024). In HCA, empathy involves explicitly acknowledging citizens' situations, feelings, or potential vulnerabilities. This does not involve emotional closeness but rather the use of respectful, supportive, and understanding language. Beck and Ranchordás (2024) describe empathy as a public value that helps government organizations prevent citizens from feeling alienated by a digitalizing government. Lindgren & Madsen (2025) demonstrate that an empathetic tone reduces stress and uncertainty by making citizens feel seen and acknowledged. In automated correspondence, where nonverbal cues and interaction are lacking, empathy takes shape through word choice, phrasing, and tone. A letter of recognition can reduce psychological burden.

Transparency refers to the comprehensibility of information: the clarity with which it is explained why a decision was made, how an amount was calculated, and what steps citizens are expected to take (Ball, 2009). Transparency, therefore, goes beyond simply providing information. It concerns the extent to which citizens can interpret and use it. Research shows that transparent communication leads to increased trust and a fairer perceived process (Grimmelikhuijsen et al., 2022; Alon-Barkat, 2022 & Busuioc). Transparency reduces

learning costs because citizens have to expend less effort to understand what is expected of them, and reduces compliance costs because necessary steps are clearly communicated.

Although empathy and transparency can be conceptually distinguished, they complement each other in practice (Ranchordás, 2022). Empathy offers emotional recognition, while transparency provides cognitive clarity. Letters feel most human-centered to citizens when both elements are present, especially in contexts where communication is one-way and there is little room for questions or explanations.

2.3. Administrative burden theory

AB theory explains why interactions between citizens and the government can be complex, time-consuming, or emotionally demanding. These burdens stem not only from policy rules but also from the design of administrative processes and communication. Herd and Moynihan (2018) distinguish three types of AB: learning costs, compliance costs, and psychological costs.

Learning costs refer to the effort citizens must invest to understand which rules apply to them and what actions are required of them. In automated tax administration, learning costs arise when citizens receive payment requests or reminders written in formal or technical language that offer only limited explanations of how obligations or amounts are calculated. When communication is automatically generated and offers little opportunity for clarification, citizens may struggle to understand what is expected of them (Herd & Moynihan, 2018; Halling & Baekgaard, 2023).

Compliance costs refer to the time and resources citizens must invest to meet administrative requirements. In automated tax collection, these costs include making timely payments, submitting objections, uploading documents, and monitoring digital tax accounts. Digital systems can increase compliance costs when citizens are expected to track deadlines, notifications, and system errors independently. This shifts responsibility for compliance largely onto citizens (Christensen et al., 2020; Halling & Baekgaard, 2023).

Psychological costs refer to the emotional strain of administrative interactions, including stress, anxiety, and uncertainty. In automated tax debt collection, these costs often stem from standardized, enforcement-oriented communication. Automatically generated messages may emphasize legal consequences while offering little acknowledgment of personal

circumstances, thereby increasing feelings of pressure or powerlessness (Gaozhao et al., 2023; Halling & Baekgaard, 2023).

Digitalization plays a key role in shaping all three types of AB. While automated tax systems are designed to improve performance and consistency, they also require citizens to navigate digital infrastructure primarily on their own. Citizens are expected to interpret system-generated messages, manage their tax affairs through online portals, and respond within strict time frames. When something goes wrong, such as an incorrect calculation or a missed notification, the burden of recognizing and addressing the issue often falls to the citizen. In this way, learning, compliance, and psychological costs can reinforce one another in automated tax collection contexts (Herd & Moynihan, 2018; Halling & Baekgaard, 2023).

Importantly, ABs in tax administration are not experienced equally across citizens. Differences in education level, age, and digital skills can shape how people understand tax communication and interact with digital systems. Citizens with fewer administrative or digital resources may find it more challenging to interpret automated messages, comply with requirements, or cope with the stress associated with DTA's debt collection. This suggests that AB is shaped not only by system design but also by the characteristics of the citizens who interact with these systems (Herd & Moynihan, 2018; Christensen et al., 2020; Halling & Baekgaard, 2023).

2.4. Social demographic factors

Educational level plays a significant role in the extent to which citizens understand and process administrative processes. Citizens with higher levels of education generally have stronger cognitive and information-processing skills, enabling them to interpret complex or formal communication better. For citizens with lower levels of education, the same messages can lead to higher learning costs (Herd & Moynihan, 2018). Empirical research supports these differences. Christensen et al. (2020) show that citizens with greater human capital make connections more quickly and encounter fewer difficulties with administrative procedures. Research on digitalization also shows that low-educated citizens more often struggle with abstract, technical, or legally formulated information (Cao & Ma, 2025).

Besides cognitive differences, emotional factors also play a role. Lower-educated citizens are more likely to feel uncertain or stressed when interacting with the government, particularly

when communication is formal or distant. This can lead to higher psychological costs (Herd & Moynihan, 2018). Empathetic communication can be an important counterbalance for these groups by demonstrating recognition and understanding. Transparent communication can also help by reducing ambiguity and confusion. It is therefore plausible that empathy and transparency can reduce perceived AB.

Age is particularly relevant in digital implementation, where citizens must use online systems independently. Younger citizens generally have more digital experience, lowering learning and compliance costs. Older citizens may struggle to navigate portals, understand automated messages, or respond to digital requests on time (Christensen et al., 2020). Empirical studies show that digital policy implementation can have unequal effects on older citizens. Research on digital transformation in social programs indicates that older people often face higher learning and compliance costs when administrative processes are highly digitized (Cao & Ma, 2025). Furthermore, studies on AB and social inequality indicate that age can be associated with AB when citizens rely on government programs and are less familiar with digital systems (Masood & Nisar, 2020). These findings suggest that age may be an important factor in how ABs are experienced within automated tax collection.

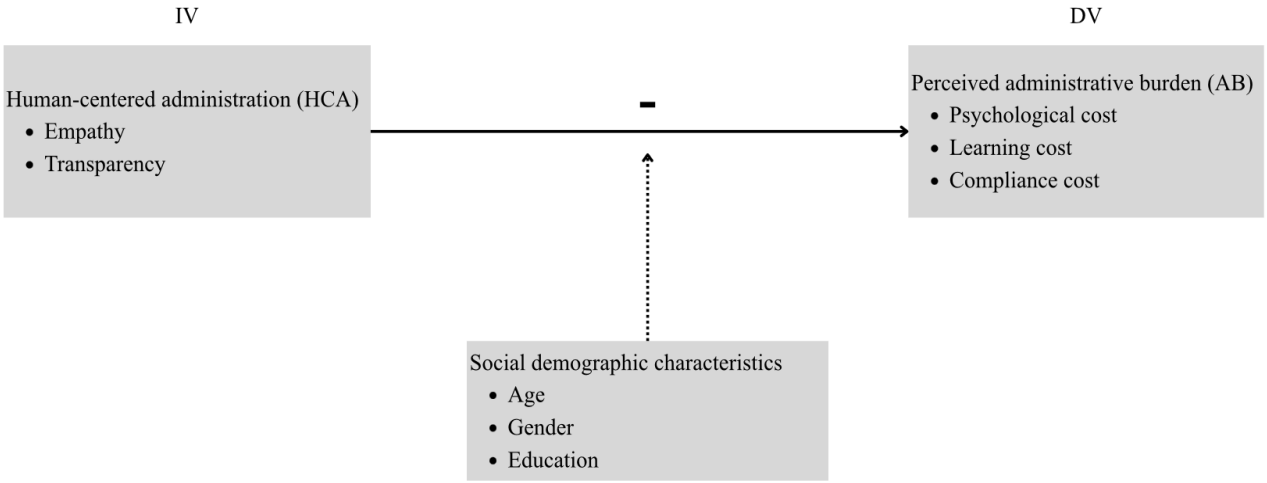
Gender has received less explicit attention in the literature on ABs than education level and age. Nevertheless, existing studies suggest that gendered social roles and socioeconomic positions can shape how ABs are experienced. For example, women are more often responsible for household administration and financial arrangements, which can lead to greater exposure to administrative demands (Masood & Nisar, 2020). Moreover, gender can be particularly relevant to psychological costs. In contexts where communication is threatening or sanctioning, differences in perceived vulnerability and stress responses can contribute to differences in emotional burden (Herd & Moynihan, 2018). Recent empirical research also shows that vulnerable groups do not always experience higher ABs uniformly, and perceptions of administrative costs can vary by context and burden type (Vogel et al., 2025). This underscores the importance of a nuanced approach to gender within AB theory.

2.5. Conceptual model

Building on the theoretical framework, this study conceptualizes HCA as the extent to which administrative communication conveys empathy and provides transparent explanations.

These two components reflect the degree of human-centeredness in digital and automated communication. In line with AB Theory, perceived AB is understood as the learning, compliance, and psychological costs that citizens incur when interacting with the government. The model posits a negative relationship between HCA and perceived AB: the more empathetic and transparent the communication, the less effort, confusion, and emotional strain citizens are expected to experience. This relationship is examined in the context of automated debt collection at the DTA. Because citizens differ in their ability to interpret administrative information, social demographic characteristics such as education level, age, and gender are included as relevant background factors. The model allows for variation in how AB is perceived across different groups, providing a more nuanced analysis of citizens' experiences with automated tax communication. In Figure 1 below, you will see the conceptual framework of this study.

Figure 1: Conceptual Framework



2.6. Hypothesis

This study focuses on the relationship between HCA and AB citizens' experiences regarding automated debt collection by the DTA. HCA is understood as the degree to which administrative communication is empathetic and transparent. The perceived AB consists of learning, compliance, and psychological costs that citizens experience in their interactions with the government (Herd & Moynihan, 2018). Previous research shows that highly standardized, digital implementation processes increase the risk that communication will be

perceived as impersonal or difficult to understand, thereby increasing ABs (Issar & Aneesh, 2021; Halling & Baekgaard, 2023). HCA communication can help reduce confusion, effort, and emotional pressure. Based on this, it is expected that a higher degree of HCA is associated with a lower perceived AB.

H1: Higher levels of HCA (empathy and transparency) in administrative communication are associated with lower levels of perceived administrative burden.

To clarify this relationship, the two core dimensions of HCA, empathy and transparency, are examined separately. Empathy in administrative communication may reduce psychological costs by acknowledging citizens' situations and emotions, thereby lowering stress, uncertainty, or powerlessness (Herd & Moynihan, 2018; Gaozhaoa et al., 2023). In automated communication, where direct interaction is limited, empathetic language may help mitigate the emotional impact of administrative demands.

H2: Higher levels of empathy in administrative communication are associated with lower psychological costs.

Transparency in administrative communication may reduce learning and compliance costs by clearly explaining rules, procedures, and underlying calculations. When citizens understand why decisions are made and what actions are required, they are better able to comply with administrative requirements and less likely to experience confusion or make errors (Christensen et al., 2020; Halling & Baekgaard, 2023).

H3: Higher levels of transparency in administrative communication are associated with lower learning and compliance costs.

In addition, research shows that ABs are not experienced equally across citizens. Social and demographic characteristics, such as education level, age, and gender, can influence how administrative information is processed, how digital systems are navigated, and how administrative interactions are emotionally experienced. Empirical studies indicate that these characteristics are associated with differences in learning, compliance, and psychological costs, though the direction and magnitude of these differences may vary across contexts

(Herd & Moynihan, 2018; Christensen et al., 2020; Masood & Nisar, 2020; Halling & Baekgaard, 2023; Vogel et al., 2025).

H4: Perceived administrative burden differs across citizens with different social and demographic characteristics, such as education level, age, and gender.

Chapter 3: Methodology

3.1. Data collection

Data collection for this study was conducted via an online questionnaire created in Qualtrics Survey Software. The questionnaire was part of an experimental vignette study with a 2 × 2 between-subjects factorial design. Respondents were randomly assigned to one of four vignettes, in which empathy and transparency in the DTA's administrative communication were systematically manipulated, resulting in four vignettes with high empathy and high transparency (HE/HT), high empathy and low transparency (HE/LT), low empathy and high transparency (LE/HT), and low empathy and low transparency (LE/LT). This design allows for the investigation of causal effects of specific communication characteristics, as differences in perceptions can be attributed to the experimental manipulations.

This research design was chosen because vignette experiments are well-suited for controlling for variations in government communication characteristics while maintaining a consistent substantive context for all respondents. This allows for the study of the effects of empathy and transparency without other factors, such as differences in situation or policy, influencing the results. The experimental manipulations were incorporated through a written debt-collection letter, as written communication is a standard mode of interaction between citizens and government agencies, particularly within the DTA.

Respondents were eligible to participate in the survey if they were 18 years or older and residents of the Netherlands. Prior to participation, respondents received an information page explaining the purpose of the survey, the voluntary nature of participation, the anonymity of the data, and the right to withdraw at any time. Only respondents who provided explicit informed consent were given access to the questionnaire.

The questionnaire consisted of three sections. First, several demographic characteristics were collected based on age, gender, education, and location, which were later used for hypothesis testing. Respondents were then randomly assigned to one of 4 vignettes in the form of a letter from the DTA, after which they answered questions about their perceptions of the communication and their perceived AB. The assignment to the vignettes was automated via the Qualtrics randomizer, ensuring a random, even distribution across the experimental vignettes. Data collection took place between November 16, 2025, and December 19, 2025. A total of 230 respondents started the questionnaire, and 35 incomplete responses were excluded from the analyses. After this exclusion, the final sample consisted of 195 respondents. The complete questionnaire, including the vignettes used, is included in Appendix A.

Table 1: Demographic factors of the sample (n=195)

Characteristic	Category	Total sample (N = 195) (%)	HE/HT (n = 49)	HE/LT (n = 48)	LE/HT (n = 50)	LE/LT (n = 48)	p (Fisher's exact)
Gender	Female	119 (61.0%)	28	31	29	31	.565
	Male	72 (36.9%)	20	17	18	17	
	Non-binary/ other	4 (2.1%)	1	0	3	0	
Age	18–24	113 (57.9%)	32	26	27	28	.768
	25–34	55 (28.2%)	10	15	17	13	
	35–44	11 (5.6%)	3	3	3	2	
	45–54	13 (6.7%)	4	4	1	4	
	55–64	0 (0.0%)	0	0	0	0	
	65 or older	3 (1.5%)	0	0	2	1	
Education level	Primary education	3 (1.5%)	0	2	1	0	.222
	Secondary education (VMBO/HAVO/VWO)	29 (14.9%)	5	7	10	7	
	Vocational education (MBO)	17 (8.7%)	2	6	6	3	
	Higher professional education (HBO)	35 (17.9%)	6	14	6	9	
	University bachelor	67 (34.4%)	22	10	17	18	
	University master or higher	44 (22.6%)	14	9	10	11	

Note: n = absolute numbers p= p-value

3.2. Descriptive statistics

Table 1 above shows that the final sample consisted of 195 respondents. In terms of gender, the largest group was female (n = 119), followed by male (n = 72). A small number of respondents identified as non-binary or other (n = 4). The age distribution shows that the sample consisted primarily of young adults. The largest age group was respondents aged 18–24 (n = 113), followed by those aged 25–34 (n = 55). Older age groups were significantly less represented.

Regarding educational level, most respondents had higher education. The largest group had a university bachelor's degree (n = 67), followed by those with a master's degree or higher (n = 44). In addition, a substantial portion of the sample had higher levels of vocational education (n = 35). Lower educational levels, such as primary education (n = 3), were less common.

To verify that randomization produced comparable experimental groups, it was examined whether age, education level, and gender were evenly distributed across the vignettes. Fisher's exact test was used for this purpose. This statistical method is appropriate for analyzing associations between categorical variables, particularly when some categories have relatively small sample sizes (Table 1). The results of Fisher's tests show no statistically significant differences between the vignettes for age ($p = .768$), education level ($p = .222$), and gender ($p = .565$).

The p-value indicates the likelihood that the observed differences between groups are due to chance, assuming no true difference in the population. In social science research, a p-value below .05 is used as the threshold for statistical significance (Verhoeven, 2019). The p-values found here are well above this threshold, indicating no evidence of systematic differences in demographic composition across the experimental vignettes. These findings indicate that randomization was successful and that the experimental groups are comparable. The full distribution of demographic characteristics by vignette and the corresponding test results are shown in Table 1.

3.3. Key variables

In this study, the core variables were operationalized using an experimental vignette design. Respondents were exposed to one of four fictional yet realistic letters from the DTA, each containing an automated income tax payment reminder. All vignettes described the same administrative situation: an outstanding amount of €950 for the 2024 tax year, due within 14 days. Furthermore, all letters contained identical information on payment options, the option to file an objection, and a link to ‘’Mijn Belastingdienst’’. These elements were kept constant so that any differences in perceptions could be attributed solely to differences in communication style.

The vignettes were systematically manipulated along two dimensions of government communication: empathy and transparency. These dimensions were varied within a 2x2 factorial design, resulting in four vignettes: high empathy-high transparency (HE/HT), high empathy-low transparency (HE/LT), low empathy-high transparency (LE/HT), and low empathy-low transparency (LE/LT). By applying the manipulations independently, it becomes possible to analyze both the individual and combined effects of empathy and transparency.

Empathy was manipulated by varying tone, word choice, and the extent to which the letter explicitly acknowledged the citizen's situation and potential feelings. In the HE vignette, the communication included emotional recognition, a supportive and respectful tone, and normalization of potential concerns about financial obligations. In the LE vignette, the tone was more formal and distant, with no references to the recipient's emotions or personal circumstances.

Transparency was manipulated by varying the level of explanation provided about the administrative decision and the underlying process. In HT Vignet, clear explanations were provided for why the payment reminder was sent, how the outstanding amount was calculated, and the extent to which automated decision-making played a role, including references to the data used and next steps. In the LT vignette, this contextual and procedural explanation was largely omitted, and the information was limited to the outstanding amount, the payment deadline, and the payment obligation. Table 2 provides an overview of the manipulations used, including example sentences from the vignettes.

Table 2: Operationalization of empathy and transparency across vignettes

Vignette	Empathy	Transparency	Examples from vignette	Sources
HE/HT	Emotional acknowledgement; supportive and respectful tone; normalization of citizens' situation	Clear explanation of decision; explanation of automated processing; insight into data use and calculation; clear instructions	"We understand that financial matters can sometimes be unexpected or stressful…" "Your tax return was processed using our automated system..." "In Mijn Belastingdienst, you can see which data was used and how the amount was calculated."	Grimmelikhuijsen & Meijer (2022); Lindgren & Madsen (2025); OECD (2024a); Alon-Barkat (2022)
HE/LT	Emotional acknowledgement; supportive tone; reassurance	Limited explanation of calculation; no detailed explanation of data use or decision-making process	"We understand that receiving letters like this may feel overwhelming…" Outstanding amount and deadline stated without explaining how the amount was calculated	Grimmelikhuijsen & Meijer (2022); Beck & Ranchordás (2024); Lindgren & Madsen (2025)
LE/HT	Formal, neutral tone; no emotional acknowledgement	Clear explanation of decision; explanation of automated processing; insight into data and calculation; clear next steps	"Our records show that an amount of €950 remains outstanding…" "Your tax return was processed using our automated system…" "In Mijn Belastingdienst, you can review which data was used…"	Ball (2009); Grimmelikhuijsen et al. (2022); Christensen et al. (2020); OECD (2024a)
LE/LT	Formal, distant tone; no acknowledgement of emotions or personal circumstances	Minimal information beyond obligation; no explanation of calculation, data use, or decision-making process	Formal notification of outstanding amount and payment deadline without emotional language or explanatory detail	Ball (2009); Busuioc (2021); Issar & Aneesh (2021)

After reading the vignette, respondents completed a questionnaire that measured the manipulated perceptions and the dependent variables, using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater perceived empathy or transparency. Descriptive statistics for each vignette are presented in Table 3.

Table 3: Descriptive statistics and reliability of key variables by experimental vignette

Variable	Condition	n	M	SD	Min	Max	Cronbach's α
Empathy	HE/HT	49	3.49	0.78	1.00	5.00	.90
	HE/LT	48	3.44	0.93	1.00	5.00	
	LE/HT	50	2.54	0.68	1.00	5.00	
	LE/LT	48	2.25	0.64	1.00	5.00	
Transparency	HE/HT	49	3.28	0.73	1.00	5.00	.77
	HE/LT	48	3.04	0.71	1.00	5.00	
	LE/HT	50	3.24	0.58	1.00	5.00	
	LE/LT	48	2.64	0.86	1.00	5.00	
Learning costs	HE/HT	49	2.27	0.81	1.00	5.00	.77
	HE/LT	48	2.29	0.65	1.00	5.00	
	LE/HT	50	2.50	0.76	1.00	5.00	
	LE/LT	48	2.64	0.75	1.00	5.00	
Compliance costs	HE/HT	49	2.75	0.84	1.00	5.00	.83
	HE/LT	48	2.87	0.78	1.00	5.00	
	LE/HT	50	3.15	0.86	1.00	5.00	
	LE/LT	48	3.10	0.84	1.00	5.00	
Psychological costs	HE/HT	49	3.04	0.85	1.00	5.00	.76
	HE/LT	48	3.22	0.79	1.00	5.00	
	LE/HT	50	3.64	0.66	1.00	5.00	
	LE/LT	48	3.74	0.71	1.00	5.00	
Administrative burden (total)	HE/HT	49	2.68	0.67	1.00	4.75	.85
	HE/LT	48	2.80	0.54	1.00	4.75	
	LE/HT	50	3.10	0.57	1.00	4.75	
	LE/LT	48	3.16	0.60	1.00	4.75	

Note: n = absolute numbers; M = mean; SD = standard deviation.

The means (M) represent the average levels of perceived empathy, transparency, and AB across vignettes. The standard deviations (SDs) indicate the degree of variation within each vignette: lower SDs reflect greater agreement among respondents, whereas higher SDs reflect greater variation in perceptions. Table 3 also reports the minimum and maximum scores. These values represent the range of responses and indicate the extent to which respondents used all the scale's response categories.

For all core variables, the minimum and maximum scores range from 1 to 5, respectively, indicating that respondents used the full scale. This suggests there are no floor or ceiling effects and that the scales have sufficient power to capture differences among respondents and across experimental vignettes. Therefore, the measurement quality of the variables is adequate for further statistical analyses.

The means for empathy show that respondents in the HE vignettes reported higher scores (HE/HT: M = 3.49, SD = 0.78; HE/LT: M = 3.44, SD = 0.93) than respondents in the LE vignettes (LE/HT: M = 2.54, SD = 0.68; LE/LT: M = 2.25, SD = 0.64). Since the scale midpoint is 3, scores above it indicate relatively high perceived empathy, while scores below it indicate lower perceived empathy. The relatively limited variation within the vignettes suggests that respondents rated the empathic tone of the letters consistently.

A similar pattern is observed for transparency. Higher transparency scores were found in the HT vignettes (HE/HT: M = 3.28, SD = 0.73; LE/HT: M = 3.24, SD = 0.58) than in the LT vignettes (HE/LT: M = 3.04, SD = 0.71; LE/LT: M = 2.64, SD = 0.86). In the LE/LT vignette in particular, the mean was significantly below the scale midpoint, indicating that this letter was perceived as relatively unclear.

In addition to empathy and transparency, AB was measured along three dimensions: learning costs, compliance costs, and psychological costs. Higher scores on these scales indicate greater perceived AB. Descriptive statistics indicate that psychological costs, particularly in the LE vignettes, are higher, suggesting that a distant communication style is associated with greater perceived stress and uncertainty. The composite measure of total AB shows a similar pattern, with the highest means in the LE/LT vignette.

The internal consistency of the scales used was assessed using Cronbach's alpha. This measure indicates the extent to which items within a scale collectively measure the same underlying construct. In social science research, alpha values of .70 or higher are generally considered acceptable (Verhoeven, 2019). As shown in Table 3, the alpha values in this study range from .76 to .90, indicating adequate to good reliability for all core variables. This means that the scales used measure the intended concepts consistently and reliably and are therefore suitable for further hypothesis testing in Chapter 4. The complete questionnaire and all vignettes used are included in Appendix A.

Chapter 4: Empirical analysis

4.1. Main effects of perceived empathy and transparency

The first hypothesis assumed that empathetic communication from the DTA would lead to a lower perceived AB. To test this hypothesis, a two-way ANOVA was conducted, and the results are presented in Table 4. A two-way ANOVA was appropriate because it allows testing the separate effects of empathy and transparency, as well as their interaction.

The analysis showed a clear and statistically significant main effect of empathy on perceived AB, $F(1, 191) = 20.72$, $p < .001$. Respondents who received a letter expressing a high level of empathy perceived the AB as significantly lower than those who received a letter expressing a low level of empathy. This result indicates that the tone and word choice of communication play a significant role in how burdensome citizens perceive administrative processes. The main effect of transparency was not significant, $F(1, 191) = 1.02$, $p = .315$. The interaction effect between empathy and transparency was also not significant, $F(1, 191) = 0.09$, $p = .770$, suggesting that empathy's effect on AB is independent of transparency level in the letter.

The strength of the empathy effect was further assessed using the effect size. The partial eta-squared for empathy was $\eta^2 = .10$, indicating that approximately 10% of the variance in perceived AB is attributable to differences in empathic communication. According to current guidelines, this effect can be interpreted as medium to substantial, indicating a substantively relevant effect within the context of public service delivery and administrative decision-making.

To further support these findings, an additional linear regression analysis was conducted. The results of this analysis confirmed the ANOVA result and showed that high empathy was significantly associated with lower AB ($\beta = -0.39$, $p < .001$). This regression coefficient indicates that respondents in the HE vignettes scored an average of almost 0.4 scale points lower on AB than respondents in the LE vignette, controlling for transparency. The adverse effect suggests that empathic communication reduces perceived AB.

These results partially support Hypothesis 1. As only the empathy component of HCA was associated with lower AB.

4.2. Effects of empathy and transparency on administrative burden

The second hypothesis was that empathetic communication from the DTA would lower perceived psychological costs. Psychological costs refer to the stress, uncertainty, and emotional burden citizens may experience during administrative interactions, particularly in contexts where communication is automated and punishing (Herd & Moynihan, 2018; Gaozhaoa et al., 2023). Within the framework of HCA, empathetic communication is assumed to reduce this emotional burden by demonstrating recognition and understanding of citizens' situations (Beck & Ranchordás, 2024; Lindgren & Madsen, 2025).

To test this hypothesis, a two-way ANOVA was conducted, with empathy and transparency as independent variables and psychological costs as the dependent variable. This analysis technique is suitable because it allows isolating the separate effect of empathy while simultaneously controlling for transparency and the possible interaction between the two communication characteristics.

As shown in Table 4 below, the results revealed a substantial and statistically significant main effect of empathy on psychological costs, $F(1, 191) = 26.80$, $p < .001$. Respondents who received an HE letter reported significantly lower stress and uncertainty than those in the LE vignette. This result supports the central assumption in the AB literature that psychological burdens do not arise solely from formal obligations, but are strongly influenced by the tone and framing of administrative communications (Herd & Moynihan, 2018).

The main effect of transparency was not significant, $F(1, 191) = 1.77$, $p = .186$. Nor was a significant interaction effect between empathy and transparency found, $F(1, 191) = 0.17$, $p = .682$. This suggests that empathy has an independent effect on psychological costs, regardless of the degree to which the communication is explained procedurally or substantively. This finding challenges the assumption that transparency automatically reduces emotional burden and indicates that cognitive clarity does not necessarily translate into emotional reassurance.

Table 4: Statistical effects of empathy and transparency on administrative burden

Dependent variable	Predictor	F (df)	p-value	η² (partial)
Total administrative burden	Empathy	20.72 (1,191)	< .001	.10
	Transparency	1.02 (1,191)	.315	< .01
	Empathy × Transparency	0.09 (1,191)	.770	< .01
Psychological costs	Empathy	26.80 (1,191)	< .001	.12
	Transparency	1.77 (1,191)	.186	< .01
	Empathy × Transparency	0.17 (1,191)	.682	< .01
Learning costs	Empathy	7.43 (1,191)	.007	.04
	Transparency	0.54 (1,191)	.462	< .01
	Empathy × Transparency	0.24 (1,191)	.626	< .01
Compliance costs	Empathy	7.17 (1,191)	.008	.04
	Transparency	0.10 (1,191)	.759	< .01
	Empathy × Transparency	0.49 (1,191)	.487	< .01

Note: η² = partial eta squared.

The effect size for empathy was substantial. The partial eta-squared was $\eta^2 = .12$, indicating that approximately 12% of the variance in psychological costs can be explained by differences in empathic communication. This effect can be interpreted as medium to large, indicating a substantively relevant effect. As a further test, a linear regression analysis was conducted to assess the reliability of these findings. This analysis confirmed the ANOVA result and showed that high empathy was significantly associated with lower psychological costs ($\beta = -0.56$, $p < .001$), controlling for transparency. The negative regression coefficient underscores that empathic formulations tend to appear and have a protective effect against feelings of stress and uncertainty that can arise when receiving administrative payment requests.

Taken together, these results support Hypothesis 2. In line with previous literature, this study shows that empathy plays a crucial role in reducing psychological costs(Gaozhaoa et al., 2023; Lindgren & Madsen, 2025).

4.3. Effects on learning, compliance, and psychological costs

Hypothesis 2 proposes that empathetic communication from the Tax and Customs Administration reduces citizens' psychological costs. Psychological costs refer to feelings of stress, uncertainty, and emotional burden that can arise from administrative interactions, particularly in contexts where communication is automated and punitive (Herd & Moynihan, 2018). To test this hypothesis, a two-way ANOVA was conducted see table 4.

The analysis showed a strong and statistically significant main effect of empathy on psychological costs, $F(1, 191) = 26.80$, $p < .001$. Respondents who received an HE letter reported significantly lower psychological costs than those in the LE vignette. This result aligns closely with the literature on HCA, which emphasizes that acknowledgment and understanding in administrative communication can reduce feelings of stress and powerlessness (Herd & Moynihan, 2018; Gaozhaoa et al., 2023). The main effect of transparency was not significant, $F(1, 191) = 1.77$, $p = .186$, suggesting that additional explanation and information alone are insufficient to reduce emotional burden. The interaction effect between empathy and transparency was also not significant, $F(1, 191) = 0.17$, $p = .682$, indicating that empathy's effect consistentis regardless across levels of transparency (table 4).

The effect size underscores the substantive relevance of this result. The partial eta squared for empathy was $\eta^2 = .12$, indicating that approximately 12% of the variance in psychological costs can be explained by differences in empathic communication. This is generally interpreted as a medium to large effect and indicates a significant influence of communication tone within administrative processes.

As an additional check, a linear regression analysis was performed. This analysis confirmed the ANOVA result: empathy was significantly and negatively correlated with psychological costs ($\beta = -0.56$, $p < .001$), whereas transparency did not make a significant contribution ($p = .185$). The regression model explained approximately 13% of the variance in psychological costs ($R^2 = .13$). Based on these consistent findings, Hypothesis 2 is supported. Empathetic

communication is effective in reducing the psychological costs that citizens experience with automated communication from the DTA.

Hypothesis 3 stated that empathic communication is associated with lower learning and compliance costs. These costs represent two central components of AB: the cognitive effort required to understand administrative information and the effort required to comply with administrative obligations (Herd & Moynihan, 2018). This hypothesis was tested with separate two-way ANOVAs for learning burden and compliance costs.

A significant main effect of empathy was found for learning burden, $F(1, 191) = 7.43$, $p = .007$. Respondents in the HE vignette experienced less difficulty understanding the letter than respondents in the LE vignette. Transparency had no significant effect on learning burden, $F(1, 191) = 0.54$, $p = .462$, and the interaction between empathy and transparency was also not significant, $F(1, 191) = 0.24$, $p = .626$. The effect size for empathy was small to medium ($\eta^2 = .04$), while the other effect sizes were negligible. This suggests that empathetic formulations can slightly facilitate cognitive processing, even when the information's content remains the same.

A similar pattern was found for compliance costs. There was a significant main effect of empathy, $F(1, 191) = 7.17$, $p = .008$, with respondents who received an empathetic letter perceiving the required actions as less burdensome. Transparency again had no significant effect, $F(1, 191) = 0.10$, $p = .759$, and here too, no interaction effect was found, $F(1, 191) = 0.49$, $p = .487$. The partial eta squared for empathy was also $\eta^2 = .04$, indicating a modest but consistent effect. Additional linear regression analyses confirmed these findings. Empathy had a significant adverse effect on both learning burden and compliance costs, while transparency made no significant contribution in either model.

Collectively, these results demonstrate that empathic communication can reduce not only psychological but also cognitive and behavioral AB. Hypothesis 3 is therefore supported for empathy. For transparency, no evidence was found for effects on learning or compliance costs, suggesting that transparency primarily matters for perceptions of clarity and contributes less directly to reducing perceived AB.

4.4 Differences in administrative burden across demographic groups

Hypothesis 4 posited that perceived ABs differ among citizens with different social and demographic characteristics, particularly by education level, age, and gender. This hypothesis is based on the AB Theory literature, which emphasizes that ABs are unevenly distributed and correlate with citizens' resources, skills, and vulnerabilities (Herd & Moynihan, 2018; Christensen et al., 2020; Halling & Baekgaard, 2023).

To test this hypothesis, one-way ANOVAs were conducted to compare total AB and the individual dimensions of learning costs, compliance costs, and psychological costs across education levels, age groups, and genders see Appendix B. The results show that for total AB, no statistically significant differences were found between education levels, $F(5, 189) = 1.31$, $p = .26$, nor between age groups, $F(4, 190) = 1.17$, $p = .32$, or between genders, $F(2, 192) = 0.48$, $p = .62$. This indicates that, within this sample, the total perceived AB does not differ systematically between these demographic groups.

For learning costs, no significant differences were found by education level, $F(5, 189) = 1.18$, $p = .32$, age, $F(4, 190) = 0.64$, $p = .63$, or gender, $F(2, 192) = 1.87$, $p = .16$. This suggests that the cognitive effort respondents experience in understanding administrative communication is similar across these groups. For compliance costs, no statistically significant effect was found for education level, $F(5, 189) = 0.94$, $p = .46$, age, $F(4, 190) = 1.04$, $p = .39$, or gender, $F(2, 192) = 0.85$, $p = .43$. The time and effort respondents expected to have to invest in meeting the administrative requirements did not differ significantly between the demographic categories examined. A similar pattern was found for psychological costs. No significant differences were found by education level, $F(5, 189) = 0.93$, $p = .46$, age, $F(4, 190) = 1.17$, $p = .32$, or gender, $F(2, 192) = 0.52$, $p = .60$. This means that, on average, feelings of stress, uncertainty, and emotional burden evoked by the letter did not differ significantly between these groups.

While these analyses do not reveal statistically significant group differences, the descriptive statistics show clear variation between subgroups, particularly in age and education level. For example, the average psychological costs are higher for older respondents and for less educated groups. These patterns are shown in Appendix B, which includes a complete overview of the means and standard deviations by demographic category. The lack of

statistical significance can be partly explained by the limited number of respondents in some subgroups, which means the statistical power is insufficient to detect smaller differences reliably.

Contrary to previous studies reporting strong inequalities in AB (Herd & Moynihan, 2018; Christensen et al., 2020), this study's results suggest that empathetic and transparent communication is experienced relatively evenly across demographic groups. Based on these findings, hypothesis 4 is not supported. The perceived AB within this sample does not differ significantly by education level, age, or gender, which you can see in a visual in Appendix C. At the same time, the descriptive patterns indicate that further testing with larger, more diverse samples is needed to identify potential subtle inequalities in AB better.

Chapter 5: Discussion and conclusion

5.1. Discussion

This study aimed to understand the role of HCA communication within highly digitalized administrative processes, with a specific focus on automated debt communication. By experimentally manipulating empathy and transparency, the investigation examined the extent to which these elements contribute to reducing perceived ABs. The results reveal a clear pattern with both theoretical and practical implications for AB Theory and the literature on HCA.

First, the results demonstrate that empathic communication significantly influences citizens' perceived ABs. Empathy is associated with lower total ABs and lower psychological, learning, and compliance costs. This aligns closely with AB Theory, which posits that ABs not only arise from formal rules but are also significantly shaped by the design of administrative processes and communication (Herd & Moynihan, 2018). Psychological costs, such as stress, uncertainty, and feelings of powerlessness, play a particularly central role in this regard. The finding that empathetic communication reduces these costs suggests that acknowledgment and understanding in administrative messages can reduce citizens' psychological burden.

Moreover, these findings make an important contribution to the literature on HCA. While HCA is often presented as a normative ideal, this research demonstrates that empathy in

automated communication has a concrete and measurable effect on how citizens experience administrative processes (Verhoef et al., 2011; OECD, 2024).

Even without direct human interaction, an empathetic tone can contribute to a sense of acknowledgment and understanding. This aligns with previous research showing that citizens can feel "seen" even in fully digital interactions through careful use of language and framing (Beck & Ranchordás, 2024; Lindgren & Madsen, 2025). The human dimension of public service delivery does not disappear, but shifts to communication design. It is seen that transparency, despite its prominent role in the literature, had no independent significant effect on experienced ABs. Previous studies suggest that transparency can reduce learning and compliance costs by providing greater clarity and predictability (Ball, 2009; Christensen et al., 2020; Halling & Baekgaard, 2023). The absence of such an effect in this study suggests that transparency on its own may be insufficient in an emotionally charged context such as blame communication. A plausible explanation is that transparency primarily appeals to cognitive needs, whereas ABs in this context are highly emotional. Empathy, therefore, appears to be a necessary vignette for transparency to effectively reduce ABs (Ranchordás, 2022; OECD, 2024).

The analyses of demographic differences further show that the effects of empathic communication are relatively consistent across different groups of citizens, including age, education level, and gender. Although descriptive differences in experienced ABs were observed, no significant interaction effects were found. This aligns with previous research showing that perceptions of administrative processes do not always differ systematically between groups, despite unequal distributions of ABs (Vogel et al., 2025). At the same time, this finding should be interpreted with caution, as some subgroups in the sample were relatively small, which may have limited statistical power (Herd & Moynihan, 2018; Christensen et al., 2020).

5.2. Conclusion

This study examined the relationship between HCA and the AB citizens face in automated administrative communication. HCA was operationalized through empathy and transparency in communication from the DTA, investigating how these elements contribute to reducing learning, compliance, and psychological costs. In the context of increasing digitalization and

standardization in the public sector, this study offers empirical insights into how human-centeredness can be shaped within automated implementation practices.

The results show that empathy consistently and significantly reduces perceived. Psychological costs appear lower when communication is empathetic, and, to a lesser extent, this pattern also applies to learning and compliance costs. These findings align with the AB theory, which holds that AB arises not only from formal rules but also from how policies are implemented and communicated. The results thus underscore that the design of communication is a crucial part of how citizens experience administrative processes. This study found no significant effect of transparency on perceived AB, suggesting that transparency alone is insufficient to reduce AB. The findings indicate that empathy plays a more important role than simply providing transparency.

Furthermore, the study examined whether the effects of empathy and transparency vary across citizens with different demographic characteristics. Although differences were evident between subgroups at the descriptive level, no statistically significant moderation effects were found. This indicates that empathetic communication is broadly relevant to a diverse group of citizens and not exclusively effective for specific demographic groups.
These findings show the importance of structurally integrating empathy as a core component of HCA within digital and automated implementation practices. The results show that even in highly standardized systems, language and tone can contribute to a more human-centered and just government body.

5.3. Limitations and further implications for research

When interpreting the results of this study, several limitations should be considered, which also offer opportunities for future research.
First, this study used a vignette design, in which respondents responded to a simulated administrative letter. While this method is suitable for investigating causal relationships and maintaining experimental control, the extent to which responses in a hypothetical scenario align with behavior and perceptions in a real-world administrative context remains questionable. In real-world situations, financial, emotional, and legal consequences can have a stronger influence on how citizens experience and respond to administrative communication.

A second limitation concerns the composition and size of the sample. Although educational levels varied, some groups were relatively small, particularly those with lower levels of education. This may have limited statistical power, potentially missing subtle moderation effects. A larger, more balanced sample would increase the likelihood of reliably identifying differences between subgroups and of drawing more robust conclusions in future research. Furthermore, this study focused exclusively on empathy and transparency as elements of HCA. Other relevant aspects of administrative services, such as the accessibility of contact options, processing speed, or the comprehensibility of procedures, were not considered. However, these factors can also influence the perceived AB and therefore deserve attention in further research. The study is entirely quantitative. While this approach provides insight into general patterns and correlations, it remains unclear how citizens experience and interpret administrative communication. Future research could therefore benefit from qualitative methods, such as interviews or focus groups, to gain deeper insight into citizens' experiences, emotions, and considerations in real-world administrative situations.

Finally, future research could examine other potential moderators, such as prior experience with the government, income, or trust in government agencies. It is also relevant to investigate how empathetic communication can be integrated into automated and digital systems and how specific elements, such as tone, word choice, and framing, contribute individually to reducing ABs.

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Appendix A

Vignette survey

Introduction

Welcome, and thank you for participating in this survey. This research is part of a master's thesis at Leiden University in the field of Public Administration. The purpose of this study is to gain a better understanding of how people experience communication from the Dutch Tax Authority (Belastingdienst). Your participation is voluntary and anonymous. No identifying data will be collected, and your responses will be used solely for academic research purposes. You may withdraw from the study at any time without providing a reason.

By clicking "Agree," you confirm that:

- You are 18 years or ol
- You currently reside in the Netherlands, and
- You agree to participate in this research.

If you have any questions, please contact:
l.l.f.paris@umail.leidenuniv.nl

Part 1

Background

What is your age?

- 18–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65 or older

What is your gender?

- Male
- Female

- Non-binary / Other

What is your highest completed level of education?

- Primary education
- Secondary education (VMBO / HAVO / VWO)
- Vocational education (MBO)
- Higher professional education (HBO)
- University – Bachelor's degree
- University – Master's degree or higher

In which region of The Netherlands do you live?

- Drenthe
- Flevoland
- Friesland
- Gelderland
- Groningen
- Limburg
- Noord-Brabant
- North-Holland
- Overijssel
- Utrecht
- Zeeland
- South-Holland

What is your current employment status?

- Employed full-time
- Employed part-time
- Self-employed
- Student
- Unemployed / seeking work
- Retired

Have you ever received a letter or message from the Dutch Tax Authority (Belastingdienst)?

yes

No

Part 2

In the next part of this survey, you will read a short message from the Dutch Tax Authority. This message describes a situation that many people may recognise. Please read the message carefully and imagine that you personally received it. Try to picture how you would feel, what you would think, and how you might respond if this situation happened to you. After reading the message, you will be asked a few questions about your impression of it. There are no right or wrong answers. I am simply interested in your personal experience. Good luck, And thank you for your participation.

High empathy high transparency

Postbus 100, 6401 AC Heerlen Nederland

Belastingdienst

S.E. de Vries
Zeestraatweg 12
3402 AB Utrecht

Payment Reminder
Income Tax 2024
Year/Period
2024
Date
10 November 2025
Assessment number
45.67.890.L.01

Dear Sir/Madam,

We understand that financial matters can sometimes be unexpected or stressful, and receiving letters like this may feel overwhelming. We would therefore like to inform you clearly and carefully. According to our records, an amount of € 950 remains outstanding following your final income tax assessment for 2024. Your tax return was processed using our automated system, which automatically reviewed your data with support from AI.

In Mijn Belastingdienst, you can see which data was used, how the outstanding amount was calculated, and why this amount remains due. This helps you understand the situation and the steps you may take. The payment deadline for your assessment has passed. To avoid additional costs or a formal reminder, we kindly ask you to transfer the amount of €950 within 14 days. Please include the assessment number 45.67.890.L.01. Once received, the amount will be processed automatically. If you are concerned, have questions, or disagree with the determined amount, please know that you are not alone. You may submit an objection within six weeks. Send a letter to the Tax Administration’s collections department at the address above, including your explanation and the assessment number.

Having trouble paying?
We understand that this can happen. Information about payment arrangements is available via the Tax Information Line (0800- 0543) or on www.belastingdienst.nl.

Yours sincerely,

The inspector

High empathy low transperancy

Postbus 100, 6401 AC Heerlen Nederland

Belastingdienst

S.E. de Vries
Zeestraatweg 12
3402 AB Utrecht

Payment reminder
Income tax 2024
Year/Period
2024
Date
10 November 2025
Assessment Number
45.67.890.L.01

Dear Sir/Madam,

We understand that receiving financial letters can be unexpected or stressful. We therefore aim to inform you as clearly and kindly as possible. According to our records, an amount of €950 remains outstanding following your final income tax assessment for 2024. Your tax return was processed using our system. In mijn belastingdienst, you can view additional information about your assessment if needed.

The payment deadline for your assessment has passed. To avoid additional costs or a reminder notice, we kindly ask you to transfer the amount of €950 within 14 days. Please include the assessment number 45.67.890.L.01. After we receive your payment, the amount will be processed automatically. If you have concerns or disagree with the determined amount, you may submit an objection within six weeks. Send a letter to the Tax Administration's collections department at the address above, and include your explanation and the assessment number. We understand that these situations can raise questions, and you may contact us for further clarification.

Having trouble paying?
We understand that this can happen. Information about payment arrangements is available via the Tax Information Line (0800-0543) or on www.belastingdienst.nl.

Yours Sincerely,

The Inspector

Low empathy high transparency

Postbus 100, 6401 AC Heerlen Nederland

Belastingdienst

S.E. de Vries
Zeestraatweg 12
3402 AB Utrecht

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Income Tax 2024
Year/Period
2024
Date
10 November 2025
Assessment Number
45.67.890.L.01

Dear Sir/Madam,

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The outstanding amount of €950 must be transferred within 14 days. Please include the assessment number 45.67.890.L.01. After your payment is received, the amount will be processed automatically. If you disagree with the determined amount, you may submit an objection within six weeks. Send a letter to the Tax Administration’s collections department at the address above, including your reason and the assessment number.

Having trouble paying?
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Tax Information Line (0800-0543) or on www.belastingdienst.nl.

Yours Sincerely,

The Inspector

Low empathy low transparency

Postbus 100, 6401 AC Heerlen Nederland

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Tax Information Line (0800-0543) or on www.belastingdienst.nl.

Yours Sincerely,

The Inspector

Part 3

Questions answered on 5 point likert scale

Empathy
The letter feels human and understanding, not automated.
The Tax Authority shows understanding for my situation.
The tone of the letter is friendly and respectful.
The tone of the letter makes me feel heard.
The letter comes across as cold and impersonal.

Transparency
The letter clearly explains why I have to pay this amount.
It is clear to me how this amount was calculated.
The reason for this letter is clear.
The letter makes clear which steps I should take next.
The explanation in the letter leaves too many questions open.

Learning cost
It takes effort to understand what the letter says.
I would need help to understand what I should do.
The information in the letter is difficult to follow.
After reading the letter, the purpose is immediately clear to me.

Compliance cost
Responding to this letter would take a lot of time.
I have to take many steps to comply with the instructions.
The procedure to resolve this feels complicated.
I can handle this quickly and with few steps.

Psychological cost
The letter makes me feel stressed.
The tone of the letter makes me feel nervous or uncomfortable.
I feel uncertain about what will happen if I do not respond on time.
The letter reassures me about what will happen.

General View
In this final part, you share your general opinion about how the Dutch Tax Authority (Belastingdienst), should communicate with citizens. There are no right or wrong answers please indicate how much you agree or disagree with each statement.

- The Dutch Tax Authority should balance fairness and efficiencywhen dealing with citizens.
- Communication from the Dutch Tax Authority should always leave room for personal circumstances.
- It is important that citizens can easily contact a real person at the Dutch Tax Authority when they have a problem with a decision.

- I believe the Dutch Tax Authority has become more human and understanding in recent years.
- Digitalisation within the Dutch Tax Authority should never fully replace human judgement in decision-making.
- When the Dutch Tax Authority clearly explains its decisions, I am more likely to see them as fair and reasonable.

if you have any additional comments or thoughts about the
message you read, you can share them below.

Thank you

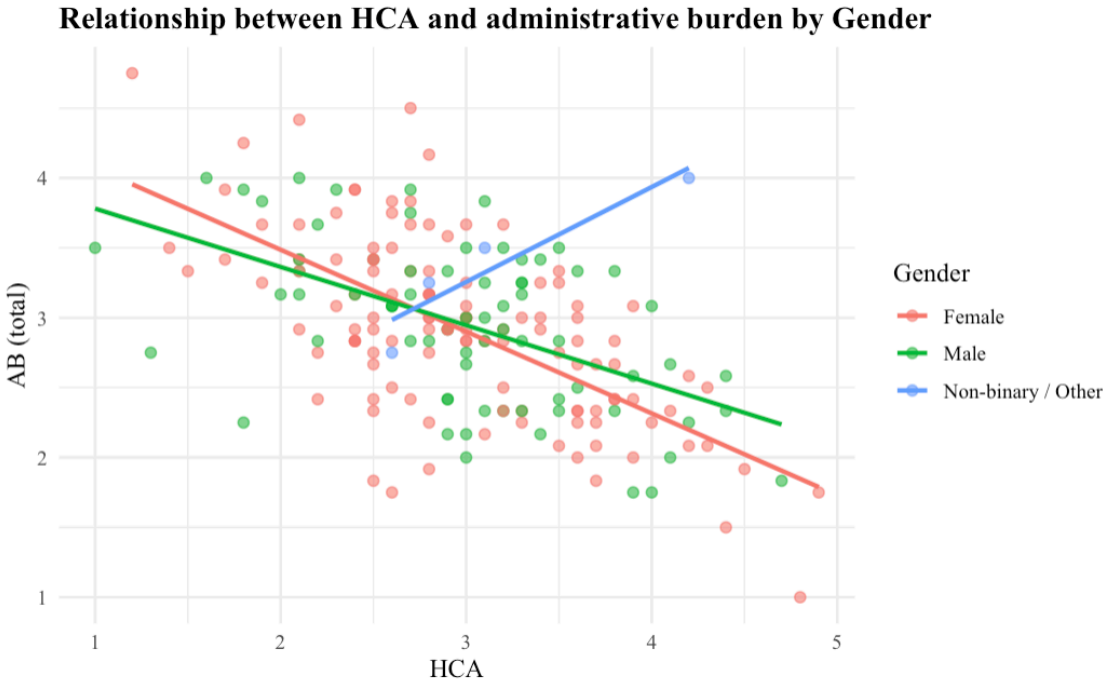
Appendix B

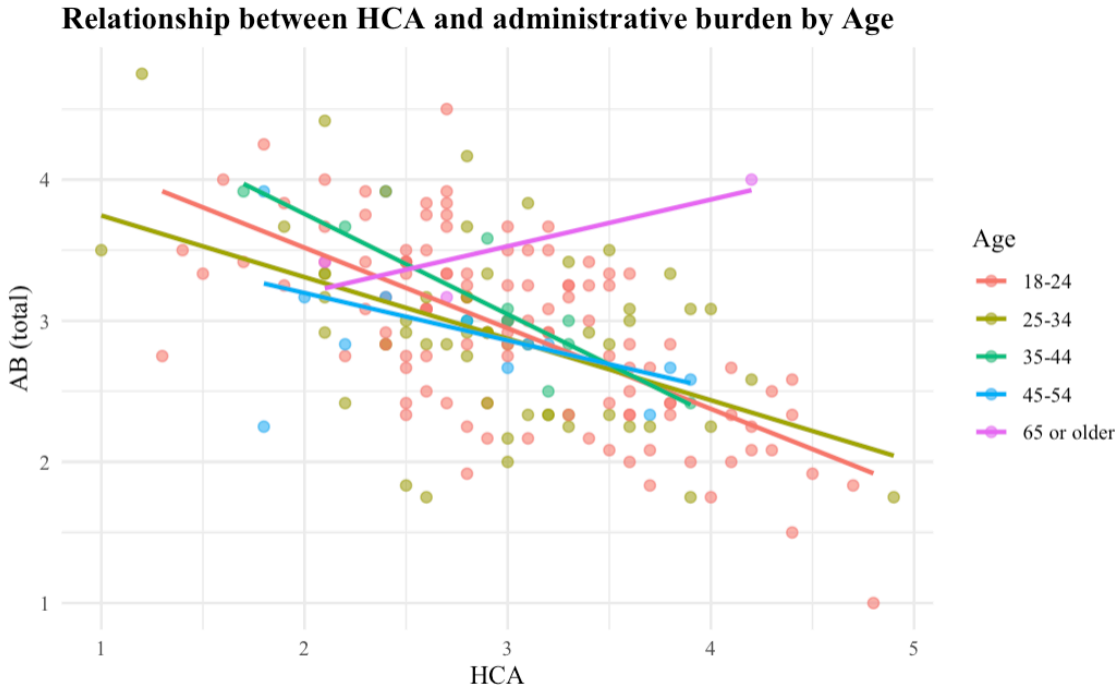
Descriptive statistics of administrative burden by demographic subgroup

Dependent variable	Demographic factor	df	F	p
Total administrative burden	Education	5, 189	1.31	.26
	Age	4, 190	1.17	.32
	Gender	2, 192	0.48	.62
Psychological costs	Education	5, 189	0.93	.46
	Age	4, 190	1.17	.32
	Gender	2, 192	0.52	.60
Learning costs	Education	5, 189	1.18	.32
	Age	4, 190	0.64	.63
	Gender	2, 192	1.87	.16
Compliance costs	Education	5, 189	0.94	.46
	Age	4, 190	1.04	.39
	Gender	2, 192	0.85	.43

Appendix C

Descriptive Figures for Hypothesis 4





Relationship between HCA and administrative burden by Education