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Author(s): Grahn, Hilikka; Häkkinen, Teemu; Taipalus, Toni

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Cognitive Security in a Changing World: Citizen Perceptions During Finland's NATO Joining Process

Hilkka Grahn¹, Teemu Häkkinen¹ and Toni Taipalus^{1,2}

¹University of Jyväskylä, Finland

²Tampere University, Finland

hilkka.grahn@jyu.fi

teemu.hakkinen@jyu.fi

toni.taipalus@jyu.fi

Abstract: Contemporary conflicts are multifaceted and no longer fit the traditional war-and-peace dichotomy due to digital dimensions and the role of the human mind. The concept of warfare has transformed significantly: it's no longer solely reliant on physical capabilities but increasingly fought within digital environments and individuals' minds. These persistent, intertwined crises and psychological information influence present challenges to cognitive security. Psychological influence shapes opinions, attitudes, emotions, behaviors, and decision-making in individuals, groups, and societies using various methods, often involving digital tools to manipulate cognitive processes. It aims to shape the human mind, going beyond altering information to influence how the human brain processes received information. To safeguard human cognition, cognitive security is crucial. It involves the capability to detect, recognize, control, and counter negative psychological information influence aimed at an individual. Cognitive security plays a critical role in enabling individuals and society to recognize, understand, and manage a wide range of threats and risks. The rapidly changing world, driven by technology, politics, and the environment, poses new challenges for citizens' cognitive security. As warfare evolves, individuals struggle to understand the complex threats, including cyber and information influence. Hence, this study aims to ascertain whether individuals' feeling of security has changed and if they are perceiving psychological information influence. The study investigates the sense of security among Finnish people using survey data collected during two significant time periods: after Finland announced its intention to join NATO ($N = 1080$) and after it officially became a NATO member ($N = 1047$). Additionally, whether an increase in hostile online influence and disruptions in the cyber environment was noticed by Finnish people during these same time frames is being investigated. The results indicate a statistically significant decrease in the feeling of security and a significant increase in the awareness of hostile influences. This implies that these phenomena warrant further investigation to gain a better understanding of citizens' cognitive security status and to explore ways to improve it.

Keywords: Cognitive Security, Cognitive Warfare, Cognitive Dimension, Psychological Information Influence, Feeling Of Security, Trust

1. Introduction

Traditionally, war has been viewed as dichotomous – either there is war or there is peace. However, contemporary conflicts are complex and diverse, no longer adhering to traditional models of warfare. For example, in Russian military thinking, the premise is that the boundary between war and peace can be easily blurred in the digital dimension without formally crossing the border (Giles, 2016). The perception of war has thus undergone a significant change: combat no longer relies solely on physical capabilities, but battles are increasingly fought in digital environments and within people's minds (Robinson, Jones and Janicke, 2015; NATO, 2016; Lehto, 2018; Kania, 2019; Claverie and Cluzel, 2022; Danyk and Briggs, 2023). The primary and crucial battleground for the new generation of warfare is identified as the cognitive dimension, that is, the human mind (Bērziņš, 2019; Tashev, Purcell and McLaughlin, 2019). We have thus moved from the traditional dichotomy to an era of gray instability (e.g., Morris et al., 2019, p. 8): we can no longer unequivocally say whether it is war or peace.

A crucial aspect within the cognitive dimension is psychological information influence. This influence involves employing strategies and actions aimed designed to shape the attitudes, emotions, opinions, actions, and decision-making of individuals, groups, and societies using various methods (e.g., Starbird, Arif and Wilson, 2019; Tashev, Purcell and McLaughlin, 2019). Influence often involves the use of digital tools to shape human cognitive processes (Claverie and Cluzel, 2022). The target of psychological information influence is thus the human mind. Such actions go beyond mere information manipulation – psychological information influence seeks to impact how the human brain processes the received information (Claverie and Cluzel, 2022).

One of the fundamental human needs is security (Maslow, 1943), and a crucial aspect of this is cognitive security, closely related to the previously mentioned psychological information influence. Cognitive security plays a critical role in enabling individuals and society to recognize, understand, and manage a wide range of threats

and risks. As described by Grahn and Taipalus (2023), cognitive security encompasses a state and process wherein undesired malign influence or manipulation is incapable of altering human cognition. This alteration of human cognition includes aspects such as opinion formation and decision-making. Cognitive security holds immense significance in today's landscape, given that Large Language Models (e.g., ChatGPT) and social media platforms enable the rapid and widespread creation and dissemination of disinformation with unprecedented ease and speed. For instance, according to Evans (2022), Russia used TikTok to spread disinformation regarding the Ukrainian war. Also, different newspapers and magazines have reported Russia's disinformation campaigns in TikTok (e.g., Brown, 2022; Paul, 2022). The Russian invasion of Ukraine in 2022 has even been characterized as "the world's first TikTok war" (Chayka, 2022). Actually, in the World Economic Forum's Global Risk Report (2024), misinformation and disinformation were identified as the most severe global risks over the next two years, exacerbating societal and political divides. Goldstein et al. (2023) predicted that language models are likely becoming more usable, reliable, and efficient, thereby providing distinct advantages to propagandists. This evolution is expected to introduce new tactics of influence, making campaign messaging more tailored and potentially more effective. Additionally, the rapidly changing world also poses new challenges to citizens' cognitive security. Technological, political, and environmental factors increasingly impact people's daily lives. Due to these factors and the evolving nature of warfare, individuals find it increasingly difficult to comprehend the complex threats of the modern world, including the potential for hostile cyber and information influence.

In Finland, a neighboring country of Russia, the information landscape has changed since the onset of the Ukrainian war and the decision to join NATO. Consequently, it becomes imperative to delve deeper into Finland's information landscape and explore citizens' perceptions of malign influence and their sense of security. In line with this perspective, we have formulated the following research questions:

1. To what extent do Finnish individuals perceive malign influence?
2. How do Finnish individuals assess their overall level of safety?
3. To what extent has the decision to join NATO influenced the way Finnish individuals perceive malign influence and evaluate their overall sense of safety?

To investigate these aspects, we utilized openly available datasets compiled by Statistics Finland and the Prime Minister's Office for the years 2022 and 2023. These datasets include inquiries related to the perception of malign influence, internet service disruptions, as well as the sense of security and trust, and provide a representative view on the topic.

2. Materials and Method

2.1 Data

The openly available datasets used in this study were derived from Statistics Finland and the Prime Minister's Office's Citizens' Pulse (2022, 2023) surveys conducted in the years 2022 and 2023. Data for the year 2022 was collected in June, while data for the year 2023 was collected in August. These datasets were chosen because, in May 2022, Finland announced its interest in joining NATO, and by April 2023, Finland had become a NATO member. Although there is a couple of months' delay in 2023 between the country's NATO membership and the data collection, no earlier dataset was accessible for analysis.

According to the description of the datasets (Statistics Finland & the Prime Minister's Office, 2022; 2023), both datasets' samples were composed of individuals aged 15 to 74 living in mainland Finland. Invitations to participate in the study, along with a personal direct link to a Webropol survey, were sent to respondents via text message. The text message also included a link to the Statistics Finland data collection webpage, where participants were informed about aspects such as data protection. The data collection page contained a link to the privacy notice. The surveys were web-based, self-administered structured questionnaires containing 58 Likert-style questions in the year 2022 and 57 questions in the year 2023. Both samples are considered representative of the Finnish citizen population.

2.2 Analysis

To analyze the possible change in perceptions among the Finnish people, we employed IBM SPSS Statistic 29.0.1.1. A Mann-Whitney U test, a rank-based nonparametric test, was chosen for assessing differences between two groups on ordinal dependent variables. In this context, the tested dependent variables were ordinal, and the independence of observations justified the use of the selected test. The distributions of scores

for both years 2022 and 2023 were similar in all Mann-Whitney U tests assessed by visual inspection, unless otherwise reported. A significance level (alpha) of 0.05 was applied in all statistical tests.

3. Results

3.1 Descriptive Statistics

The dataset for the year 2022 consisted of 1080 participants, including 510 males, 564 females, and 6 individuals who did not specify their gender. The distribution of ages is visually depicted in Figure 1, showcasing representation across different age categories. The mean age falls within the 45–49 years old category.

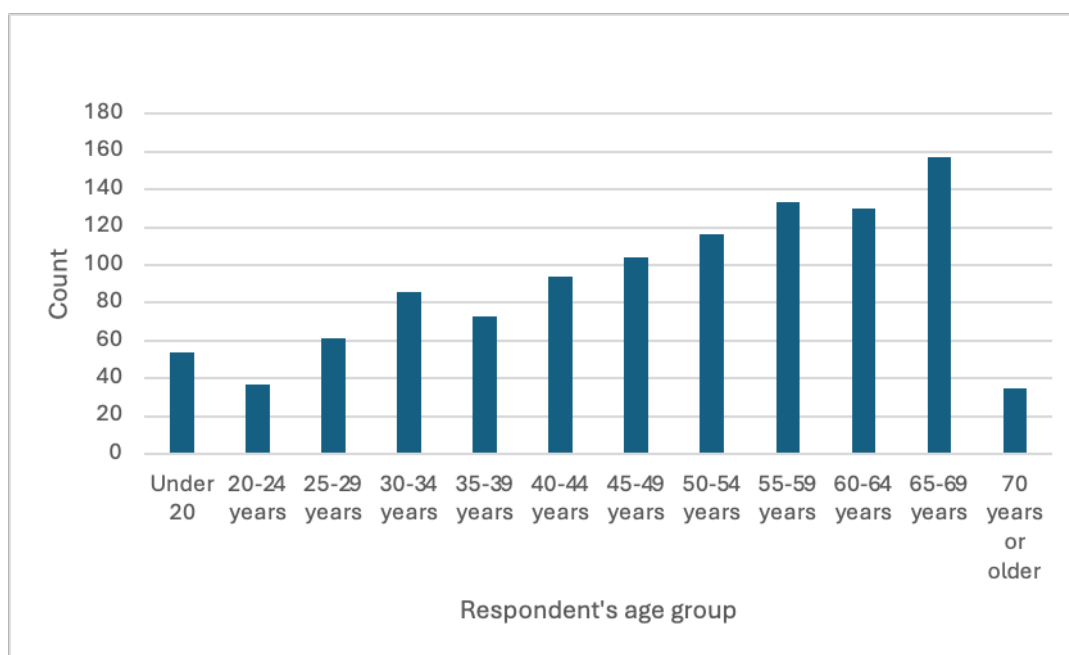


Figure 1: Age distributions in the 2022 data set

The sample size (N) for the 2023 dataset was 1047, comprising 475 males, 564 females, and 8 participants who did not specify their gender. The mean age category in this dataset was 45–49 years old, as illustrated in Figure 2, which displays the distribution across different age categories.

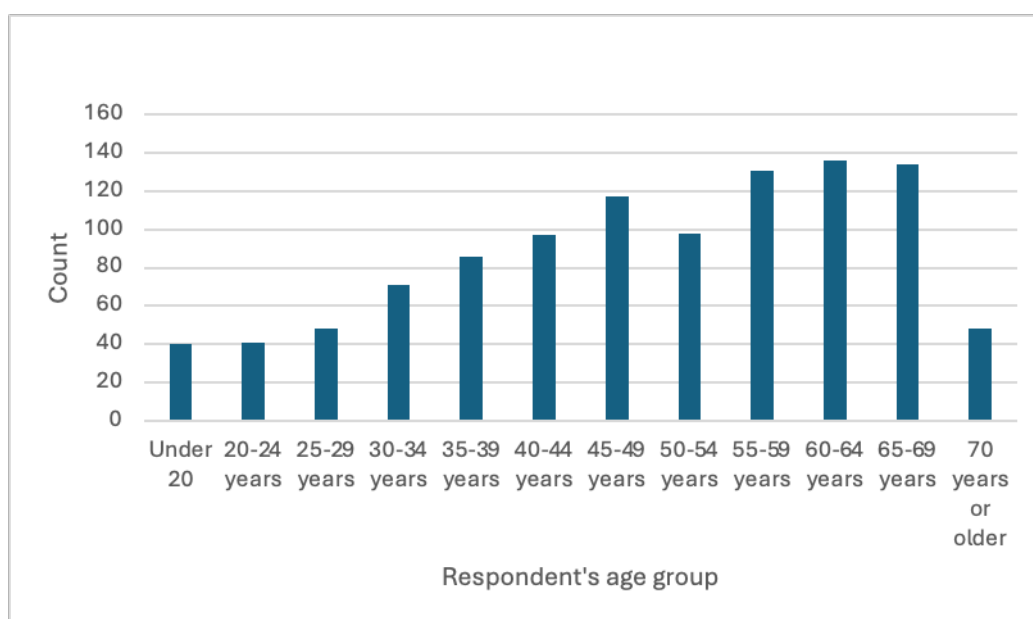


Figure 2: Age distributions in the 2023 data set

3.2 Influence Attempts and Internet Malfunctions

The survey question indicating influence attempts was “Have you observed any of the following first-hand in the past month: Attempts to influence others by spreading deliberately misleading information on the internet or social media?” (1 being none and 5 being very much). In the year 2022 ($N = 977$), the mean was 2.44, standard deviation 1.13, and median 2.00. In 2023 ($N = 903$), these values were mean 2.79, standard deviation 1.22, and median 3.00. As justified earlier, A Mann-Whitney U test was run to determine if there were differences in observations of attempts to spread misleading information on the internet between years 2022 and 2023. A statistically significant difference was observed between the years 2022 and 2023 ($U = 6.318$, $p < .001$), with the year 2023 indicating more observations of misleading information.

The survey question indicating internet malfunctions was “Have you observed any of the following first-hand in the past month: Malfunctions in internet services or issues related to personal data security?” (1 being none and 5 being very much). In the year 2022 ($N = 1006$), the mean was 1.85, standard deviation 0.89, and median 2.00. In 2023 ($N = 959$) these values were mean 1.98, standard deviation 0.92, and median 2.00. Similarly, the difference between years 2022 and 2023 the observed malfunctions of internet services and personal data security was tested. A statistically significant difference was observed between the years 2022 and 2023 ($U = 3.173$, $p = .002$), with the year 2023 indicating more observations of internet malfunctions.

3.3 Feeling of Safety

The survey question indicating feeling of safety was “To what extent do you agree or disagree with the following statement? I feel that my life is safe” (1 being totally disagree and 5 = totally agree). In the year 2022 ($N = 1073$), the mean was 4.12, standard deviation 0.77, and median 4.00. In 2023 ($N = 1043$), these values were mean 4.02, standard deviation 0.79, and median 4.00. According to the Mann-Whitney, there were also differences in feeling of being safe between years 2022 and 2023. A statistically significant difference was observed in the feeling of being safe between the years 2022 and 2023 ($U = -3.465$, $p < .001$), with the year 2022 indicating higher sense of safety.

Another question related to safety was associated with NATO. In year 2022, the survey inquired, “Finland has applied to become a member state of the military alliance NATO. How has this impacted your sense of safety when compared to the time period prior to Finland's application?”. In the year 2023, after joining NATO, the question was modified to “Does Finland's NATO membership affect your sense of security?”. Here, 1 indicated weakening, and 5 indicated strengthening. In the year 2022 ($N = 1038$), the mean was 3.66, standard deviation 0.94, and median 4.00. In 2023 ($N = 1011$), these values were mean 4.08, standard deviation 0.90, and median 4.00. Again, there was a statistically significant difference between the years in the feeling of security ($U = 10.996$, $p < .001$), but now indicating an improvement in the sense of safety among Finnish people in year 2023.

3.4 Trust in Finnish Defense Forces

Trust in the Finnish Defense Forces was also assessed in the survey with a question “How much do you personally trust the following institutions? Finnish Defense Force”, with a scale of 1 indicating zero trust and 10 indicating full trust. In the year 2022 ($N = 1043$), the mean was 8.58, standard deviation 1.31, and median 9.00. In 2023 ($N = 1013$), these values were mean 8.53, standard deviation 1.40, and median 9.00. In this case, there was no significant difference between the years 2022 and 2023 ($p = .772$); the level of trust remained consistent.

4. Discussion

In this study, our objective was to examine potential changes in the perceptions of Finnish individuals regarding malign influence, internet malfunctions, sense of security, and trust in the defense forces following Finland's NATO membership, as compared to the period approximately a year before when Finland expressed its intention to join NATO. To achieve this, we conducted a comparative analysis of two survey datasets collected in the specified years.

The findings suggest that following Finland's NATO membership, Finnish individuals have observed an increase in attempts to exert malign influence through the deliberate dissemination of misleading information on the internet or social media compared to the preceding year. Additionally, Finnish citizens have observed more internet service malfunctions and concerns related to personal data security after Finland joined NATO, surpassing the levels observed in the year prior to the alliance. However, these observations were still at a relatively low level on a scale from 1 to 5. The observed increase in Finnish individuals' awareness of malign

influence, particularly in the form of misleading information on digital platforms, aligns with the evolving landscape of information warfare (e.g., Giles, 2016). Simultaneously, as Finnish individuals have noted an increase in malign influence and internet malfunctions, their overall sense of security has diminished over the course of the year. This sentiment was measured simply with the questionnaire item "I feel my life is safe." The simultaneous decrease in the overall sense of security among Finnish individuals in response to heightened malign influence and internet malfunctions introduces a complex dynamic. This suggests that while advances in digital communication bring about conveniences, they also introduce vulnerabilities that impact individuals' perceptions of safety.

In 2022, prior to joining NATO, respondents were asked about the potential impact of NATO membership on the sense of security among the Finnish people. Subsequently, after joining, they were questioned about whether NATO membership affected their personal sense of security. Interestingly, an increase in the feeling of security was observed. This is in contrast to the initial observation when the question was phrased simply as "I feel my life is safe." Notably, the introduction of NATO into the question appeared to positively influence the sense of security among Finnish respondents. The dynamic relationship between the introduction of NATO into the questionnaire and the heightened sense of security raises questions about the psychological influence of collective security agreements on individuals' perceptions. Exploring this phenomenon deeper could shed light on the intricate connections between geopolitical affiliations and citizens' sense of safety.

As noted in the literature, the Russian military perspective emphasizes the blurring of boundaries between war and peace in the digital dimension (Giles, 2016), a notion that resonates with our findings of increased attempts at malign influence and internet malfunctions following Finland's NATO membership. However, it should be noted that these are perceptions among the Finnish people, and there is no knowledge of the actor behind the observed malign influence and internet malfunction. Nevertheless, this shift challenges the conventional understanding of warfare, extending it beyond physical capabilities to include battles fought in digital environments and within the cognitive realm (Robinson, Jones and Janicke, 2015; NATO, 2016; Lehto, 2018; Kania, 2019; Claverie and Cluzel, 2022; Danyk and Briggs, 2023). The results also support the idea that the cognitive dimension, the human mind, is another battleground in this new era of warfare (Bērziņš, 2019; Tashev, Purcell and McLaughlin, 2019). The observed changes in Finnish individuals' perceptions of malign influence, alterations in their sense of security, and the paradoxical influence of NATO membership on their feelings of safety reflect the profound impact of geopolitical events on the cognitive landscape.

Furthermore, we sought to explore whether joining NATO or recent global events has affected the level of trust in the Finnish defense forces. According to the questionnaire results, the trust level has remained consistent regardless of world events or NATO membership. It's noteworthy that the trust level is notably high, with a median score of 9 on a scale ranging from 1 to 10. While influence operations have been identified as potential factors eroding trust (e.g., Goldstein et al., 2023), it appears that, at least in this instance, the observed malign influence has not impacted this particular trust metric. This aligns well with the broader Finnish cultural context, where trust in institutions has historically been robust (Simonen et al., 2022).

Overall, malign influence, internet malfunctions, the overall feeling of security, and trust in various institutions collectively form essential components of the aforementioned cognitive security. While these individual questions analyzed here offer a valuable starting point for examination, it is important to recognize that these isolated inquiries may not fully encompass the complexity of the entire phenomenon.

4.1 Limitations and Further Research

This study comes with limitations which should be considered when interpreting the obtained results. While efforts were made to capture the period encompassing Finland's decision to join NATO in May 2022 and its subsequent NATO membership in April 2023, there exists a time gap of a couple of months between the official NATO accession and the data collection in 2023. This limitation implies that the immediate aftermath of Finland's NATO membership might not be fully represented in the collected data. Another limitation arises from the modification of the survey question between 2022 and 2023, transitioning from an inquiry about the impact of Finland's application to become a NATO member to a question specifically addressing the effect of Finland's NATO membership on the sense of security. While this modification was essential for capturing evolving perceptions, it introduces a challenge in directly comparing the responses between the two years. The nuanced wording differences may influence participant interpretations and responses, potentially impacting the coherence of the comparative analysis. Also, while the statistical tests revealed significant differences among the variables, it's crucial to note that these differences, though statistically significant, were of a small

magnitude. Nevertheless, it is noteworthy that the robustness of our findings is supported by a substantial sample size in the surveys. While a larger sample size can enhance the reliability of findings, it is important to interpret results with caution and consider both statistical and practical significance. Finally, to delve deeper into this issue and gain a comprehensive understanding of cognitive security, a more nuanced and holistic approach is essential. Moving beyond the analysis of individual components, a thorough investigation should explore the intricate interconnections and interdependencies among these aspects. The use of a validated quantitative measurement instrument would facilitate a more precise and insightful exploration of the broader cognitive security landscape, unveiling its dynamic interplay with various factors.

5. Conclusions

The evolving landscape of contemporary conflicts, as discussed by Giles (2016), challenges the traditional dichotomy of war and peace. With the integration of digital dimensions and the significance of the human mind, warfare has undergone a profound transformation. No longer confined to physical capabilities, conflicts are increasingly waged in digital environments and within the cognitive realm of individuals' minds (Bērziņš, 2019; Tashev et al., 2019). Within the cognitive dimension, psychological information influence plays a role and is linked to cognitive security. As described by Grahn and Taipalus (2023), cognitive security encompasses a state and process wherein undesired malign influence or manipulation is incapable of altering human cognition. This alteration of human cognition includes aspects such as opinion formation and decision-making. The findings of the study underscore the impact of Finland's NATO membership on the cognitive security landscape. The observed increase in attempts to exert malign influence and the rise in internet malfunctions and personal data security concerns among Finnish citizens after joining NATO indicate the complex interplay between geopolitical events and cognitive security. Simultaneously, the study reveals a nuanced dynamic, as the introduction of NATO into the questionnaire positively influences the sense of security among respondents. In essence, the results contribute to the broader understanding of how contemporary conflicts are reshaping the cognitive dimension of warfare, emphasizing the need for nuanced approaches to security in an era characterized by gray instability. The study also suggests that due to the broad and intricate nature of cognitive security, a more comprehensive metrics to measure it is needed.

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