MIT Press • Open Encyclopedia of Cognitive Science

Proxemics

Cade McCall[1]

[1]Department of Psychology, University of York (UK)

MIT Press

Published on: Jul 24, 2024

DOI: https://doi.org/10.21428/e2759450.399d520e

Proxemics is the study of how people use and experience physical space during social interactions. Proxemic analyses focus on interpersonal distancing and orienting as well as individuals' subjective and physiological responses to the proximity of others. The methodological approaches to studying proxemics vary widely, including self-report, digital motion tracking, and qualitative analyses of interactions. Proxemics research spans many disciplines and has examined the way in which people's use of physical space during interactions expresses cultural norms, power relations, interpersonal attitudes, and individual dispositions. In recent years, proxemics research has been applied to a variety of fields, including interactive robotics design.

History

The term *proxemics* was originally coined by anthropologist Edward C. Hall, who referred to it as the study of "use of space as a specialized elaboration of culture" (Hall, 1966, page 1). In subsequent years, proxemics research has focused on people's use and experience of physical space during social interactions. Proxemics research now spans a variety of disciplines, including communications, social psychology, cognitive neuroscience, sociology, and robotics. This research has addressed basic questions about the key factors that determine proxemic behavior and preferences as well as more applied questions about how proxemic behavior can contribute to effective face-to-face communication.

Proxemic research uses a variety of measurement approaches. Self-report measures assess proxemic preferences and subjective experiences of proxemic events (such as intrusions into personal space). Detailed, third-party coding of physical behaviors provides richly detailed accounts of actual behavior during an interaction (Harrigan, 2005). More quantitative approaches include one-shot measures of behavior, such as how close an individual sits to a target individual, as well as more precise and continuous measures using digital tracking technology (Bailenson et al., 2003; Lahnakoski et al., 2020) [see also Virtual Reality]. Neuroimaging (Hunley & Lourenco, 2018; Kennedy et al., 2009) and psychophysiological measures (Candini et al., 2021) have also been used to explore the physiological correlates of interpersonal proximity.

Core concepts

Personal space

Some of the earliest work on proxemics described proxemic zones (Hall, 1966), each of which is defined by the distance from the individual. Hall proposed that people interact at different distances, depending upon the nature of their relationship. Proxemic zones range from intimate distance (for interactions involving touching), personal distance (for interactions with family or friends), social distance (for interactions with acquaintances or strangers), and public distance (for public speaking or speaking to groups). Subsequent research has frequently focused on the "personal space bubble" comprised of the

inner zones. Breaches of this bubble are likely to elicit discomfort or anger, such as when a stranger stands unnecessarily close (Hayduk, 1983).

Equilibrium

Interpersonal distance, bodily orientation, and gaze are all proxemic variables, but they are often studied and discussed separately. Nevertheless, proxemics research demonstrates that these facets of nonverbal behavior are interdependent. For example, when strangers are forced into close proximity in an elevator, they tend to avoid orienting toward each other or engaging in mutual gaze. Equilibrium theory suggests that interpersonal proximity, mutual gaze, and other variables all contribute to the level of intimacy in an interaction (Argyle & Dean, 1965). To maintain the desired level of intimacy, a shift in one variable (e.g., the increase in proximity in the elevator) necessitates a shift in another variable (e.g., away from mutual gaze). Although support for this theory is mixed, treating proxemics as a multivariate construct has nevertheless proven fruitful in providing a more comprehensive picture of proxemic behavior (Hayduk, 1983; McCall & Singer, 2015).

Attitudes

Research has long suggested that proxemic behavior implicitly reveals how an individual feels about the people with whom they are interacting (Mehrabian, 1968). This pattern is most evident in research on attitudes whereby negative attitudes are associated with physical avoidance in terms of both interpersonal distance and orienting. Studies along these lines suggest that avoidance reveals prejudices against disability (Worthington, 1974), obesity (Bessenoff & Sherman, 2000), and ethnicity (Dovidio et al., 1997), even when individuals may not explicitly acknowledge those biases.

Questions, controversies, and new developments

From its inception, proxemics researchers have been interested in identifying systematic cultural differences in behavior (Hall, 1966). Nevertheless, questions remain as to if and why such differences exist (Sorokowska et al., 2017). Similarly, researchers have long examined identity-based differences in proxemic behavior (e.g., gender; Hayduk, 1983), again with mixed results. In more recent years, research on individual differences has focused on clinical phenomena such as autism, social anxiety, and schizophrenia. For example, findings suggest that autistic individuals may have unusually rigid preferences for interpersonal space over time (Asada et al., 2024) and across situations (Candini et al., 2020). Nevertheless, behavior varies widely across autistic individuals and may be better explained by other phenomena such as social anxiety (Perry et al., 2015).

Broader connections

In recent years, proxemics research has extended to the field of robotics. Here, researchers have applied findings from the research of humans to better understand how robots can be designed to interact in a safe and trustworthy manner with humans (Rios-Martinez et al., 2015). Work in this area also aims to

model human proxemics so that autonomous systems can better predict and respond to human behavior (Patompak et al., 2020).

Recent research has also raised questions regarding the relationship between the ideas explored in proxemics research and those explored in research on cognitive and neural representations of physical space [see Spatial Cognition]. Peripersonal space, the space immediately around the body, has primarily been studied with regards to attention and action. It remains to be seen if and how peripersonal space relates to people's use and experience of space during social interactions (Hunley & Lourenco, 2018).

Further reading

- Harrigan, J. A. (2005). Proxemics, kinesics, and gaze. In J. A. Harrigan, R. Rosenthal, & K. R. Scherer (Eds.), *The new handbook of methods in nonverbal behavior research* (pp. 137–198). Oxford University Press.
- McCall, C., & Singer, T. (2015). Facing off with unfair others: Introducing proxemic imaging as an implicit measure of approach and avoidance during social interaction. *PloS One*, *10*(2), e0117532. https://doi.org/10.1371/journal.pone.0117532
- Patompak, P., Jeong, S., Nilkhamhang, I., & Chong, N. Y. (2020). Learning proxemics for personalized human–robot social interaction. *International Journal of Social Robotics*, *12*(1), 267–280. https://doi.org/10.1007/s12369-019-00560-9

References

- Argyle, M., & Dean, J. (1965). Eye-contact, distance and affiliation. *Sociometry*, *28*(3), 289–304. https://doi.org/10.2307/2786027 ↩
- Asada, K., Akechi, H., Kikuchi, Y., Tojo, Y., Hakarino, K., Saito, A., Hasegawa, T., & Kumagaya, S. (2024). Longitudinal study of personal space in autism. *Child Neuropsychology*. Advance online publication. https://doi.org/10.1080/09297049.2024.2337753 ↩
- Bailenson, J. N., Blascovich, J., Beall, A. C., & Loomis, J. M. (2003). Interpersonal distance in immersive virtual environments. *Personality and Social Psychology Bulletin*, *29*(7), 819–833. https://doi.org/10.1177/0146167203029007002 ↩
- Bessenoff, G. R., & Sherman, J. W. (2000). Automatic and controlled components of prejudice toward fat people: Evaluation versus stereotype activation. *Social Cognition*, *18*(4), 329–353. https://doi.org/10.1521/soco.2000.18.4.329 ↩

- Candini, M., Battaglia, S., Benassi, M., di Pellegrino, G., & Frassinetti, F. (2021). The physiological correlates of interpersonal space. *Scientific Reports*, *11*(1), 2611. https://doi.org/10.1038/s41598-021-82223-2 ↩
- Candini, M., di Pellegrino, G., & Frassinetti, F. (2020). The plasticity of the interpersonal space in autism spectrum disorder. *Neuropsychologia*, *147*, 107589. https://doi.org/10.1016/j.neuropsychologia.2020.107589 ↩
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, *33*(5), 510–540. https://doi.org/10.1006/jesp.1997.1331 ↩
- Hall, E. T. (1966). *The hidden dimension.* Doubleday. ↩
- Harrigan, J. A. (2005). Proxemics, kinesics, and gaze. In J. A. Harrigan, R. Rosenthal, & K. R. Scherer (Eds.), *The new handbook of methods in nonverbal behavior research* (pp. 137–198). Oxford University Press. ↩
- Hayduk, L. A. (1983). Personal space: Where we now stand. *Psychological Bulletin*, *94*(2), 293–335. https://doi.org/10.1037/0033-2909.94.2.293 ↩
- Hunley, S. B., & Lourenco, S. F. (2018). What is peripersonal space? An examination of unresolved empirical issues and emerging findings. *Wiley Interdisciplinary Reviews Cognitive Science*, *9*(6), e1472. https://doi.org/0.1002/wcs.1472 ↩
- Kennedy, D. P., Gläscher, J., Tyszka, J. M., & Adolphs, R. (2009). Personal space regulation by the human amygdala. *Nature Neuroscience*, *12*(10), 1226-1227. https://doi.org/10.1038/nn.2381 ↩
- Lahnakoski, J. M., Forbes, P. A., McCall, C., & Schilbach, L. (2020). Unobtrusive tracking of interpersonal orienting and distance predicts the subjective quality of social interactions. *Royal Society Open Science*, *7*(8), 191815. https://doi.org/10.1098/rsos.191815 ↩
- McCall, C., & Singer, T. (2015). Facing off with unfair others: Introducing proxemic imaging as an implicit measure of approach and avoidance during social interaction. *PloS One*, *10*(2), e0117532.

https://doi.org/10.1371/journal.pone.0117532

↩

- Mehrabian, A. (1968). Relationship of attitude to seated posture, orientation, and distance. *Journal of Personality and Social Psychology*, *10*(1), 26. https://doi.org/10.1037/h0026384

↩

- Patompak, P., Jeong, S., Nilkhamhang, I., & Chong, N. Y. (2020). Learning proxemics for personalized human–robot social interaction. *International Journal of Social Robotics*, *12*(1), 267–280. https://doi.org/10.1007/s12369-019-00560-9

↩

- Perry, A., Levy-Gigi, E., Richter-Levin, G., & Shamay-Tsoory, S. G. (2015). Interpersonal distance and social anxiety in autistic spectrum disorders: A behavioral and ERP study. *Social Neuroscience*, *10*(4), 354–365. https://doi.org/10.1080/17470919.2015.1010740

↩

- Rios-Martinez, J., Spalanzani, A., & Laugier, C. (2015). From proxemics theory to socially-aware navigation: A survey. *International Journal of Social Robotics*, *7*(2), 137–153. https://doi.org/10.1007/s12369-014-0251-1

↩

- Sorokowska, A., Sorokowski, P., Hilpert, P., Cantarero, K., Frackowiak, T., Ahmadi, K., Alghraibeh, A. M., Aryeetey, R., Bertoni, A., Bettache, K., Blumen, S., Błażejewska, M., Bortolini, T., Butovskaya, M., Castro, F. N., Cetinkaya, H., Cunha, D., David, D., David, O. A., … Pierce, Jr., J. D. (2017). Preferred interpersonal distances: A global comparison. *Journal of Cross-Cultural Psychology*, *48*(4), 577–592. https://doi.org/10.1177/0022022117698039

↩

- Worthington, M. E. (1974). Personal space as a function of the stigma effect. *Environment and Behavior*, *6*(3), 289–294. https://doi.org/10.1177/0013916574006003

↩