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**THE CATCH-22
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Social facilitation in the workplace

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Article at a glance

The open-plan office affords a number of advantages to organisations, yet the combination of increased density and decreased privacy has introduced an intense social dynamic to the workplace. This paper reviews the literature on social facilitation, a body of research specifying conditions under which the presence of others may serve to either assist or hinder performance, and offers a set of guidelines intended to harness the positive aspects of co-located work—while avoiding the pitfalls.

Social psychology and the open-plan office

Working environments today are largely characterised by variations on the open-plan design. The advantages of open-plan are a reduction in space required (and related cost savings), greater flexibility for office layout, and improved communication/collaboration between staff. The majority of criticisms relate to a lack of privacy, both acoustic and visual. While workplace designers are generally aware of the social issues accompanying open-plan offices, they are likely to be unaware of the wealth of psychological literature devoted to the topic of social facilitation. As the debate concerning the viability of flexible working arrangements gathers momentum, social facilitation research specifies conditions under which managers should, and should not, encourage staff to break from the crowd.

In what is generally considered to be the first experiment in social psychology, Triplett (1898) measured the speed with which children turned a fishing reel. He had half of the participants reel alone while the other half performed the task in pairs, and found that the paired group reeled faster than the solitary group. However, even though the group differences suggested that the paired children benefited from the presence of a coactor, some children within this group reeled more slowly, indicating that the effects of others are not always positive.

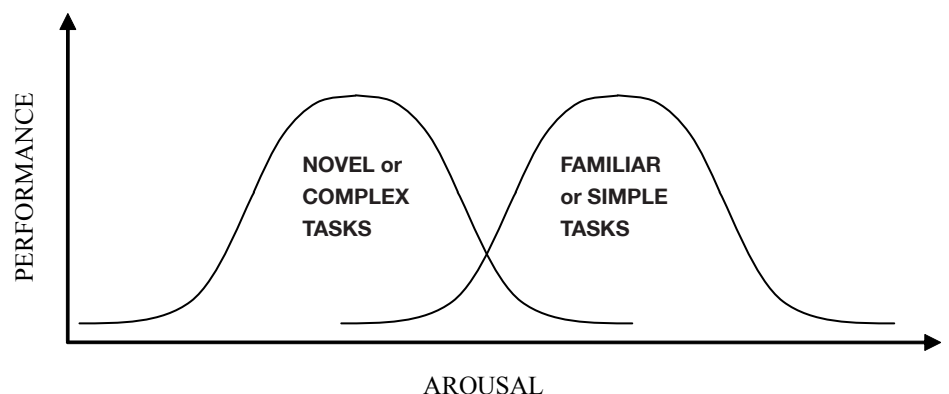
Allport (1920) followed up this seminal study with an experiment designed to test if the effects reported by Triplett could be obtained without explicit competition, and whether the results would transfer from a physical to a cognitive task. He had participants complete a word-association and argument generation task, either by themselves or working in groups, and found that the groups produced a greater number of associations and arguments than those working in isolation; leading Allport to coin the phrase “social facilitation”. However, the quality of arguments submitted by the groups was judged to be inferior to those constructed by solitary participants (i.e., the teams also exhibited social inhibition), once again raising the prospect that the beneficial effects of public performance are limited.

Social facilitation: Inconsistent effects in need of a theory

After an initial period of interest in this new topic, research on social facilitation declined for a number of decades, primarily because the inconsistent direction of effects (i.e., performance improvements versus decrements) could not be accounted for, either theoretically or methodologically. Zajonc (1965) ended this research drought by offering a theory capable of accounting for both social facilitation and inhibition. According to his adaptation of Hull-Spence drive theory, the presence of others increases one's general level of arousal as we prepare for possible interaction. Interestingly, Zajonc asserts that this increase in arousal is automatic and independent of what others are doing. When in this state of high arousal, Zajonc claims that we are more likely to perform well-learned (dominant) responses: a conservative reliance on past behaviours that have been rewarded. If the task to be executed has been mastered, then the dominant response will be correct, leading to social facilitation. However, if a novel task is assigned, the dominant response is unlikely to be correct, leading to social inhibition. Thus "performance is facilitated and learning is impaired in the presence of spectators" (Zajonc, 1965, p. 270). In a somewhat dubious theoretical extension, simple and complex tasks are widely assumed to have the same effects as task familiarity and novelty respectively (e.g., Aiello & Douthitt, 2001). That is, simple tasks are predicted to be facilitated by the presence of others, while complex tasks are inhibited.

While Zajonc's drive theory provides a means of explaining both social facilitation and inhibition, some researchers disagree that the mere presence of others is enough to increase arousal. For Cottrell (1968), the presence of others increases arousal because the performer expects to be evaluated, while for Baron, Moore, and Sanders (1978), awareness of the presence of others distracts the performer, which leads to increases in arousal. While a meta-analysis by Bond and Titus (1983) provides support for the mere presence hypothesis, it is likely that we become conditioned to associate others of our species with important information—such as evaluation—and that attempts to monitor such activities by others can serve to distract our attention from task-relevant cues. Unfortunately, if we accept that high arousal—increased by any means—improves the execution of well-learned tasks, the inverted-U principle (Duffy, 1962) predicts that increases beyond an optimal level will impair performance (see Figure 1). The end result is that any relationship between arousal and performance is unlikely to be straightforward.

Figure 1 Theoretical inverted-U curves plotting performance against arousal for both novel and familiar (well-learned) tasks. Note that performance for a novel (or complex) task peaks at a significantly lower level of arousal than does performance for a familiar (or simple) task.



As a result of the conceptual difficulties associated with drive-based accounts of social facilitation (see Glaser, 1982, for a detailed critique of drive theory), attentional theories purporting to avoid the topic of arousal have been proposed. Among these are Baron's (1986) revision of distraction theory, in which he claims that performance decrements result from cognitive overload, and Baumeister's (1984) self-awareness model, which states that an audience increases our attention to the process of performance, disrupting the automatic execution of well-learned skills. However, even these so-called non-drive alternatives rely on some form of affective response to the presence of others: attending to others or focusing on task specifics are motivated behaviours based on some kind of performance anxiety, which can be considered a type of arousal. Consequently, it will be assumed henceforth that the presence of others elevates the level of some non-specific form of psychic energy—which we shall term 'arousal': it remains to be seen how this arousal has been linked to performance across a range of conditions.

The search for key variables

Social facilitation is one of the most researched topics in experimental psychology, and a wide range of variables have been investigated in an attempt to uncover the factors capable of hindering and assisting task performance. For instance, the evaluative potential of the other has been systematically investigated in an attempt to solve the innate- versus learned-drive debate, from blindfolded others versus passive spectators (Cottrell, Wack, Sekerak, & Rittle, 1968), expert versus non-expert spectators (Gore & Taylor, 1973), the ability of spectators to see mistakes (Bond, Atoum, & VanLeeuwen, 1996), and inattentive versus attentive others (Guerin, 1983). The majority of this research suggests that the ability of others to evaluate performance is necessary for social facilitation/inhibition to occur.

Additional research focusing on audience factors indicates that the familiarity of observers to the performer moderates effects (Shaver & Liebling, 1976), as does the ability of the performer to observe the spectators (Guerin, 1983). In a study relevant to team-based work, VanTuinen and McNeel (1975) found that the effect of coactors depends on whether or not they are competing with the performer. Seta and Seta (1995) found that participants perform worse if they were paired with an audience who was aware of their prior success on the same task, and Martens and Landers (1972) have reported incremental effects with increasing audience size. See Table 1 for a summary of these findings.

Table 1 Selection of published studies applicable to workplace performance

Source	Other variable	Effect on performer
Cottrell et al. (1968)	Ability to see performer	Dominant responses are increased only when others are able to observe the performer
Gore & Taylor (1973)	Gore & Taylor (1973)	Expert spectators inhibited learning in the performer relative to non-experts
Bond et al. (1996)	Ability to see mistakes	Learning of complex tasks impaired only if spectator can witness errors
Guerin (1983)	Attentiveness of spectator	Inhibition of complex task performance only when those present are attentive
ibid	Observability of spectator	Inhibition of complex task performance only when those present are not observable
Shaver & Liebling (1976)	Familiarity of spectator	Familiar others lead to less errors on complex tasks but more errors on simple tasks
VanTuinen & McNeel (1975)	Competition with performer	Only competing coactors increased dominant responses by the performer
Seta & Seta (1995)	Awareness of prior success	Social inhibition if audience is aware of prior successful performance
Martens & Landers (1972)	Number of coactors	Increasing group size caused incremental decrements in motor performance

While cited for their relevance to performance in the workplace, this selection of studies represents a mere sample of the available pool of research on social facilitation. In an attempt to provide an overall picture of the findings, Bond and Titus (1983) performed a cumulative analysis of the results from 241 studies to test (a) whether and how arousal is implicated in social facilitation/inhibition, and (b) how the presence of others affects various aspects of the performance of complex and simple tasks. The authors found, as alluded to earlier, that the mere presence of others seems to be sufficient for producing effects, but that physiological arousal only increases with complex tasks. Concerning performance, speed is increased in simple tasks and decreased in complex tasks, and the same pattern holds for accuracy—although the facilitation of simple tasks is weak. Overall the effects were small and somewhat unreliable, although results may have been different if the researchers had defined tasks in terms of Zajonc's original formulation of familiarity.

In summary, while the literature is generally plagued with inconsistent results, the snapshot of studies presented in Table 1, along with the results of Bond and Titus' (1983) meta-analysis, allows for some cautious conclusions to be drawn:

- The presence of others heightens arousal in performers, as humans are conditioned to prepare for evaluation and associated social consequences. This arousal is intensified if the observer is an expert, and is aware of the performer's previous standards (i.e., the observer has more information with which to judge the performer).
- Arousal is further intensified if the observer is unfamiliar to the performer, and if they are positioned in such a way as to prevent the performer from monitoring the spectator's behaviour (presumably because this obscures their reactions to the performance).¹
- In general, the greater the number of 'others' (spectators or coactors) the greater the increase in arousal (due to multiple sources of potential evaluation). Research by Martens and Landers (1969; 1972) indicates that significant differences in task performance are obtained when the size of the group comprises at least four members. Within such groups, competitive coactors produce greater arousal than do cooperative coactors.
- Increased arousal seems to be beneficial for the performance of well-learned tasks, but is detrimental while attempting to learn new behaviours (this rule may generalise to the dimension of task complexity). However, the inverted-U principle suggests that extremely low or high arousal will lead to impaired performance, regardless of task type.

Social facilitation applied to the workplace

While the majority of studies on social facilitation are laboratory-based and considered to be examples of 'pure research', a small portion of the social facilitation literature dedicated to crowding is perhaps more readily applicable to open-plan design. According to certain researchers (e.g., Elliot & Cohen, 1981), the violation of interpersonal distance norms increases arousal, which has the same effects on task performance as hypothesised by Zajonc (1965). Research reported by Paulus and Nagar (1989) support this assertion, with increasing density often associated with the inhibition of complex task performance. However, individual differences serve to obscure this general rule. For instance, males tend to avoid high density environments more than females (Ross, Layton, Erickson, & Schopler, 1973), and, when forced to collocate with a stranger, males prefer moderate interpersonal distances (operationalised as 1.11 m shoulder-to-shoulder), whereas females prefer either close (1.5-2.5 cm shoulder-to-shoulder) or distant (2.11 m shoulder-to-shoulder) proximity (Elliot & Cohen, 1981). Also, certain cultures appear to be more tolerant of crowding (Paulus & Nagar, 1989).

¹ Interestingly, this link between the ability to observe others and arousal appears to have a precedent in the teachings of Feng Shui. Practitioners of this Eastern philosophy invariably caution designers against positioning occupants with their backs towards doors. While proponents of Feng Shui give a somewhat mystical description of the 'negative energy' that results from the violation of this principle, researchers in social facilitation would claim that such a position heightens arousal in preparation to respond to potential threat. Conversely, lower levels of arousal are predicted if the subject is able to register and monitor new arrivals.

Nonetheless, if we adopt the position that the workplace must be capable of catering to those members most afflicted by aversive stimuli, then designers should attempt to incorporate features capable of alleviating the discomfort of crowding, present – to a greater or lesser extent – in most open-plan offices.

Recommendations by prominent researchers include the following:

- Evans, Lepore, and Schroeder (1996) found that increasing architectural depth (the number of defined spaces one must pass through while navigating a floorplate) mitigates the effects of crowding, as occupants feel that they have some buffer against constant interaction (i.e., the preparedness to interact is reduced as the likelihood of making social contact—including visual connection—decreases).
- Provide options for staff to escape from crowded conditions (Langer & Saegert, 1977), such as flexible working conditions and shared spaces.
- Paulus and Nagar (1989) recommend using partitions, private rooms, high ceilings and windows to alleviate feelings of crowding.

Common to all of these proposed solutions is the notion of crowding as a *perception*, which can be altered either through spatial structure or by affording the employee a sense of control via the provision of multiple work locations.

However, contemporary knowledge work is often collaborative, and it is for this reason that open-plan offices—with their tendency to encourage communication—are designed to minimise both interpersonal distance and structural means of separation. Team-based work has undoubtedly benefited from the move away from cellular offices, yet such collaborative labour is often afflicted by a well-known psychological phenomenon termed *social loafing*. This process, linked by some researchers to social facilitation, is characterised by a decrease in individual output that is proportional to the number of co-workers involved in a collective task. The reasons for this behaviour range from expectancies about others' input to the belief that someone else will pick up the slack (see Geen, 1991, for a review of these accounts and their links to social facilitation).

How can business leaders discourage this widespread and costly practice through workplace design? One obvious solution would be to remove the anonymity upon which all accounts of social loafing are based. Communicating to staff that management is aware of individual output removes the veil cloaking poor productivity both within and outside of groupwork. As it is undesirable to station supervisors throughout the office purely for the purpose of monitoring staff performance, some organisations have adopted the controversial practice of *electronic performance monitoring* (EPM). By utilising the network within an organisation, managers can access staff computer terminals and telephones, providing information as to the type of activities the employee is currently engaged in, as well as performance data such as speed and accuracy. Aiello and Kolb (1995) found that this form of worker evaluation influenced performance in the pattern predicted by social facilitation research: skilled participants keyed more entries when monitored, whereas unskilled participants were more productive without EPM. However, this result has not proven particularly robust, with other studies reporting insignificant (Griffith, 1993) or wholly negative effects (Aiello & Rutgers, 1993).

Regardless of whether or not monitoring increases productivity, Frey (1993) suggests that this form of evaluation can have a damaging impact on the employee-organisation relationship. Using Rousseau's (1995) description of the *psychological contract*, Frey claims that an unwritten understanding exists between the employee and the organisation that includes their responsibilities toward one another, and that increased supervision can be viewed by staff as a sign of distrust. This act on the part of the organisation may then be received as a violation of the psychological contract, which often provokes a response of reduced work effort from staff. Thus, while monitoring may increase arousal and lead to greater productivity of well-learned activities, it could equally result in the inhibition of learning and of more complex tasks, the suppression of creativity, and, perhaps most serious of all, a withdrawal of effort and decreased staff engagement with the company.

A less authoritarian, yet purportedly more effective, means of reducing social loafing is to foster a sense of cohesion within workgroups (Karau & Williams, 1997). Research suggests that employees who consider themselves as part of a collective enterprise increase their individual efforts, resulting in optimal team outcomes (Ellemers, de Gilder, & Haslam, 2004). The goal for organisations should therefore be to create a culture that encourages and supports positive collaborative relationships among its members. Obviously many elements contribute to the development and maintenance of such a culture, so we shall restrict our focus to the ways in which the physical environment can support this ideal.

To return to the topic of crowding, research suggests that there are certain situations in which high density conditions may be beneficial to work performance. Close proximity can be adaptive if groups are working together as a team on a common output—that is, there is no potential for within—group competition (Seta, Paulus, & Schkade, 1976). In fact, Freedman (1975) argues that crowding simply intensifies the affective state associated with the group, such that positive feelings of camaraderie and enthusiasm will be enhanced with reduced proximity between members. To this end, Paulus and Nagar (1989) claim that “any feature that increases the opportunity for social interaction should increase the degree of group development in an environment” (p. 125). Specific suggestions include:

- Prevent work groups from getting too large (i.e., greater than four), unless the task is very well-learned/simple (Paulus, 1983).
- Spaces for group interaction should not use tables/arrangements that space the participants too far apart (Green, 1975), though care should be taken not to crowd team members (particularly males).
- Workers who are comfortable with their colleagues tend to work best on collaborative tasks with sociopetal (semi-circular) seating arrangements (Gifford & Gallagher, 1985).

A psychologist's blueprint for a supportive open-plan office

To summarise, the presence of others—in a variety of forms—has been theoretically linked to a heightened state of arousal in humans, which has been empirically linked to either facilitation or inhibition of task performance depending on a number of task- and audience-related factors. So what implications does this research hold for designers of office space? Is it possible to moderate the effects of socially-induced arousal in order to attain optimal levels of performance for a variety of work-related tasks? It is unlikely that any one employee will have an invariant desire for either low or high arousal, emphasising the need for a flexible office design in which each individual can seek out a workspace that suits the requirements of their current task. It seems, then, that the workplace should offer a variety of zones that are characterised by their arousal value according to the range of variables considered in this paper.

Low arousal areas should be used for concentrated individual work requiring highly creative thinking and/or innovative problem solving, and should contain:

- Enclosed cubicles which provide a high degree of visual privacy, particularly from colleagues—and especially managers—who are positioned behind the worker.
- A number of barriers that serve to separate the space from the rest of the office.

Moderately arousing areas could be designed for those whose current task demands a mixture of concentrated individual work and the opportunity to coordinate with a small team of co-workers. This space should be characterised by:

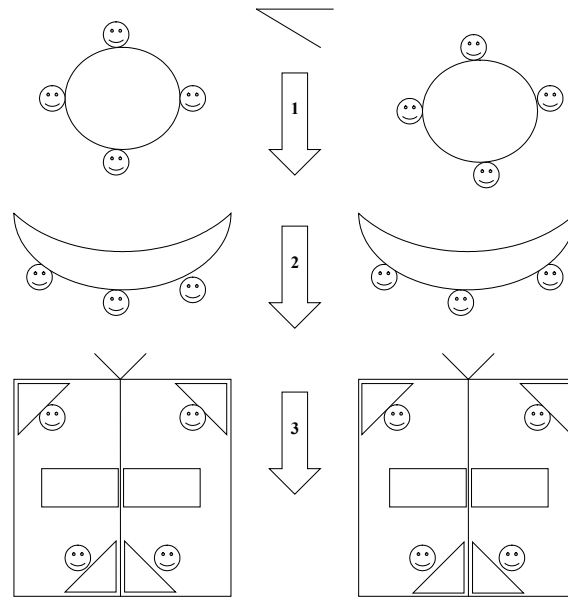
- Curvilinear benches capable of accommodating around 3-4 employees (this shape supports the sociopetal seating arrangement recommended by Gifford & Gallagher, 1985, for fostering communication between co-workers).
- Traffic passing behind these workstations should be minimised, as the mere presence of colleagues occupying the bench should prove sufficient to elevate arousal to moderate levels. The curved work surface will also ensure that adjacent colleagues are unable to easily view the computer screens of others.

Finally, *high arousal areas* should include collaborative spaces: a flexible arrangement of tables and chairs that can be used by groups for the purpose of brainstorming, or possibly even by individuals engaged in highly repetitious and cognitively undemanding tasks. This area should include:

- A number of round tables facilitating collaboration. These should not be too large (capacity of approximately four people), and be mobile enough to be combined if the need arises.
- A high degree of visual connectivity, with minimal physical barriers.

A pictorial representation of how these guidelines might translate to design is offered in Figure 2.

Figure 2 Schematisation of three working zones and their arousal value. Zone 1 is a high arousal environment designated for collaborative work; Zone 2 is less arousing and intended for small teams engaged in individual work; Zone 3 is a low arousal area designed for concentrated, solitary tasks.



In Figure 2, arousal is progressively alleviated via a number of social and design factors. Structural separation from others increases, and density decreases, as one moves down through the diagram, and the potential for observation—particularly from behind the employee—also decreases. A number of other variables associated with arousal have also been considered and are consistent with the model. For instance, noise decreases from Zone 1 to Zone 3, with eye-level sound-absorbent screens placed on the workbenches in Zone 2. Ideally, sources of visual distraction, such as window views, should be placed in Zone 1, as should the entrance, allowing circulation in the direction indicated by the arrows (i.e., incoming traffic is observable and decreases in volume as one progresses through the zones). Note that the cubicles in Zone 3 are based on a design currently being developed by Simon Pole and his colleagues in the London studio. These work areas can be illuminated with task lighting, while Zones 1 and 2 may be primarily lit by daylight, decreasing energy costs.

In summary, open-plan offices have the potential to facilitate the performance of staff, but a range of variables need to be considered in order to reduce the likelihood of social inhibition. Figure 2 provides a crude and simplistic, yet theoretically functional, guide for arranging the workspace into areas that are aligned with the attentional and affective needs dictated by a range of tasks. While many organisations may permit, or even encourage, employees to work from home under certain conditions, designing the workplace with a range of working options should ensure that office-based staff are able to select a position that allows them to either harness or avoid the energising effects of colleagues.

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