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Publication date
2024

Document Version
Final published version

Published in
TWR Conference

Citation (APA)
Colenberg, S. (2024). Social affordances of communal office spaces: A visual analysis. In A. Smith, A. Reid, M. Jowkar, & S. Jaradat (Eds.), *TWR Conference: Transdisciplinary Workplace Research* (pp. 504-512). TWR Network.

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

TWR CONFERENCE

Transdisciplinary Workplace Research

4th-7th September 2024

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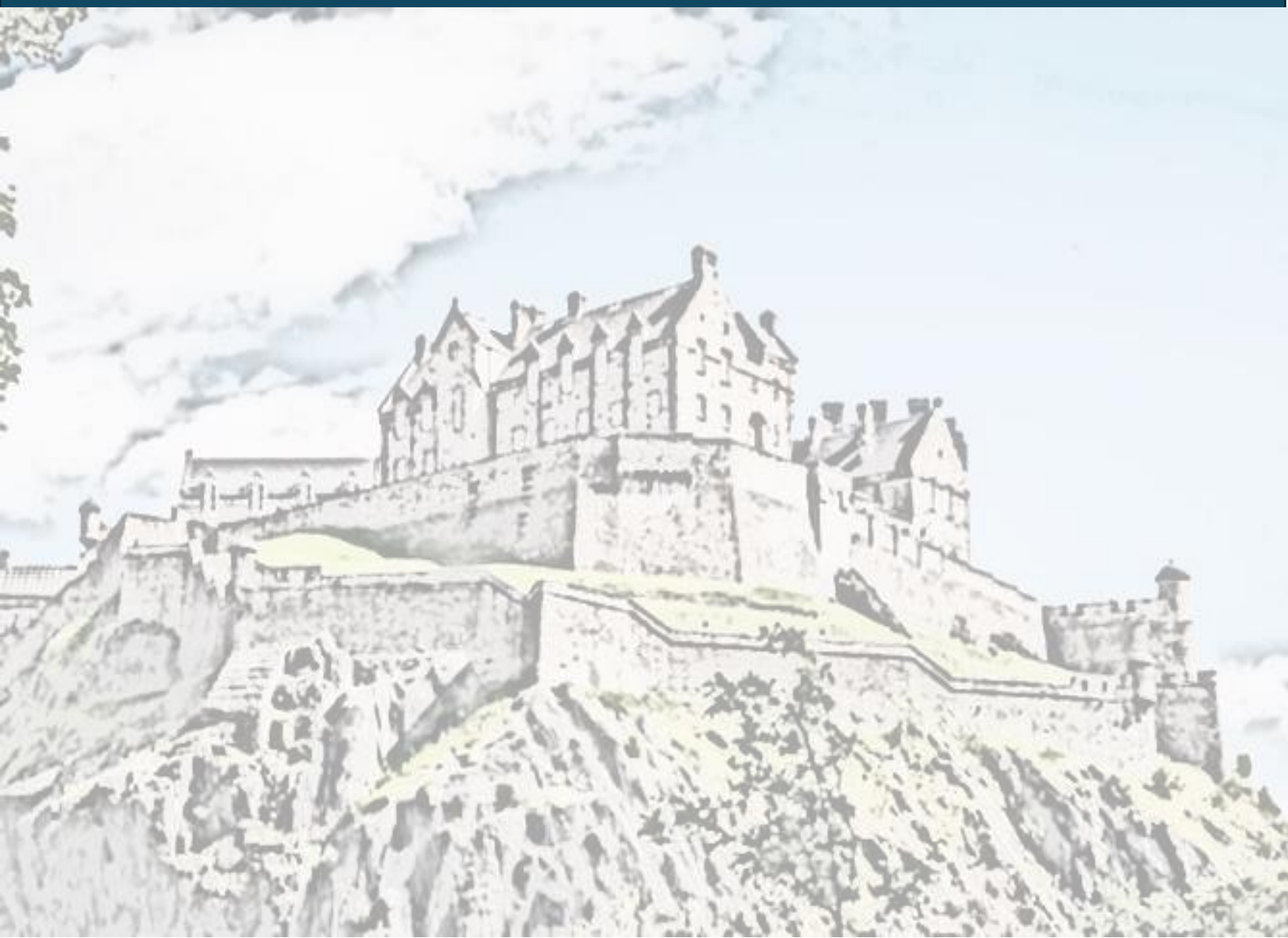

Andrew Smith, Alasdair Reid, Mina Jowkar, Suha Jaradat (eds.)

Proceedings of the 4th Transdisciplinary Workplace Research (TWR) Conference, 4th – 7th September 2024, Edinburgh, UK

Edinburgh Napier University

School of Computing, Engineering and the Built Environment

ISBN 9781908225122

Social affordances of communal office spaces: a visual analysis

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ABSTRACT

Purpose: In the hybrid working model, offices largely serve as a place to meet co-workers and clients and fulfil the need for casual encounters and social bonding. Not much is known about what interior design characteristics office users perceive as supportive of these informal social interactions. This study explored the relationship between interior design attributes, affordances and perceived support of informal interactions in depicted office spaces.
Theory: Based on the theory of affordances, it was assumed that particular combinations of interior design attributes could be perceived as supporting or impeding social interactions.
Method: Photographs of communal office spaces designed to support informal social interaction were collected from workplace designers. A selection was coded by five interior designers regarding colour use, materialisation, and decoration. Subsequently, the 14 most high-consensus pictures were rated by 34 office workers for social affordances. Spaces were ranked, associations between affordances were calculated, and affordance-design connections were counted. The high-performing spaces were further explored through qualitative comparative analysis.
Findings: The depicted social office spaces predominantly featured light colours, angular shapes and artificial finishes rather than biophilic designs and were not very pronounced regarding colour use. Spaces with ample decoration, plants, rounded shapes, and at least some enclosure were deemed most supportive of informal social interactions. Although many lacked perceived privacy and comfort, they still seemed to afford some intimate conversations. But overall, the spaces' social affordances and support of informal social interactions were perceived as quite limited.
Value: This study's novelty lies in applying visual analysis to gather detailed insights into the relationship between interior design attributes and perceived social affordances of office space. The study serves as a basis for further data collection and systematic comparison of social office spaces to discover patterns that could guide workplace design projects.

Keywords
Offices, Interior design, Affordances, Social interaction, Visual analysis.

1 INTRODUCTION

The emergence of hybrid work models and the rapid improvement of remote connectivity have redefined the purpose of physical office spaces (Sailer et al., 2023). Currently, the office is evolving as a dynamic hub for collaboration and community and a social anchor, emphasising the importance of fostering informal social interaction among employees (Fayard et al., 2021). Informal interaction, characterised by spontaneous exchanges and socialising, plays a pivotal role in shaping organisational culture, fostering a sense of belonging, and enhancing performance (Pyöriä, 2007; Sailer et al., 2021). Even minimal interactions increase happiness (Sandstrom & Dunn, 2014) and daily small talk at work has an uplifting effect and serves as a social ritual (Methot et al., 2021). Winslow et al. (2019) argue that social interactions represent affective events which accumulate to form enduring workplace relationships. They define informal or non-instrumental interactions as casual, non-task/work-related interactions in the organisation, such as talking about shared interests, making jokes, sharing personal experiences, and discussing events of non-work time.

Informal interactions cannot be planned or forced but research in the field of environmental psychology shows that the likelihood of their occurrence can be increased by workplace design. Sailer and McCulloh (2012) showed that spatial integration and sightlines increase the likelihood of social interactions at work. Furthermore, environments shape behaviour patterns, guiding social interactions by signalling acceptable behaviour through design cues (Scott, 2005). Biophilic design, such as views of greenery, can create an environment conducive to positive social interactions by restoring sources of prosocial energy (Klotz & Bolino, 2021).

On the other hand, stressors like noise and crowding can inhibit social interactions, emphasising the importance of freedom of choice to reduce stress and enhance social bonding (Proshansky et al., 2004). Seat choice and personal space influence privacy control, impacting interpersonal dynamics and well-being (Evans & Wener, 2007; Staats & Groot, 2019). Symbolic barriers and personalisation contribute to a sense of ownership, reinforcing social norms and reducing conflicts (Brown & Robinson, 2011; Brunia & Hartjes-Gosselink, 2009).

In a recent study, interior designers explained their strategies for supporting informal interactions and connectedness among employees, for example by creating an informal or cosy atmosphere that invites people to visit and linger and providing facilities for social activities (Colenberg et al., 2023). Spreitzer et al. (2020) argue that the scents and sounds of coffee bars and food spaces can trigger emotions that stimulate informal interaction. However, empirical research on how employees perceive the support for informal social interaction at the office by its interior design is limited.

This paper addresses this gap by investigating the perception of these ‘social office spaces’ designed to support informal social interaction among employees, such as breakout rooms, lounge areas, and collaboration spaces. By classifying and quantifying the interior design features depicted in realistic visual representations of different social office spaces, the study aimed to elucidate how various interior design elements contribute to an atmosphere that office workers perceive as appropriate for informal social interactions. This knowledge could support designers and organisational leaders in informed decision-making to create work environments that foster vibrant social ecosystems.

2 Social affordances of the office environment

This study is rooted in the theoretical framework of affordances (Gibson, 1977) stating that users perceive an environment based on what it offers them in terms of action possibilities. In this viewpoint, the work environment may be perceived as supporting or inhibiting social behaviour based on its physical characteristics. Norman (1988) expanded the concept of affordances to include its application in design. Contemporary perspectives, such as those by Still and Dark (2013), highlight affordances as perceived and dynamic, influenced by both automatic perception and cultural processes. The essence of the affordances concept implies that an interior design can communicate possibilities for social behaviour through semiotic materials that convey a message to the users (Ledin & Machin, 2018).

Affordances can serve as nudges for social behaviour (Service et al., 2015), stimulating interactions through design elements like spatial configuration and object placement. For example, Khazanchi et al. (2018) argue that shorter distances increase the frequency of face-to-face interactions and personal (vs. task-oriented) conversations and architectural privacy contributes to longer conversations, building expressive ties. Fayard and Weeks (2007) showed how water-coolers and copiers served as people attractors in the office and Olsson et al. (2020) provide examples of how open spaces for shared activities and displays that disclose information about users could enhance collocated social interaction.

In this paper, social affordances refer to the workplace's physical characteristics that foster positive social interactions, support relationship-building, and cultivate a sense of community and belonging among employees while mitigating negative interactions and feelings of alienation. Fayard and Weeks (2007) used the term social affordances to refer to workplace characteristics that enable propinquity, privacy, and social designation necessary for informal interactions. Spreitzer et al. (2020) defined social affordances of the working environment as opportunities for social connection, promoting positive relationships through design elements like coffee bars, quiet zones, and team spaces. This study focused on these types of social office spaces and aimed to describe their interior design attributes, perceived social affordances, and opportunities for different types of informal interactions, including casual encounters, eating, drinking, or playing together, in-person collaboration, and intimate conversations for relationship-building. An appropriate atmosphere, privacy for personal talks, and comfort for lingering were included as affordances that may support one or more of these interactions.

3 Method

The association between interior design attributes and perceived social affordances was investigated through the assessment of 14 depicted office spaces by both interior architects and office workers (Fig. 1) in February-March 2024. Using pictures is cost-effective and makes it easy to gather feedback from a large and diverse group of office workers. Pictures can easily be distributed and accessed by participants remotely, allowing for a broader sample size. Furthermore, pictures provide a standardised stimulus ensuring that everyone evaluates the same visual information which offers consistency and reliability in the data collection.

3.1 Data Collection Procedures

Experienced Dutch workplace designers were asked to provide visual material of interior office spaces they had designed to support the users' informal social interactions and connectedness. From their submissions, 24 pictures were selected which were taken from the user's eye level and (after cropping) framed the space in question. Artist impressions and 3D sketches were excluded. Due to their extremely wide angles and less detail in textures and lighting conditions, these images less accurately represented reality, which could impede office workers from imagining themselves in the depicted spaces.

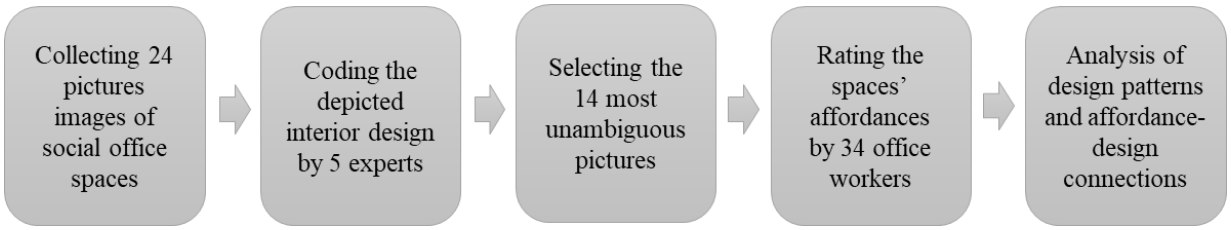
Among the collected pictures, six categories of social office spaces were distinguished: lounge areas, recreational spaces, informal meeting spaces, collaborative workspaces, and traffic zones with room for social interactions. Within each category, four examples were selected. Additionally, examples from a variety of designers and projects were included to establish a mix of styles and colour palettes which would cover the versatility of interior design and minimize differences in perception based on personal taste. Subsequently, the pictures were de-identified by blurring faces, logos, and other items that may reveal the identity of the occupants.

To quantify and classify the depicted interior design, the 24 anonymised pictures were coded by five interior design experts. Through a survey, they assessed the space's look and feel on 7-point semantic differentials, for example, *Warm colours* (1) vs. *Cool colours* (7), and the presence of interior design objects from *None* (1) to *Many* (4), complemented by the option *Not clear*. This assessment focused on the interior design's decorative aspects visible in single overview pictures, excluding layout and details such as texture.

Subsequently, 34 random office workers rated the space's social affordances on a 5-point scale ranging from (1) *Not at all* to (5) *Very much*. The affordances included an informal atmosphere, cosiness, conversation privacy, and comfort. To indicate the possible effect of these affordances, the spaces were also judged on their opportunities for different types of informal interactions.

Since pilot testing showed that participants' attention span and willingness to complete the survey was too low when presenting all 24 pictures, their number was reduced to the experts' 14 most unequivocally assessed ones. An anonymous link to the survey was distributed through direct mailing and social media and data collection was closed after two weeks.

Figure 1. Schematic overview of the data collection procedure and analysis



4.2 Perceived Support of Informal Interactions and Affordances

On average, the 34 office workers who completed the survey were not very enthusiastic about the potential of the depicted spaces to support informal social interactions. Overall, none of the depicted

spaces was considered to possess much of any affordance or interaction support (*Mode* ≤ 3, *Somewhat*).

Only four spaces were considered to have a convincing informal atmosphere (*Mode* = 4, *quite a lot*), which referred to a casual, playful and lively character. In 13 pictures, this affordance was significantly and strongly associated with cosiness (average r (29 to 32) = .672, p <.05), which referred to a warm, homely and intimate atmosphere. However, the scores on cosiness were lower than on informal atmosphere. For example, the recreation space in picture #17 was rated relatively high on informal atmosphere, maybe because it featured a bar and billiard, but scored lower on cosiness, maybe because it featured less homely decoration and doubled as a transit area. An informal atmosphere was positively associated with facilitating spontaneous encounters (average r (29 to 32) = .495, p <.05) and eating, drinking, or playing a game together (average r (29 to 32) = .591, p <.05).

Conversation privacy, i.e. not being seen and heard during social interaction, was rated very low in most spaces (*Mode* = 1, *not at all*, or 2, *a little*). As expected, in most pictures perceived privacy was positively associated with support of intimate conversations (average r (29 to 32) = .563, p <.05). Remarkably, perceived conversation privacy was not significantly threatened by opportunities for eye contact with passers-by and did not significantly reduce opportunities for spontaneous encounters. Comfort seemed more important for conversation privacy (average r (29 to 32) = .502, p <.05) than cosiness (average r (29 to 32) = .473, p <.05).

Overall, the spaces' support for informal social interactions was better rated than their social affordances. This could mean that other characteristics of the work environment may be more important in supporting this than the affordances measured in this study. Opportunities for eye contact with passers-by had the highest scores, maybe because many pictures showed open spaces or glass walls. All spaces were perceived to provide reasonable opportunities for eye contact, spontaneous encounters, in-person collaboration, and eating, drinking or playing a game together; the latter despite the absence of specific facilities such as games or coffee machines in the picture. An informal atmosphere seemed the most important in supporting informal interactions and a lack of comfort the least.

4.3 Connections with Design Attributes

A qualitative analysis of the high-performing spaces revealed that they could be divided into two groups: (1) spaces that best support *public interactions*, such as eye contact, casual encounters and recreational activities, and (2) those that best support more *private interactions* such as working together (or co-located working) and personal conversations. One of the spaces, which featured a workbench along a hallway, was considered to support public interactions and working together reasonably well but was rated inappropriate for personal conversations.

The spaces that were perceived as most stimulating for spontaneous encounters appeared to be accessible from several sides, situated in a transit area, and featuring a coffee machine. The spaces that were considered to offer at least a little conversation privacy appeared to be relatively enclosed physically or visually. None of the spaces was perceived to afford eye contact with passers-by and conversation privacy simultaneously, except for a glass-walled meeting room. However, this space was deemed not very cosy or informal. Partly enclosed spaces, such as seating arrangements in an alcove, hallway corner, or a project room with potted plants at the window were perceived as the next

best options for personal conversations. A well-decorated shared office was perceived as offering both privacy and cosiness. Spaces which were rated best for in-person collaboration all featured a table. The five spaces with the highest scores on informal atmosphere and cosiness featured relatively much decoration, such as a rug, cushions, pending or table lamps, a notice board, and bookcases. They also included quite some plants and four out of five featured predominantly rounded shapes. However, plants are no guarantee of success because two spaces which featured many plants were still rated as barely cosy. Table 1 lists the number of depicted social office spaces that feature both a specific interior design feature (according to the majority of the experts) and a social affordance or supported interaction type (office workers' perception, mode ≥ 2). It shows the little variety in design features across the different affordances and interaction types. For example, not many spaces featured predominantly dark colours, soft finishes, or rounded shapes, maybe because these were considered inappropriate for office environments. The observed uniformity of applied design features could mean that social office spaces require more or less the same design approach, the assessed spaces were coincidently designed in approximately the same way, or the data of this study were not sufficient due to small sample sizes.

Table 1. Number of depicted spaces (n=14) in which both the specific design feature and the social affordance or interaction support were rated as present

Design feature	**Social affordances**				**Supported interactions**				
	Informal atmosphere	Cosy atmosphere	Conversation privacy	Bodily comfort	Eye contact with passers-by	Spontaneous encounters	Eating, drinking, or playing together	In-person collaboration	Intimate conversations
More cool colours	●	●	●	●	●●	●	●●	●●	●●
More warm colours	●●	●●	●	●	●●	●●	●	●	●●
More muted colours	●●	●●	●	●●	●●	●●	●●	●●	●●
More saturated colours	●●	●●	●	●●	●●	●●	●●	●●	●●
More light colours	●	●	●	●	●	●	●	●●	●●
More dark colours	●	●		●	●	●	●	●	●
Few colours (uni)	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
Many colours (colourful)	●●	●●	●	●	●●	●●	●	●●	●●
More hard finishes	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
More soft finishes	-	-	-	-	-	-	-	-	-
More natural materials	●	●	●	●	●	●	●	●	●
More artificial materials	●●	●●	●●	●●	●●	●●	●●	●●	●●
More round shapes	●	●	-	●	●	●	●	●	●
More angular shapes	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●

Presence of plants	●●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
Ambient lights	●●	●●	●	●●	●●	●●	●●	●●	●●
Decorative objects	●●	●●	●	●●	●●	●●	●●	●●	●●
Wall decoration	●	●	●	●	●	●	●	●	●
Seat variety	●●	●●	●	●●	●●	●●	●●	●●	●●
Amenities	●●	●●	●	●	●●	●●	●	●	●●

Both present in ● 1-3 pictures; ●● 4-7 pictures; ●●● ≥ 8 pictures

5 Discussion and Conclusion

This study aimed to shed light on the affordances of social office spaces perceived by office workers and the composition of these affordances from interior design features. The findings show that most of the studied spaces were not very pronounced in terms of colour but predominantly featured hard and artificial finishes and angular shapes rather than biophilic designs. An informal atmosphere was associated with the support of spontaneous encounters and social activities and conversation privacy and comfort were perceived to support intimate conversations. The highest-rated spaces featured relatively much decoration, plants, and enclosure. These insights may guide workplace designers in their decisions when designing social office spaces.

However, the social spaces' affordances and support of informal interactions were not rated very high. This could indicate that, according to the office workers, the depicted designs failed to strongly support informal interaction or the study did not capture the most important affordances. After all, the study was limited by the small sample sizes of the pictures, coders, and respondents. The number of pictures was reduced to prevent survey fatigue and drop-outs among the voluntary participants. Alternatively, the surveys could have presented a random selection of a larger number of pictures to each respondent. This would require a larger sample to collect sufficient data per picture. Other strategies could be paying the participants or reducing the number of questions about each picture. Larger samples of both the experts and the office workers would enable quantitative analyses and statistical tests which would provide more generalizable results. For example, the importance of the design features in predicting perceived affordances could be examined through ordinal regression analysis (Eiselen & Van Huyssteen, 2021), taking one of the affordances (ordinal) as the dependent variable and several relevant design features (continuous/ordinal) as independent variables.

By using pictures, the spaces were assessed based on visual information only, neglecting other senses such as touch, smell, and sound. For example, Spreitzer et al. (2020) argue that the scents and sounds of coffee bars and food spaces can trigger emotions that stimulate people to interact. Additionally, pictures may not fully capture the holistic experience of space since they do not convey the spatial context. Therefore, this type of data provides an incomplete understanding of how office workers perceive social office spaces. Future research should consider case studies to capture the spatial and cultural context of office workers' perceptions and include behavioural observations to relate these perceptions to actual behaviour. Case studies may also provide more insight into the design features' contribution to perceived affordances. Assessment of different social spaces within one office building which were decorated by one design agency reduces the variation in design styles.

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