

The Science of a Happy Home Literature Scan Summary

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Note to reader:

This document is a supplement to Resi's 2020 report 'The Science of a Happy Home'. The full report can be downloaded [here](#).

A Methodology, Policy Recommendations, Industry Insights paper and a copy of the national data set used to develop this body of work can be found [here](#).

Research Context and Design

Key Context

The Science of a Happy Home is a project about how the design and the use of our homes influences our wellbeing. It has been spearheaded by Resi, the UK's leading architecture practice for everyday homeowners. Resi's ambition is for this body of research and insight to grow over time.

As a first step, Resi commissioned an independent¹, exploratory enquiry to highlight credible evidence on how the design and use of our homes relates to our happiness and wellbeing.

To develop these findings, a national survey of 4000 UK adults was administered by Populus in August 2019. The survey built a dataset that links to established benchmarks such as the English Housing Survey, as well as providing new correlates for subjective wellbeing at home.

The research was undertaken between August and September 2019 by the Underdog Collective - a diverse group of researchers, strategists and designers who bring rich local and international perspectives to their specialist domains of architecture, statistics, wellbeing and geography.

¹ The research was undertaken between August and September 2019 by the Underdog Collective - a diverse group of researchers, strategists and designers who bring rich local and international perspectives to their specialist domains of architecture, statistics, wellbeing and geography. A breakdown of contributors can be found in the main report.

Our Aims – Why Resi are focused on Happy Homes

To make architecture and design accessible. This isn't about aesthetics, it's about the real benefits you can get from applying a different way of thinking to your home. This challenges some of our cultural tendencies to accept things the way they are. We discuss changes big and small to broaden the conversation.

To further our understanding of the changes people can make to create happier homes. Lots of research demonstrates what we should not do to our homes, establishing causality between poor design and ill health, or negative social and environmental outcomes. By contrast, evidence on what we might aspire to is under explored: homes that make us happy.

To look behind the front door, rather than focus beyond the front door. There has been significant research to understand how our neighbourhoods, streets, towns and cities shape our wellbeing. At this scale there is more data available and interactions are easily observable. It is more difficult, but equally important, to look at the private and intimate ways we use our homes.

Research Design Summary

The purpose of this research is to understand how design interacts with wellbeing in the home. To achieve this, we used both secondary source data from relevant literature and conducted a primary research exercise.

Key research questions:

Q1 How do specific spatial design and feature characteristics impact on wellbeing at home?	Literature Review and National Survey Insights to: <ul style="list-style-type: none">• Identify empirical, established frameworks of wellbeing to develop an understanding of wellbeing at home.• Perform critical analysis and identification of empirical causal links of spatial design and feature characteristics and wellbeing.
Q2 How important are these characteristics relative to each other?	Literature Review and National Survey Insights to: <ul style="list-style-type: none">• Hypothesise interdependencies across multiple characteristics and speculate effect variance across space/ household types.• Develop a matrix that presents key interaction effects as a result of interdependencies.
Q3 How does undertaking a home transformation project interplay with happiness at home?	Resi targeted engagement <ul style="list-style-type: none">• Design of semi structured interviews for video interviews.• Develop a nuanced understanding of motivations, processes and wellbeing interactions in relation to home transformations.

The detailed Methodology can be read [here](#).

Literature Scan: Summary Findings

In developing The Science of a Happy Home over 100 key reports, papers and books were scanned as part of the research design, survey development and insights generation processes. Our starting point was to establish that there are three lenses through which we can consider the home:

Residents

Who you live with matters. Our domestic lives are relational experiences, relying on interactions with those who share the same roof, rooms, or bed. The personal nature of how we relate to our home means that it can be a source of conflict or camaraderie, with identities clashing or complementing each other.

Spaces

Homes are usually comprised of multiple different spaces, physically defined through walls and rooms or less clearly demarcated, as with open plan spaces, informal claims of space such as having 'your side of the bed' and the other unwritten rules and unconscious habits that govern how we use our homes.

Functions

Our homes are more than just shelter. They play host to a range of functions in relation to how we conduct our daily routines through habits and practices, to how we celebrate special occasions.

Key Aspects of the Home

With the Residents, Spaces, Functions framing, we reviewed reports and papers to identify established, empirical frameworks of wellbeing and causal links between design characteristics and wellbeing outcomes.

A summary of how 15 key environmental, physical and spatial aspects of the home interact with our wellbeing.

ACOUSTICS in the form of unwanted noise can create stress, disturb sleep, and negatively affect our mental and physical health. This is exacerbated at night, when our sensitivity to noise increases². Having the ability to control what noise enters our homes allows us to tailor our environment to react to internal needs and external conditions. Within the home, we can try and regulate noise disturbance by considering noise as a factor influencing how we use different spaces at different times, but incompatible attitudes and behaviours among household members cannot be designed out. Where noise sources from outside our home involves significant investment and alterations for mitigation³, the lack of control is linked to stress.

Key interactions: Windows, Density.

COLOURS are very emotive⁴ and can be used to define a space or evoke a certain mood⁵.

Although personal preferences must be considered, we can follow guidelines to make colours contribute toward our wellbeing in the home. Colours are relatively easy to change and should be considered in relation to the lighting and function of a room.⁶

Key interactions: Layout, Lighting

CROWDING refers to the number of people in a home compared to the space and number of rooms available. Standards exist which define overcrowding (where there are too many residents in a home) on a national and international basis. Effects of overcrowding include negative impacts on

² Schmidt, FP., et al. (2013). *Effect of nighttime aircraft noise exposure on endothelial function and stress hormone release in healthy adults*. US National Library of Medicine National Institutes of Health.

³ Marks, A., & Griefahn, B. (2007). *Associations between noise sensitivity and sleep, subjectively evaluated sleep quality, annoyance, and performance after exposure to nocturnal traffic noise*. *Noise and Health*, 9(34), 1

⁴ Wright, A. (1995). *The beginner's guide to colour psychology*. Kyle Cathie Limited.

⁵ Codinhoto, R., Tzortzopoulos, P., Kagioglou, M., Aouad, G., & Cooper, R. (2009). The impacts of the built environment on health outcomes. *Facilities*, 27(3/4), 138-151.

⁶ Savavibool, N. (2016). *The effects of colour in the work environment: A systematic review*. *Environment-Behaviour Proceedings Journal*, 1(4), 262-270.

physical and mental wellbeing⁷, which are exacerbated for children⁸. Overcrowding influences the functionality of our homes, logically increasing the potential for space to serve multiple functions, and potential conflict over the use of spaces. Under-occupied homes also impact wellbeing, with loneliness being a considerable issue in older populations in particular⁹.

Key Interactions: Malleability, Layout, Acoustics.

DENSITY is the number of homes or people per measure of land. Residential density can create increased opportunities for community development but also a greater pressure on local facilities and services¹⁰. The value of homes and allocations of space are also impacted by density¹¹. High housing costs can generate overcrowded conditions which creates a detrimental impact on wellbeing¹². Low densities can bring negative impacts on accessing amenities and services, while very high densities require careful management of communal facilities and noise.

Key Interactions: Crowding, Acoustics.

INDOOR AIR QUALITY (IAQ) experienced through ventilation in our homes allows the circulation of air so as to remove pollutants, moisture and heat and improve IAQ¹³. For homes which are more airtight, IAQ can decrease as pollution is trapped unless mechanical circulation and filtering is maintained. Being able to control air circulation ourselves, through natural ventilation, provides the greatest benefit to wellbeing¹⁴. Awareness is generally low about how to best manage potential sources of toxic air from products in our home and, in certain parts of the country, from polluted air outside.

Key interactions: Windows.

LIGHTING in our homes, both natural and artificial, needs to match our daily rhythms so we can wake up and sleep when we need to¹⁵. Throughout the day, the warming impact of daylight and sunlight needs to be regulated to keep temperature comfortable¹⁶. The full spectrum of quality of

⁷ Boyko, C. T., & Cooper, R. (2014). *Density and mental wellbeing. Wellbeing: A Complete Reference Guide*, 1-22.

⁸ Solari, C. D., & Mare, R. D. (2012). *Housing crowding effects on children's wellbeing. Social science research*, 41(2), 464-476.

⁹ Kenyon, E., & Heath, S. (2001). *Choosing this life: narratives of choice amongst house sharers. Housing Studies*, 16(5), 619-635.

¹⁰ Lang, R. E., & Hornburg, S. P. (1998). *What is social capital and why is it important to public policy?. Housing Policy Debate*, 9(1), pp. 1-16

¹¹ Mitrany, M. (2005). *High density neighborhoods: Who enjoys them?. GeoJournal*, 64(2), 131-140.

¹² Frumkin, H. (2003). *Healthy places: exploring the evidence. American journal of public health*, 93(9), 1451-1456.

¹³ UK Green Building Council. (2016). *Health and Wellbeing in Homes*.

¹⁴ Chappells, H., & Shove, E. (2004). *Comfort: A Review of Philosophies and Paradigm*. University of Lancaster.

¹⁵ Evans, G. W. (2003). *The built environment and mental health. Journal of Urban Health*, 80(4), 536-555.

¹⁶ World Green Building Council (2018). *A guide to healthier homes and a healthier planet*.

natural light, the ability to create shade and choose the quality of artificial lighting are also important¹⁷.

Key interactions: Colour, Windows.

LAYOUT is about how spaces are organised is crucial to different functions and to how people in the home interact¹⁸. We may get bored with our layouts, outgrow them as our needs change, and wish to reorganise, or move entirely¹⁹. We need a careful balance between shared spaces which accommodate communal activity, as well as spaces for privacy and intimacy²⁰.

Key Interactions: Temperature, Acoustics, Air quality, Malleability.

MALLEABILITY considers that our homes should serve our needs in the present as well as be able to accommodate change in the future²¹. Spaces should be malleable enough to serve several different functions throughout the day to make the best use of space, particularly as it is a limited and expensive resource. Layouts and design should allow for more long-term adaptations, such as catering for reduced mobility or an extra family member²². Creating this flexibility allows our homes to provide both current functionality and security for the future.

Key interactions: Security.

MATERIALS of our homes define the spaces within. We need them to be robust, easy to maintain and effective insulators for noise and temperature²³. All materials emit radiation and some materials emit pollutants into the air. In general, common materials are not harmful to human life. The overall sustainability and lifespan of materials should also be considered. Natural materials lend to particular uses and moods²⁴, such as wood being associated with calm, so we need to consider what materials we use carefully²⁵.

Key interactions: Acoustics, Temperature.

¹⁷ Boubekri, M., Cheung, I. N., Reid, K. J., Wang, C. H., & Zee, P. C. (2014). *Impact of windows and daylight exposure on overall health and sleep quality of office workers: a case-control pilot study*.

¹⁸ UK Green Building Council. (2016). *Health and Wellbeing in Homes*.

¹⁹ Foye, C. (2017). *The relationship between size of living space and subjective well-being*. *Journal of Happiness Studies*, 18(2), 427–461.

²⁰ White, N. R. (2002). *"Not under my roof!" Young people's experience of home*. *Youth & Society*, 34(2), 214–231.

²¹ Sixsmith, A., & Sixsmith, J. (2008). *Ageing in place in the United Kingdom*. *Ageing International*, 32(3), 219–235.

²² House, H. (2009). *Consultation on proposed revisions to the Lifetime Homes Criteria*.

²³ World Green Building Council (2018). *A guide to healthier homes and a healthier planet*.

²⁴ Parramore, L., & Gong, C. F. (2012). *Japan home: Inspirational design ideas*. Tuttle Publishing.

²⁵ Augustin, S., & Fell, D. (2015). *Wood as a restorative material in healthcare environments*.

NATURE is proven to contribute positively to our physical and mental wellbeing²⁶. We can bring nature into the home environment directly through private gardens and houseplants or indirectly through windows overlooking green spaces and accessing communal green spaces²⁷

Key interactions: Windows.

NEIGHBOURHOOD is important because we do not live in isolation. Our homes consist of what is within as well as beyond the walls of our property²⁸. Being part of a strong community provides us with friends, security and support, ranging from childcare to a lift to the shops²⁹. It can be difficult to develop a community but shared facilities and institutions can help bring people together. Time to grow relationships and familiarity with neighbours is also crucial³⁰.

Key Interactions: Malleability.

SECURITY in the form of shelter from potential hazards, inside and out, and emotional security are important at home. External access should only be possible for those who belong to the space and internal access should allow all household members to use the space as they would like³¹. This can include locks on windows or an extra handrail on the stairs. Safety and security in the home are most crucial for our oldest and youngest. Having the flexibility to be able to adapt our spaces to our changing safety needs ensures the longevity of the home over time³².

Key interactions: Neighbourhood, Malleability, Technology, Windows.

TECHNOLOGY can be harnessed to increase our convenience and safety. The role of technology should be to empower us with informative suggestions, such as helping us to manage things like temperature, security and ventilation, improving efficiency and making our homes more liveable³³. We also need to consider the use and accessibility of the data generated through technology in the home to protect our privacy.³⁴

²⁶ Kaplan, R. (2001). *The nature of the view from home: Psychological benefits*. Environment and behavior, 33(4), 507-542.

²⁷ Bringslimark, T. (2007). *Psychological benefits of nature in the indoor context*. Norwegian University of Life Sciences, Department of Plant and Environmental Sciences.

²⁸ Blunt, A., & Sheringham, O. (2018). *Home-city geographies: Urban dwelling and mobility*. *Progress in Human Geography*, 1, 1-20.

²⁹ Hampton, K. N. (2014). *Social Ties and Community in Urban Places*. In Hiller, H. H. (ed.) *Urban Canada* (3rd edition). Oxford University Press: Toronto, pp. 92-114.

³⁰ Fine, A., Mahler, A., Steinberg, L., Frick, P. J., & Cauffman, E. (2017). *Individual in context: The role of impulse control on the association between the home, school, and neighborhood developmental contexts and adolescent delinquency*. *Journal of youth and adolescence*, 46(7), 1488-1502.

³¹ World Health Organization. (2018). *WHO Housing and Health guidelines*.

³² Dupuis, A., & Thorns, D. C. (1998). *Home, home ownership and the search for ontological security*. *The sociological review*, 46(1), 24-47.

³³ Nicholl, A., & Perry, M. (2009). *Smart home systems and the code for sustainable homes*. BRE.

³⁴ Deschamps-Sonsino, A. (2018) *How Technology Will Change Your Home Life*

Key Interactions: Lighting, Malleability, Security, IAQ, Temperature.

TEMPERATURE in our homes has a big impact on our wellbeing. Homes that are too hot impact on comfort, concentration and sleep³⁵. Homes that are too cold can increase the risk of respiratory illness, particularly for the very young or old³⁶. The ability to control temperature, as well as moisture, and maintain comfort affordably is a key concern. In the UK, being able to maintain a comfortable temperature in the winter is a greater concern than during the summer as heating is one of the biggest costs of the home regardless of tenure³⁷. 4.9 million homes across the UK are in a 'non-decent' condition due to inadequate heating facilities, bringing cold, damp and poor air quality³⁸. Key interactions: Windows, IAQ.

WINDOWS bring in light, air and frame the outside world³⁹. What we see out of our windows is important, as well as ensuring that no unwanted pollutants, or people, come through them. Seeing the outside world is good for our mental well-being, particularly when overlooking natural areas⁴⁰. Good views can also bring us together, with a window near the dining table increasing the likelihood of eating together which benefits family relationships and childhood development⁴¹. Most windows can adopt different fixtures so as to control privacy but the position, size and orientation of windows are not so easy to alter.

Key Interactions: IAQ Temperature, Light, Acoustics, Security.

³⁵ International Energy Agency. (2014). Capturing the multiple benefits of energy efficiency. OECD.

³⁶ Somerville, M., Mackenzie, I., Owen, P. and Miles, D., (2000). *Housing and health: does installing heating in their homes improve the health of children with asthma?*

³⁷ Barton, A., Basham, M., Foy, C., Buckingham, K., & Somerville, M. (2007). *The Watcombe Housing Study: the short term effect of improving housing conditions on the health of residents.*

³⁸ Public Health England (2014). *Local action on health inequalities: Fuel poverty and cold home-related health problems.*

³⁹ Jacobs, J. M., Cairns, S. R., & Strebel, I. (2008). *Windows: Re-viewing red road.* Scottish Geographical Journal, 124(2-3), 165-184.

⁴⁰ Ozdemir, A. (2010). *The effect of window views openness and naturalness on the perception of rooms spaciousness and brightness: A visual preference study.* Scientific Research and Essays, 5(16), 2275-2287.

⁴¹ Fiese, B. H., & Schwartz, M. (2008). *Reclaiming the Family Table: Mealtimes and Child Health and Wellbeing.* Social Policy Report. Volume 22, Number 4. Society for Research in child development.

Recurring Themes

In conducting the literature scan, we identified that there are three sociological dimensions which help us understand wellbeing at home.

Familiarity

Over time, we develop routines and to feel 'at home' there⁴². This familiarity also encompasses the street, neighbourhood and community where we live⁴³. Time also allows us to make memories in our homes, develop attachments to objects and places by giving sentimental value⁴⁴. This value is increased when we share these memories with others⁴⁵. 'Place attachment' is a deep sense of belonging in our homes where we have had memorable experiences with family and friends.

Control

The home is the part of the world where we have the most control⁴⁶. We can decide who comes in, what happens there, what it looks like and even what it smells like. Our home is our castle, our palace, our territory. Thinking of the home as personal territory provides a useful way of thinking about how we exert control over the space⁴⁷. We exert a possessive claim over it; we defend it by locking the doors; we have a say in who enters it; we lay down markers to personalise the space, showing ourselves and others that it is our own⁴⁸.

Expression

We strive to make our homes reflective of our individual identities. The control we have over the space and the time we spend within it result in residual traces of ourselves being visible everywhere – accidentally, or on purpose. Some aspects support our identities, offering self-affirmation, reminders of relationships and assurances that we are who we say we are⁴⁹. These features are sources of intrinsic identity value⁵⁰. We enjoy spaces which reflect who we are, so it is not surprising that we try

⁴² Scannell, L., & Gifford, R. (2010). *Defining place attachment: A tripartite organizing framework*. Journal of environmental psychology, 30(1), 1-10.

⁴³ Steiner, H., & Veel, K. (2017). *Negotiating the boundaries of the home: the making and breaking of lived and imagined walls*. The Journal of Architecture, Design and Domestic Science, 14(1)

⁴⁴ Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). *A room with a cue: personality judgments based on offices and bedrooms*. Journal of personality and social psychology, 82(3), 379.

⁴⁵ Percival, J. (2002). *Domestic spaces: uses and meanings in the daily lives of older people*. Ageing & society, 22(6), 729-749.

⁴⁶ Gosling, S. (2018). *Snoop: What your stuff says about you*. Profile Books.

⁴⁷ Edney, J. J. (1974). *Human territoriality*. Psychological Bulletin, 81(12), 959.

⁴⁸ Tucker, A. (1994). *In search of home*. Journal of applied philosophy, 11(2), 181-187.

⁴⁹ Bernheimer, L. (2017). *The Shaping of Us: How Everyday Spaces Structure Our Lives, Behaviour, and Well-being*. Hachette UK.

⁵⁰ Porteous, J. D. (1976). *Home: The territorial core*. Geographical Review, 383-390.

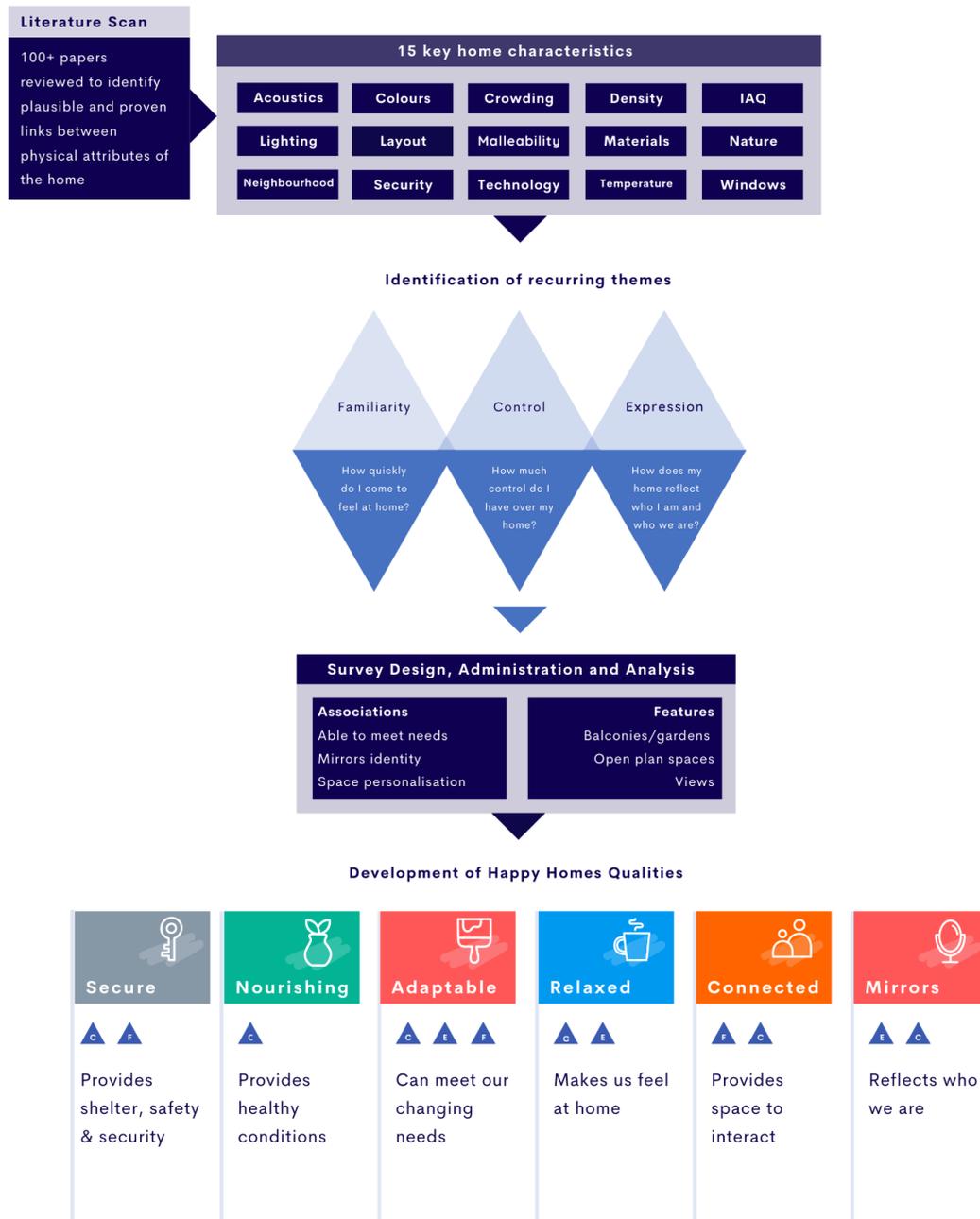
and mould our homes into personal mirrors⁵¹. Other elements of our homes are extrinsic; outward-facing to present an image of our identities that we would like others to see.

These three dimensions were the foundations for the questions we developed for the national survey. When the survey data was analysed, these themes were returned to as part of the development of the six happy homes qualities.

The infographic flow in Figure 1 below illustrates how this was done.

⁵¹ Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). *A room with a cue: personality judgments based on offices and bedrooms*. *Journal of personality and social psychology*, 82(3), 379.

Figure 1 - Research flow: how our literature scan fed into the development of The Science of a Happy Home and Six Happy Homes Qualities.



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