Where Useful Air Quality Awareness Actually Comes From

This article discusses a subtopic that emerged from a qualitative study, which examined how late adolescents (18–24) in Budapest perceive air pollution, how aware they are of standardised air quality measurements such as the Air Quality Index (AQI), how that awareness shapes their behaviour, and how those behavioural patterns relate to their mental wellbeing. The study, conducted by Filip Kopta during an internship at Clean Air Action Group (Levegő Munkacsoport), combined eight semi-structured interviews with a questionnaire of 27 late adolescents and used the Framework Method for analysis, grounded in an adaptation of the Health Belief Model, which explains preventive health behaviour through six core constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and self-efficacy (Becker, 1974; Gale et al., 2013).

The cross-case analysis, shows a pattern that went beyond the main report's focus on awareness to behaviour gaps: the forms of air quality awareness that actually translated into action were shaped by how air pollution was experienced as a bundle with other urban stressors, and by the delayed ways in which reducing outdoor activity affected mental wellbeing, rather than by AQI literacy alone. This working awareness was usually imported from other cities, embodied through previous health experiences, or activated by designed cues and digital tools that gave concrete, activity specific advice. This article explores that pattern, drawing on under used cells and codes from the framework matrix and positioning them in relation to existing literature on risk perception and adolescent behaviour (e.g. Lynch & Mirabelli, 2021a; Cori et al., 2020).

Imported Awareness: Lived Comparison Across Places

One matrix pattern that the main report only briefly mentions but does not fully unpack is “place comparison/migration”. In six of the eight interviews, interviewees evaluated Budapest air through direct comparison with other places they had lived or spent extended time, such as Alaska, the French countryside, Paris, Lyon, Bayonne or other more polluted European cities. These comparisons were not abstract, they were tied to specific bodily experiences, such as breathing more easily when leaving Budapest, developing headaches on arrival in Paris and Budapest, or feeling a marked difference in freshness at the Atlantic coast versus an inland highway city.

Crucially, those who used such comparative baselines were also more likely to show either calibrated behavioural change or at least a differentiated mapping of the city into “acceptable” and “avoid” zones. For example, one interviewee who had experienced severe pollution elsewhere deliberately chose a peripheral, greener Budapest neighbourhood, limited trips into the centre during sustained bad air periods, and shifted leisure activities to parks or the countryside when AQI readings and personal intuition aligned. Another interviewee, originating from a city she described as “famous in the worst sense” for air pollution, treated Budapest as relatively clean and therefore deprioritised air quality as a daily concern, but still drew on government push alert practices from her home country to define what counts as bad air and justified staying indoors and closing windows on days she would have perceived as dangerous at home.

These patterns echo broader risk perception research, which shows that subjective risk judgements often rest on experiential anchors rather than objective pollutant levels (Cori et al., 2020). Comparative studies in large metropolitan regions have likewise found that residents’ risk perceptions are shaped by how their current city contrasts with other places they know, rather than by ambient concentration data alone (Landeros-Mugica et al., 2023). Recent European

work has even linked perceived air quality and measured pollution to migration choices across cities, suggesting that “air quality imaginaries” can influence where people settle (Vontroba et al., 2025). In the Budapest sample, however, these imaginaries did not generally trigger migration, they instead structured which parts of Budapest participants sought out, avoided, or used as mental benchmarks.

Bundling Air, Noise and Heat: Awareness that is not only about Air

Another underused theme from the interviews is the consistent conflation and bundling of air pollution with other urban stressors, such as noise and heat, implicitly through interviewees’ definitions of bad air. Several interviewees described what bothered them most not as chemical pollution alone, but as the package of exhaust smell, trapped heat between buildings, traffic noise and, in summer, unbreathable hot air.

For instance, one interviewee framed bad air as a mix of particulate risk, noise, and climate-related heat, especially in summer, and explicitly described the experience of big cities as “a mix of the three”. Another described running in Budapest as being affected simultaneously by the smell of exhaust, dust, and the stress of noise: when her mood worsened on those runs, she attributed it to “noise and the smell together,” rather than to air pollution alone. This bundling helps explain why air quality specific campaigns may not fully register, because young people’s lived categories do not neatly separate air from other co-present environmental burdens.

Risk perception reviews note similar blending, finding that people often use sensory cues like odour, visibility, noise as proxies for air quality risk, even when these are imperfect indicators (Liu et al., 2020). Policy discussions on urban environmental justice also show that air and noise pollution exposures tend to co-occur in lower income or otherwise disadvantaged neighbourhoods (Ehler et al., 2023). In the Budapest matrix, this appears qualitatively as

interviewees' descriptions of bad districts where high buildings trap air, noise is constant, and residents are perceived as having less freedom to move elsewhere.

For adolescent audiences, this means that interventions which speak only about air quality in chemical or numerical terms risk missing the categories through which young people actually experience harm. Messages that acknowledge the full sensory and social package are more likely to resonate with their lived reality (Cori et al., 2020; Ehler et al., 2023).

Awareness Without Action, Excuses, and Delayed Effects

One of the inductive codes captured a pattern where participants explicitly recognised that air pollution is harmful and that they could check or act on information, but admitted they did not do so, often citing laziness, habits, or social norms as reasons. One interviewee, an urbanism student, summarised this mode as "I could, but I don't," explaining that entrenched route habits overrode her knowledge that greener alternatives would be healthier. Another, living near a heavily trafficked intersection, stated directly that she "cannot manage" her life around air quality and would go out regardless of the readings, while still reporting that running in such conditions felt physically and psychologically worse.

A particularly revealing variant of this pattern was an asthmatic interviewee who used a dedicated AQI app daily and could accurately estimate current AQI, yet admitted that sometimes, when feeling too tired to run, he would use poor air quality as a "legitimate excuse" to stay indoors, even on days when he later regretted not going out . Here, awareness did not just fail to motivate action, it also provided a justification for inaction that he recognised as partly self-deceptive. Experimental work on environmental cognitive dissonance has documented similar dynamics, showing that when people's environmental values conflict with their behaviour, they often reduce dissonance by rationalising low-effort choices instead of changing behaviour (Bosone et al., 2022).

The analysis also surfaced an under discussed “delayed wellbeing effect”. One interviewee, who refused to limit outdoor time even when she believed pollution was dangerous, nevertheless described feeling mentally worse “two or three days after” periods of reduced outdoor activity, rather than on the same day. Another reported noticing the impact of a fully indoor day only in retrospect, when returning outdoors made the contrast obvious. This aligns with the questionnaire finding that 52% of respondents reported feeling somewhat or much worse mentally on days when outdoor activities had to be reduced or avoided, even when the reason for that reduction was not specified. Together, these pieces point to a temporal disconnect: the psychological costs of curtailed outdoor activity, driven partly by pollution, may accumulate over days rather than being immediately felt, which makes it harder for young people to link individual decisions to their mood. In terms of the Health Belief Model, this delay weakens the perceived connection between a specific avoidance decision and its emotional consequences, even when participants can articulate, in the abstract, that repeated “staying in” harms their mood (Alyafei & Easton-Carr, 2024).

Structural Fairness and Who “Should” Care

Another inductive dimension that the main report only briefly notes is “class equity framing”. Several interviewees explicitly framed air pollution as an issue of distribution: those most affected are least able to choose where they live or work. One interviewee linked bad air to “poor districts” and people who “cannot afford a different alternative to live,” highlighting construction workers, children near busy roads, and “everyday persons” on heavily polluted streets as those bearing the greatest burden. Another emphasised that most people do not select rental housing based on air quality, but on price, and expressed more concern for grandparents and neighbours than for herself.

This structural framing coexisted with low perceived personal control in the questionnaire. The mean perceived control score over personal exposure was 2.33 on a 1–5

scale, and the most cited barriers to changing habits were not only “I don’t know when air quality is poor” but also “people around me don’t take it seriously either”. Sociological work on air pollution inequalities similarly finds that immigrant or low-income groups in European cities are often over exposed, partly because of housing markets and job structures, leading to what has been called an “air pollution disadvantage” (Ehler et al., 2023). In the Budapest interviews, this did not yet translate into collective action claims, but it did appear as a quiet moral awareness that some people should not have to think about air quality because they are “lucky,” while others cannot avoid it.

Designed and Digital Cues: When Awareness Becomes Usable

The matrix points to two specific kinds of cues where awareness most clearly translated into concrete behaviour. The first are designed environmental cues. One interviewee described a landmark in park showing a coloured “smiley” that changed according to local air quality. She rarely sought out air quality information proactively but described this landmark as an effective way of getting people to be aware of air quality. Another interviewee in a different neighbourhood reported closing windows and staying in when alerted to bad air, again treating the cue as a straightforward instruction rather than as a number to interpret.

The second are digital tools that convert AQI readings into graded, activity specific advice. The asthmatic interviewee mentioned above valued his AQI app less for the numbers than for its concrete recommendations (e.g. wear a mask, avoid outdoor activity, reduce exertion if vulnerable), which he used to calibrate whether to bike, run, or substitute indoor activities on high pollution days. Another interviewee checked air quality in summer every day from May to October, then adapted the time of day and location of her outdoor activities when multi day pollution episodes coincided with heat, while criticising generic AQI scales for not explaining the risk attached to each level.

Behavioural reviews of air quality communication have reached similar conclusions: public messages are more likely to change behaviour when they provide clear, personally relevant guidance (“what to do now”) instead of only presenting concentrations or index values (LIFE Emerald, 2021). The Budapest data add two nuances. First, for late adolescents, the guidance appears most effective when it is embedded into everyday tools (weather and running apps, park signage, route planners) rather than presented as standalone public health messaging. Second, the control benefit of awareness in the questionnaire – feeling more in control when paying attention and making protective choices – was higher among respondents who actually reported adapting behaviour, and not among those who were aware but inactive. Awareness seems to support wellbeing when it is coupled to practicable options, not in isolation.

The main research report’s key narrative rightly emphasised the awareness behaviour gap around air quality in late adolescents. Reading deeper into the framework matrix showed that the more relevant distinction is between abstract awareness and situated, working awareness. Working awareness tends to arise from embodied comparisons across places, health histories, bundled urban experiences of noise heat and air, structural reflections on who is exposed, and especially from designed and digital cues that translate AQI into specific decisions about running, commuting, or spending time in parks. By contrast, AQI literacy on its own rarely predicts action and can, under some conditions, provide rationalisations for inactivity or add another layer of worry.

For more in-depth analysis of the general research question, please refer to the full concise research report.

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