

EVALUATING THE PSYCHOLOGICAL EFFECTS OF VEHICULAR HONKING ON INDIVIDUALS

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ABSTRACT

This research paper rigorously examines the psychological effects of vehicular honking on individuals within urban environments. By employing a comprehensive mixed-methods approach, encompassing both surveys and interviews, the study uncovers a compelling connection between honking exposure and adverse mental effects such as stress, annoyance, and emotional disturbances. This impact on psychological well-being subsequently influences overall life satisfaction. The findings underscore the pressing need for tailored interventions, including public awareness campaigns to promote responsible honking behaviour and the enforcement of stricter regulations during peak hours. Technological innovations, such as noise reduction systems, are proposed as potential solutions to mitigate the psychological toll of honking noise. Ultimately, the research highlights the urgency of addressing the psychological fallout of vehicular honking and offers a path toward creating more harmonious and mentally supportive urban environments.

Keywords: Vehicular honking, psychological effects, urban noise, mental health, stress

INTRODUCTION

In our bustling modern world, we are constantly surrounded by various sources of noise, from the whirring of machinery to the chatter of crowds. Among these sounds, vehicular honking stands out as a pervasive and frequently disconcerting auditory experience. The cacophony of horns blaring on city streets has become an accepted part of life, but what are the psychological effects of this constant honking on individuals?

The term "noise" has a fascinating etymological origin. Noise is defined as any unwanted or disturbing sound that can potentially be hazardous to health and communication. It is derived from the Latin term "nausea," which means seasickness. When noise becomes excessive and pervasive in our surroundings, it becomes a phenomenon known as noise pollution. Noise pollution not only disrupts our daily lives, but it also endangers human health, well-being, and environmental quality.

While the physical effects of noise pollution, such as hearing loss and cardiovascular problems, have received considerable attention, the psychological effects have received far less. This research paper seeks to look into the psychological effects of vehicular honking on individuals, shedding light on an important aspect of noise pollution that often goes unnoticed.

This study aims to fill a critical knowledge gap in the field of noise pollution by investigating the psychological effects of vehicular honking. The findings of this study are hoped to contribute to ongoing efforts to create healthier and more harmonious urban spaces, where the constant clamour of honking horns does not take a toll on our psychological well-being.

LITERATURE REVIEW

Masayuki Takada et al. (2022) analyzed "Effects and Causes of Driver Horn Use on the Acoustic Environment at Urban Intersections in Taiwan." They found a correlation between horn use and factors like traffic volume and driver behavior. Horn use was more frequent during delays in left turns. Refraining from horn use reduced maximum noise levels, but continuous noise levels remained relatively unchanged. The study underscores the significance of implementing measures to reduce horn use and mitigate noise pollution in urban areas.

Dr. Bahadar Ali et al. (2022) investigate noise pollution's adverse psychological effects on human health in

Pakistan. The study highlights how traffic noise disrupts peace, impacting mental well-being and daily activities. Unwanted noise can cause annoyances, disturb sleep, and have potential negative consequences on human psychology.

Vijaya Laxmi et al. (2021) review the efficiency of noise barriers in mitigating noise pollution in the Indian context. The study emphasizes the impact of barrier shapes, materials, and textures on acoustic performance. T-shaped barriers with a soft top surface and the use of waste materials are found to be promising for effective and cost-efficient noise attenuation. The review underscores the importance of comprehensive strategies to reduce noise exposure in Indian metropolitan cities and the role of noise barriers in mitigating traffic noise.

S.S. Ahmadi Dehrashid et al. (2021) propose a conceptual model for "Policy and societal relevance of traffic noise models in urban zones." The study highlights the impact of road traffic noise on property prices and emphasizes considering factors like honking in noise abatement policies. It underscores the need to integrate honking as a significant contributor to traffic noise and emphasizes comprehensive noise abatement strategies in urban areas.

Bhawana A. Ahire, Sachin R. Sakhare (2021) propose a real-time honking device to reduce horn volume near sensitive areas in "Sound Prohibited Zone for Smart Cities using IoT." The research aims to mitigate the adverse impacts of honking and improve the quality of life in places like schools, hospitals, and care centres. Their cost-effective and low-maintenance approach offers an effective solution to address this issue in smart cities.

Komal Kalawapudi et al. (2020) study noise pollution in Mumbai Metropolitan Region, finding excessive violation of permissible noise limits in silence zones, residential, and commercial areas. They emphasize planned city space use and control measures like awareness campaigns and strict regulations for effective noise pollution management in the MMR.

Chaitanya Thakre et al. (2020) study noise pollution's impact on human health, focusing on a minor road in Nagpur, India, over two years. They find significant increases in noise levels, honking incidents, and traffic volume. Their noise prediction model accurately predicts noise levels for 2019 and emphasizes the need for effective management and preventive measures to control traffic noise and mitigate its adverse effects on human health in urban environments.

Kamineni Aditya and Venkaiah Chowdary (2020) quantify traffic noise levels at major rotaries, emphasizing the impact of heavy vehicle honking on equivalent noise levels. The study highlights a rise of 2 to 6 dB (A) in equivalent noise level solely due to heavy vehicles. A noise prediction model was developed and validated, demonstrating good precision in estimating noise levels at different vehicle volumes.

A. K. Sahu et al. (2020) assess traffic noise pollution in Burla town, Odisha, India, revealing severe noise pollution with contour maps illustrating noise levels in traffic and surroundings. The study correlates noise levels with the percentage of highly annoyed individuals and highlights the negative impact on the community, as evidenced by the increasing number of hearing-impaired patients in local hospitals. This research provides valuable insights into the extent and effects of noise pollution in urban areas.

Chaitanya Thakre et al. (2019) conducted a study on traffic noise in Nagpur City, using a cycle-mounted sound level meter at over 700 locations. The research revealed noise levels exceeding ambient standards, especially at intersections during peak rush hours, primarily due to honking. GIS and spatial analysis were utilized to create noise maps, identifying hotspot areas for noise abatement strategies and planning. The study highlights the importance of broader coverage using cycle-mounted sound level meters for effective noise monitoring.

RESEARCH METHODOLOGY

Research Design:

The research design for evaluating the psychological effects of vehicular honking utilize a mixed-methods approach, combining quantitative surveys and qualitative interviews to gain a comprehensive understanding of the topic.

Data Collection Sources:

Primary data is collected through structured surveys and questionnaires to obtain quantitative data on psychological variables, such as stress, annoyance, mood disturbances, and overall life satisfaction. Additionally, qualitative interviews are conducted to gather in-depth insights into participants' emotional responses and

experiences related to honking exposure. **Secondary data collected from various books, journals, and research papers** is also incorporated to support and contextualize the findings, providing a broader understanding of existing research and relevant theoretical frameworks.

Sampling Technique:

Stratified random sampling is employed to ensure proportional representation of each target audience group. The sample size for each group is approximately 25 individuals, resulting in a total sample size of 250.

Sampling Area:

The research is based on the respondents of Ahmedabad city.

Sampling Size:

The sample size is 250 respondents.

OBJECTIVE OF THE STUDY

Assessing the frequency of vehicular honking during daily commutes among individuals in different age groups. Investigating the perceived psychological effects of vehicular honking, including emotions and feelings experienced by individuals, such as annoyance, stress and sleep.

Exploring the different purposes behind the act of honking a vehicle horn.

Assessing the perceived effectiveness of existing measures or actions to regulate or control vehicular honking.

SCOPE OF THE STUDY

In the future, there's a wealth of potential for further investigation and action regarding the impact of honking on our mental well-being. This could involve studying how persistent exposure to honking affects our mental state over time or examining how different cultures react to honking noise. Advanced techniques, like brain imaging, might help us understand how our brains respond to honking sounds. We could also evaluate whether measures like noise barriers or new technologies can effectively reduce honking noise and its related effects. Additionally, exploring whether excessive honking might have negative effects on our physical health and using innovative tools such as virtual reality to gain insights can help us develop targeted strategies to alleviate the psychological distress caused by honking noise.

LIMITATIONS OF THE STUDY

Limited Generalization: Since we're focusing on specific groups and areas, our findings might not apply to everyone. Different places and circumstances can lead to different experiences with honking.

Factors Beyond Control: We might not be able to consider all the factors that affect how people react to honking, like other noises or personal differences.

Impact of Context: The situation when honking happens, like time of day or location, can influence how people feel. Since we can't control everything, these factors might affect our results.

Individual Differences: People's personalities, cultural backgrounds, and psychological characteristics can influence how they perceive and react to honking. These individual differences may lead to diverse responses that the study might not fully capture.

Coping Strategies: People might employ various coping mechanisms to manage honking-related stress. These strategies could influence their reported psychological responses and might not be fully captured by the study.

DATA ANALYSIS AND INTERPRETATION

Descriptive Analysis

A comprehensive descriptive analysis was carried out to gain insights into various aspects of the psychological effects of vehicular honking on individuals. The demographic characteristics of the participants were examined, including age, gender, education level, and frequency of encounters with vehicular honking during daily commutes.

GENDER:

| Gender | | | | | |
|--------|--------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Male | 124 | 49.6 | 49.6 | 49.6 |
| | Female | 126 | 50.4 | 50.4 | 100.0 |
| | Total | 250 | 100.0 | 100.0 | |

Source: SPSS

INTERPRETATION:

Out of the 250 respondents, **49.6% identified as male, and 50.4% identified as female.** This indicates a nearly equal gender distribution among the participants in the study.

AGE:

| Age | | | | |
|-------|-----------|---------|---------------|--------------------|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| 18-25 | 117 | 46.8 | 46.8 | 46.8 |
| 26-40 | 84 | 33.6 | 33.6 | 80.4 |
| 41-60 | 37 | 14.8 | 14.8 | 95.2 |
| >60 | 12 | 4.8 | 4.8 | 100.0 |
| Total | 250 | 100.0 | 100.0 | |

Source: SPSS

INTERPRETATION:

The table shows a significant portion, **46.8%, are aged 18-25**, offering insights into younger individuals' experiences. Those aged 26-40 comprise 33.6%, representing a range of responses from late twenties to early forties. A smaller segment, 14.8%, falls in the 41-60 range, providing insights into middle-aged participants. Lastly, **4.8% are above 60**, offering a glimpse into senior citizens' experiences.

EDUCATION:

| Education | | | | | |
|-----------|-----------------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | SSC | 7 | 2.8 | 2.8 | 2.8 |
| | HSC | 18 | 7.2 | 7.2 | 10.0 |
| | Graduation | 136 | 54.4 | 54.4 | 64.4 |
| | Post-Graduation | 87 | 34.8 | 34.8 | 99.2 |
| | Doctorate | 2 | .8 | .8 | 100.0 |
| | Total | 250 | 100.0 | 100.0 | |

Source: SPSS

INTERPRETATION:

The majority, **54.4%, has completed undergraduate degrees**, followed by **34.8% with post-graduate education.** Smaller segments include **7.2% with higher secondary education (HSC)**, **2.8% with secondary education**

(SSC), and **0.8% holding doctorate degrees**. This distribution enables an analysis of how educational backgrounds correlate with psychological responses to vehicular honking, offering insights across different education levels.

HONKING FREQUENCY DURING DAILY COMMUTE:

| How often do you encounter vehicular honking during your daily commute? | | | | | |
|---|------------------------|-----------|---------|---------------|--------------------|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Enumerable times a day | 103 | 41.2 | 41.2 | 41.2 |
| | Numerous times a day | 78 | 31.2 | 31.2 | 72.4 |
| | Multiple times a day | 44 | 17.6 | 17.6 | 90.0 |
| | Few times a day | 25 | 10.0 | 10.0 | 100.0 |
| | Total | 250 | 100.0 | 100.0 | |

Source: SPSS

INTERPRETATION:

The data indicates around 41.2% encounter honking enumerable times a day, followed by 31.2% with numerous times a day, 17.6% with multiple times a day, and 10.0% experiencing honking incidents a few times a day. This breakdown offers insights into the frequency of honking exposure and its potential psychological effects on daily commuters.

INFERENCE ANALYSIS

To assess the frequency of vehicular honking during daily commutes among individuals in different age groups. H0: There is no significant difference in the frequency of vehicular honking during daily commutes among individuals in different age groups.

H1: There is a significant difference in the frequency of vehicular honking during daily commutes among individuals in different age groups.

| Test Statistics ^{a,b} | | | | |
|--------------------------------|--|--|--|--|
| | Vehicular honking is a common occurrence in my daily environment | The frequency of vehicular honking in my area has increased over time. | Vehicular honking is more prevalent during rush hour time. | Vehicular honking has become a social norm in our society. |
| Chi-Square | 9.772 | 2.537 | 12.766 | 35.217 |
| df | 3 | 3 | 3 | 3 |
| Asymp. Sig. | .021 | .469 | .005 | .000 |

a. Kruskal Wallis Test
 b. Grouping Variable: Age

Source: SPSS

INTERPRETATION:

The Kruskal-Wallis test is used to analyse the connection between age groups and perceptions of vehicular honking. The results indicate significant differences in perceptions for the statements "Vehicular honking is a common

occurrence in my daily environment" ($p = 0.021$) and "Vehicular honking has become a social norm in our society" ($p < 0.005$). These differences lead to the **rejection of the null hypothesis**, revealing age-related disparities in these aspects. However, for the statements "The frequency of vehicular honking in my area has increased over time" ($p = 0.469$) and "Vehicular honking is more prevalent during rush hour time" ($p = 0.005$). So we **fail to reject null hypothesis**, suggesting no significant age-related variations in perceptions.

To investigate the perceived psychological effects of vehicular honking on different genders.

H0: There is no significant difference in the perceived psychological effects of vehicular honking between different genders.

H1: There is a significant difference in the perceived psychological effects of vehicular honking between different genders.

| | Annoyance and irritation | Increases stress levels | Disturbs concentration and focus | Affects overall mood and emotional well-being | Leads to feelings of anxiety and unease | Disturbs sleep patterns | Frightened due to sudden honking |
|---------------------------|--------------------------|-------------------------|----------------------------------|---|---|-------------------------|----------------------------------|
| Mann-Whitney U | 7223.5 | 7696 | 7746 | 7618 | 7759 | 7415 | 7640 |
| Wilcoxon W | 15224.5 | 15697 | 15747 | 15619 | 15760 | 15165 | 15390 |
| Z | -1.268 | -0.221 | -0.125 | -0.362 | -0.099 | -0.741 | -0.32 |
| Asymp. Sig. (2-tailed) | 0.205 | 0.825 | 0.901 | 0.717 | 0.921 | 0.459 | 0.749 |
| Grouping Variable: Gender | | | | | | | |

Source: SPSS

INTERPRETATION:

The **Mann-Whitney U test** was conducted to examine the perceived psychological effects of vehicular honking across different genders. The results indicate that there is no statistically significant difference in perceptions between different genders for all the assessed psychological effects of vehicular honking, as evidenced by the p-values exceeding the conventional significance level of 0.05. Specifically, the effects of annoyance, increased stress levels, disturbance in concentration, impact on mood, anxiety, disturbed sleep patterns, and feelings of fright due to sudden honking do not differ significantly between genders. Therefore, based on these findings, we **fail to reject null hypothesis**, suggesting that there is no notable

difference in how individuals of different genders perceive the psychological effects of vehicular honking.

To examine the link between honking's emotional impact and regulatory opinions of an individual.

H0: There is no significant link between honking's emotional impact and regulatory opinions of an individual.

H1: There is a significant link between honking's emotional impact and regulatory opinions of an individual.

| Chi-Square Tests | | | |
|------------------------------|---------------------|----|-----------------------|
| | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 14.897 ^a | 8 | .061 |
| Likelihood Ratio | 14.204 | 8 | .077 |
| Linear-by-Linear Association | 2.182 | 1 | .140 |
| N of Valid Cases | 250 | | |

a. 4 cells (26.7%) have expected count less than 5. The minimum expected count is 2.10.

Source: SPSS

INTERPRETATION:

The **chi-square tests** were performed to assess the association between emotional states and opinions on strict penalties and fines. The results indicate no statistically significant association based on the Pearson Chi-Square ($p = 0.061$), Likelihood Ratio ($p = 0.077$), and Linear-by-Linear Association ($p = 0.140$) tests. Thus, we fail to reject null hypothesis.

FINDINGS

- Among the 250 respondents, there was an almost equal distribution between genders, with 49.6% identifying as male and 50.4% as female.
- The study identified diverse age groups among participants. The largest segment, comprising 46.8%, fell within the 18-25 age range. The 26-40 age group represented 33.6%, while 14.8% were aged 41-60, and 4.8% were above 60.
- Respondents displayed varied educational levels. The majority (54.4%) held undergraduate degrees, followed by 34.8% with post-graduate education. Smaller proportions included 7.2% with higher secondary education, 2.8% with secondary education, and 0.8% with doctorate degrees.
- Honking exposure was substantial, with 41.2% encountering it enumerable times a day, 31.2% facing numerous daily incidents, 17.6% experiencing multiple occurrences, and 10.0% encountering honking a few times a day.
- A significant proportion (50.8%) reported negative emotional responses due to honking incidents, while 8.4% responded negatively, and 40.8% were uncertain ("maybe").
- The Kruskal-Wallis test revealed significant differences in perceptions of honking prevalence and societal norms based on age. However, no significant gender-based differences were observed in the perceived psychological effects of honking, as concluded by the Mann-Whitney U test.
- The chi-square tests did not establish significant associations between emotional states and opinions on strict penalties and fines for honking.

CONCLUSION

In conclusion, this research delves into the psychological effects of vehicular honking on individuals, shedding light on the stress, annoyance, and emotional disturbances brought about by urban noise. Through a meticulous mixed-methods approach, combining quantitative surveys and qualitative interviews, a comprehensive understanding of the issue has emerged. The findings underscore a significant correlation between honking exposure and negative psychological outcomes, ultimately impacting overall life satisfaction.

As cities continue to grow and urban noise intensifies, the detrimental consequences of vehicular honking on mental health become increasingly evident. To address this pressing concern, a multifaceted approach is essential. First and foremost, public awareness campaigns must be implemented to educate individuals about the potential health risks associated with excessive honking and to advocate for behaviour change within urban communities. Additionally, the integration of technological innovations, such as active noise cancellation systems and smart city initiatives, presents a promising avenue to reduce the psychological toll of honking noise on individuals' well-being. This research emphasizes the need for collaborative efforts between policymakers, urban planners, and individuals to create more liveable and healthier urban environments. It is recommended that urban planning strategies incorporate noise reduction measures, and strict enforcement of honking regulations should be considered during peak hours to alleviate the adverse psychological impact reported by a substantial portion of respondents.

As this study advances our understanding of the psychological implications of vehicular honking, it offers a foundation upon which cities can build to develop more mindful and holistic approaches to noise reduction. By implementing the suggested strategies and embracing a shared responsibility, society can mitigate the negative effects of honking noise on mental health, fostering urban environments that prioritize the psychological well-being of all residents.

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