

Power and High Floors: A Socioecological Perspective

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POWER AND HIGH FLOORS

Abstract

The urban space of the twenty-first century is markedly dominated by high-rise construction. We explore how this extensive phenomenon relates to people's lay theories of power. Drawing from socioecological psychology and seminal linguistic work on vertical metaphors of power, we test the bi-directional link between floor location and perceived power in five experiments. Experiments 1–3 demonstrate that information about a powerful (vs. powerless) individual leads to inferences about this individual's greater preference of, willingness to pay for, and actual location on higher floors. Experiments 4–5 demonstrate that information about an individual's higher (vs. lower) floor location leads to inferences about this individual's greater power. We discuss the implications of our findings for power signaling in real-world settings, social polarization and inequality, and pricing of high floors.

Keywords: social ecology, verticality, power, urban/environmental psychology

POWER AND HIGH FLOORS

“What is it about power, that it has to be higher up than everyone else?

Can a man not be powerful on the group floor?”

Joe Abercrombie, Last argument of kings

From the biblical Tower of Babel, through medieval European Cathedrals, all the way to modern-day metropolitans, high-rise construction has dominated urban environments. Given the high-rise residential and commercial structures’ accelerated development in today’s urbanized world (Yuen, 2005), we focus on the psychological implications of high-rises on social hierarchies. Drawing from socioecological psychology that highlights the impact of physical environments on mind and behavior (Oishi & Graham, 2010), as well as from seminal linguistic work on vertical metaphors of power (Lakoff & Johnson, 1980; see also Landau, Meier, & Keefer, 2010), we test the bi-directional link between floor level (a key yet often overlooked feature of the modern urban environment) and the psychological construct of power.

Lay Theories of Power

Power, often referring to a person’s capacity to influence others’ outcomes (Keltner, Gruenfeld, & Anderson, 2003; Kifer, Heller, Perunovic, & Galinsky, 2013), coordinates social life and is the foundation of social hierarchies (Keltner, Van Kleef, Chen, & Kraus, 2008). People have accordingly developed rich and highly accessible beliefs about characteristics and behaviors that are associated with power (Hall, Coats, & LeBeau, 2005)—enabling them to readily detect power hierarchies and categorize others within these social frameworks (Srivastava & Anderson, 2011; Zitek & Tiedens, 2012). For example, people commonly use demographic factors such as gender, race, education, and professional position (e.g., Berger, Ridgeway, Fisek, & Norman, 1998; Domhoff, 1998; Henley, 1977), as well as behavioral cues

POWER AND HIGH FLOORS

such as action initiation, non-verbal behavior (e.g., expansive postures), and norm violations, as signals of power (Hall et al., 2005; Van Kleef, Homan, Finkenauer, Güendemir, & Stamkou, 2011).

Correspondingly, in this study, we propose that lay beliefs of the powerful further include perceptions and expectations regarding one's vertical (floor) location within the real physical environment, and further, that the latter leads to perceptions and expectations regarding one's social power. Conceptual work in linguistics argues that social concepts in general, and power in particular, are understood by metaphors (Landau, Robinson, & Meier, 2013). To wit, when thinking about power, people often use spatial metaphors referring to the vertical axis of “up” versus “down” (Lakoff & Johnson, 1980), such as referring to a powerful person as being “higher up” on the corporate ladder, and referring to a person with little power as “on the bottom rung.” Consistent with the vertical metaphor of power, social cognition research shows that participants associated abstract vertical representations (i.e., circle pairs) with power-related statements (Schubert, 2005) and identified a letter located at the top of a computer monitor faster when it followed a word referring to a powerful, as opposed to a powerless, person (Zanolie et al., 2012). Similarly, people indicated leaders who are positioned higher up in a schematic organizational chart are more powerful (Giessner & Schubert, 2007). Finally, based on the power-verticality association, other studies experimentally induced the experience of power by placing participants on higher (vs. lower) chairs (Brinol, Petty, Valle, Rucker, & Becerra, 2007; Chen, Lee-Chai, & Bargh, 2001).

Power and High Floors

How does power manifest and translate in the everyday, real-world experience of the 21st century physical urban environment? Specifically, what does power (floor location) imply about

POWER AND HIGH FLOORS

one's floor location (power)? Despite the central role of power in social life (Galinsky, Rucker, & Magee, 2014; Magee & Galinsky, 2008) and real-world contexts (Smith & Hofman, 2016), the literature has not addressed the power-verticality link within the physical urban space. According to the socioecological perspective (Oishi & Graham, 2010), the physical space has diverse psychological effects, including life satisfaction, mental health, social relations, and stereotypes (e.g., Bonam, Bergsieker, & Eberhardt, 2016; Panczak, Galobardes, Spoerri, Zwahlen, & Egger, 2013). Thus, we propose that floor location within a high-rise environment is bi-directionally linked to people's lay theories of power. Consistent with our proposition, previous findings indicate that people designate a higher residential location (e.g., home on a hilltop) to higher social-status¹ individuals (Tower-Richardi, Brunyé, Gagnon, Mahoney, & Taylor, 2014) and assign a northern (southern) residential location to high (low) social-economic-status (SES) individuals (Meier, Moller, Chen, & Riemer-Peltz, 2011)—based on the association of “north” with “up” and “south” with “down.”

In sum, given that power and verticality are linked, we argue that lay theories of the powerful have come to include vertical physical locations. Thus, we test two causal hypotheses regarding the real-world link between power and floor location in a high-rise environment: (a)

¹ Tower-Richardi et al. (2014) manipulate “social status” (rather than social power)—an undefined term in the social psychological literature— thereby not allowing for a differentiation between various hierarchical dimensions such as “SES,” “power,” and “status” (Magee & Galinsky, 2008). Because power is the central aspect of social hierarchy, recent theorizing has delineated the boundaries of the power construct, distinguishing it from other related yet distinct hierarchical constructs such as “status” (defined as the prestige, respect, and admiration one gains in the eyes of others; see, e.g., Anderson, Srivastava, Beer, Spataro, & Chatman, 2006) and “socio-economic-status” (SES; commonly a composite measure of education, income, and occupation; see, e.g., Kraus, Piff, & Keltner, 2009).

POWER AND HIGH FLOORS

greater power signals preference for as well as actual higher floor location, and (b) higher floor location signals greater power.

Overview

We conducted five experiments in which participants made inferences about a target (Mr. L.). Experiments 1 and 2 explore the *power-to-floor* effect, by manipulating the target's power and examining inferences about floor preference (Experiment 1) and actual floor location (Experiment 2). In Experiment 3, we further explore an important economic downstream consequence for the power-to-floor effect—the willingness to pay (WTP) for a higher floor as a function of the target's power. Experiments 1-3 employ a construct-valid structural manipulation of power (Fragale, Overbeck, & Neale, 2011) that is different and separate from other dimensions of the social hierarchy (Blader & Chen, 2014). In Experiments 4 and 5, we explore the *floor-to-power* effect by manipulating the target's floor location and examining inferences about the target's power. Importantly, we demonstrate the power-to-floor links in different contexts—residential and organizational—and with various floor levels, to enhance the generalizability of our findings.

We determined sample size based on a-priori power analyses (G*power; Faul, Erdfelder, Lang, & Buchner, 2007), expecting an average-sized effect ($\Delta = .40$) and .80 power. We thus aimed for 200 participants in Experiment 1, and at least 64 participants in each group for all other experiments (Funder et al., 2014). We completed all data collection and exclusions (based on pre-determined criteria) prior to data analyses. We report below all manipulations and measures (Simmons, Nelson, & Simonsohn, 2012).

POWER AND HIGH FLOORS

Experiment 1: Does Power Lead People to Infer Residential Floor Location?**Method**

Participants and procedure. We randomly assigned 200 MTurk workers (94 women, $M_{\text{age}}=37.93$, $SD=11.87$) to the powerful or powerless conditions.

Participants first read the following description of a target, named “L” (Fragale et al., 2011):

Mr. L is 40 years old, married with 2 children. L works at a mid-sized company and earns \$70,000 (a salary higher than 75% of all U.S. individuals). L is very powerful [powerless] within the company. L holds a formal position that provides him with a great deal of [very little] control over valued resources in the company. Thus, L has [does not have] influence over others because of his great [limited] access to resources in the company. In his spare time, L likes to watch sports, hike, and read books.

We varied only the target’s power level between conditions, keeping all other information fixed across conditions. Importantly, to avoid the potential confounding influence of income (i.e., powerful people might be perceived as richer and thus more likely to be able to afford a possibly pricier higher floor location), in both conditions we provided an identical fixed annual income of \$70,000, indicating it was greater than the income of 75% of all U.S. individuals. Next, participants saw a graphic representation of a 10-floor apartment building. We told participants Mr. L was looking for an apartment in this building (except for the floor level, all apartments are identical in their features) and asked them to indicate the floor on which Mr. L would prefer to reside. The chosen floor served as the main dependent measure. To control for the floor-view effect, participants rated the target’s preference for view, alongside filler

POWER AND HIGH FLOORS

apartment attributes (e.g., natural light) and other preferences for luxury and ordinary products (Rucker & Galinsky, 2008). As a manipulation check, we then asked participants to recall details from L's description (gender, age, power level, and ability to influence others) and indicate the extent to which they perceived L as powerful (embedded within other filler items, e.g., nice). Finally, participants provided their socio-demographic information.

We excluded nine participants who failed the attention checks (i.e., incorrectly recalled both the target's level of power and ability to influence others). We analyzed a total of 191 responses (95 in the powerful condition).

Results

Manipulation check. The manipulation was successful in making the target appear more powerful in the powerful condition ($M=6.24$, $SD=.795$) than in the powerless condition ($M=2.03$, $SD=1.01$), $t(189)=31.99$, $p<.001$, $d=4.43$.

Residential floor choice. Participants who read about the powerful target indicated a higher floor for the target ($M=7.83$, $SD=2.93$) than participants who read about the powerless target ($M=5.01$, $SD=2.63$), $t(189)=6.99$, $p<.001$, $d=1.69$. This outcome maintained statistical significance after controlling for the effect of view preference, $F(1,188)=16.177$, $p<.001$, $d=.96$.

Experiment 2: Does Power Lead People to Infer Workplace Floor Location?

Experiment 1 established the power-to-floor link, suggesting people infer floor preferences from power, controlling for income and preference for view. In Experiment 2, we examined whether the effect of power on floor location generalizes to an organizational context. We also added a control group that received no information regarding the target's power, to shed light on the locus of the effect. To address the possibility that participants in Experiment 1 perceived the target as wealthy, we decreased the target's annual income to \$50,000, indicating

POWER AND HIGH FLOORS

this salary is the average annual income among U.S. men. We predicted participants would infer that a powerful target was working on a higher floor compared to both a powerless target and to the control condition.

Method

Participants and procedure. We recruited 201 MTurk workers (64 women, $M_{\text{age}}=31.38$, $SD=7.90$). We randomly assigned participants to the powerful, powerless, or control conditions. We used the procedure from Experiment 1 for manipulating power levels, while in the control condition participants received no information on target's power. We asked participants to indicate on which floor the target works in a given 20-floor office building owned by the target's company. As a manipulation check, participants rated the target's power (combined measure of power items: decisive, in control, leader-like, influential; $\alpha = .907$), embedded within unrelated items (e.g., nice), on a scale of 1 (*not at all*) to 7 (*very much*).

Following the same exclusion criteria from Experiment 1, we excluded 18 participants. We thus analyzed a total of 182 responses (62 in the powerful condition, 61 in the powerless condition, and 59 in the control condition).

Results

Manipulation check. An ANOVA revealed a condition effect on the power manipulation check index, $F(2,179)=63.25$, $p<.001$, $\eta^2=.414$. Pairwise comparisons confirmed the manipulation was successful in making the target appear more powerful in the powerful condition ($M=5.69$, $SD=.83$) than in the powerless condition ($M=3.32$, $SD=1.39$), $t(179)=11.24$, $p<.<.001$, $d=2.07$, and the control condition ($M=4.45$, $SD=1.21$), $t(179)=5.83$, $p<.001$, $d=1.20$. The target was also viewed as less powerful in the powerless condition compared to the control condition, $t(179)=5.29$, $p<.001$, $d=.87$.

POWER AND HIGH FLOORS

Office floor location. Replicating and extending the findings of Experiment 1, we found the predicted main effect of power on office floor location, $F(2,179)=20.98, p<.001, \eta^2=.190$. As in Experiment 1, this effect maintained significance when we controlled for the preference for view, $F(2,178)=16.89, p<.001, \eta^2=.160$. Planned contrasts revealed that information about the powerful target led participants to infer a higher floor location ($M=13.89, SD=4.62$) than for the powerless target ($M=8.62, SD=5.02$), $t(179)=6.33, p<.001, 95\% \text{ CI } [2.93, 6.02], d=1.09$, and in the control condition ($M=10.29, SD=4.12$), $t(179)=4.29, p=.001, 95\% \text{ CI } [1.39, 4.49], d=.82$. The difference between control and powerless conditions was marginal, $t(179)=1.97, p=.051, 95\% \text{ CI } [-3.07, 0.006], d=-.36$.

Experiment 3: Does Power Increase Willingness to Pay (WTP) for a Higher Floor?

Taken together, the findings from Experiments 1 and 2 indicated people infer floor preferences, as well as actual floor location, from power-related information, even after controlling for income and preference for view. The powerful condition was driving the effect; namely, power signals preference for higher floors. In Experiment 3, we extended these findings by examining a downstream economic consequence of the inference regarding floor preference that stems from power-related information. Specifically, we measured participants' WTP for a higher (vs. lower) floor for powerful and powerless targets. We further controlled for the possibility that participants were more attuned to a powerful target's preference (that may follow from an inherent motivation to please a powerful individual). We hypothesized that participants would be willing to pay more for a higher (vs. lower) floor for a powerful target than for a powerless target.

Method

POWER AND HIGH FLOORS

Participants and procedure. Similar to Experiments 1 and 2, we presented 200 MTurk workers with the same short description of either a powerful or powerless target, Mr. L. We then asked participants to imagine they worked at the same company as L. and that their task was to find an office for him. We presented participants with a schematic picture of a 20-floor building, and informed them that two office units were available in this building—one on the 2nd floor and the other on 19th floor, where all other characteristics of the units (e.g., unit size) were identical. We intentionally excluded the last floor of the building so as avoid participants confounding height with additional features (e.g., penthouse and roof access). To maintain symmetry, we similarly excluded the first floor. Participants were asked to indicate their WTP for an office for L on each of these two floors on a standardized scale for each floor, ranging from 1 (*minimal price*) to 10 (*maximal price*), with the middle point representing the average price of a typical office unit on the given floor. Importantly, we used a standardized price scale for two reasons. First, because participants might have different price benchmarks and assessments, comparing absolute WTP dollar-price responses is likely to be meaningless. Second, the standardized scale accounted for the possible perceived price differences between 19th and 2nd floors. After providing their WTP, participants chose one of the two floors for L. Finally, we measured the extent to which participants wished to please L (to control for the possibility that participants would be more attuned to the preferences of the powerful target), followed by the same manipulation check of the target’s power as in Experiment 2 ($\alpha = .94$).

Following the same exclusion criteria used in Experiments 1 and 2, we excluded 11 participants who did not recall correctly both the target’s level of power and the target’s ability to influence others. We thus analyzed a total of 190 responses (95 in the powerful condition).

Results

POWER AND HIGH FLOORS

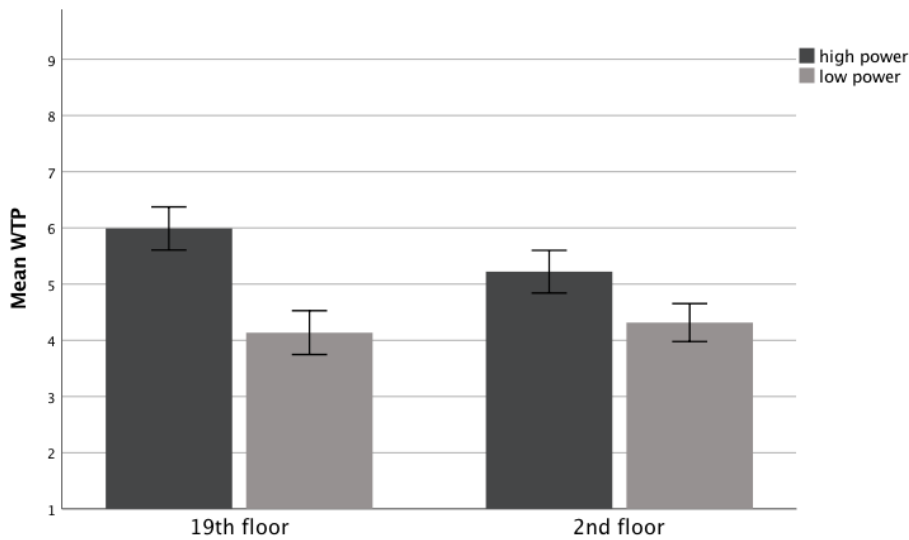
Manipulation check. The manipulation was successful in making the target appear more powerful in the powerful condition ($M=5.70$, $SD=.93$) than in the powerless condition ($M=2.95$, $SD=1.08$), $t(189)=18.82$, $p<.001$, $d=2.74$.

As expected, participants rated the “importance of pleasing L” significantly higher in the powerful condition ($M=5.47$, $SD=1.42$) than in the powerless condition ($M=3.51$, $SD=1.62$), $t(182)=7.78$, $p<.001$, $d=1.59$.

Willingness to pay. We ran a mixed-model ANOVA of WTP with power (high vs. low) as a between-subjects factor, and floor (2nd vs. 19th) as a within-subjects factor. The analysis yielded a main effect of power. Participants were willing to pay more for an office for the powerful target ($M= 5.60$, $SD=1.32$) than for the powerless target ($M=4.23$, $SD=1.51$), $F(1,188)=44.65$, $p<.001$, $\eta^2=.192$. We found no difference in WTP for the high compared to the low floor, $F(1,188)=3.09$, $p=.081$, $\eta^2=.016$. Importantly, we found a significant predicted power X floor interaction, $F(1,188)=7.98$, $p=.005$, $\eta^2=.041$ (Figure 1). The interaction remained significant in a MANOVA controlling for the importance of pleasing L, $F(1,188)=7.98$, $p=.005$, $\eta^2=.041$.

Fig. 1: WTP for locating a powerful versus powerless target on the 2nd and 19th floors (Experiment 3).

POWER AND HIGH FLOORS



Note. Error bars are 95% CIs.

As expected, planned contrasts revealed the difference in WTP between the 19th ($M=5.99$, $SD=1.88$) and 2nd ($M=5.22$, $SD=1.86$) floors was significant only for the powerful target, $F(1,188)=10.49$, $p=.001$, 95% CI [0.30, 1.24], $\eta^2=.05$. WTP did not differ between the 19th ($M=4.14$, $SD=1.92$) and 2nd ($M=4.32$, $SD=1.66$) floors for the powerless target, $F(1,188)=.45$, $p=.452$, 95% CI [-0.29, 0.65], $\eta^2=.003$.

Consistent with the findings on the WTP measure (and findings from Experiments 1 and 2), a majority of the participants in the powerful condition (57 out of 95; 60%) selected the 19th (over the 2nd) floor, whereas only a minority selected the 19th floor in the powerless condition (36 of 95; 38%), thereby further supporting our findings from Experiments 1 and 2, $X^2(1, N=190)=9.29$, $p=.002$.

Experiment 4: Do People Infer Power from Residential Floor Location?

Experiments 1-3 established the power-to-floor effect. Specifically, we showed not only that people infer floor preference and location from power (Experiments 1 and 2), but also that

POWER AND HIGH FLOORS

the latter carries a downstream economic effect because people are willing to pay more for higher (but not for lower) floors intended for powerful targets (Experiment 3). The downstream effect of power on WTP, in turn, suggests substantial economic insight regarding the role of power in the pricing of high-rises (see also the General Discussion section).

In Experiment 4, we examined the reverse causal direction, namely, inferences regarding the target's power that stem from information on the target's high versus low floor location. We predicted that a target residing on a high, as opposed to low, floor would be perceived as having greater power.

Method

Participants and procedure. We randomly assigned 213 MTurk workers to the high-, intermediate-, or low-floor condition. Participants read about a target living on the 18th floor (high-floor condition), the 10th floor (intermediate-floor condition), or the 3rd floor (low-floor condition) of a 20-floor condominium, maintaining all other information about the target (e.g., gender, age, income) fixed across conditions. Next, participants rated the target on three objective work-related power items—level of power, ability to influence others, and professional rank—which served as our main dependent measure ($\alpha=.847$) and were embedded within several unrelated items, on a scale of 1 (*very low*) to 7 (*very high*). Participants also rated the target's subjective sense of power at work (adapted from Anderson, John, & Keltner, 2012; [$\alpha=.86$]), along with several filler items (e.g., being a nice person). Participants also rated the importance of several luxury office items for the target (e.g., an expensive pen or a tie) as fillers. Finally, as an attention check, participants recalled the target's floor of residence and answered demographic questions.

POWER AND HIGH FLOORS

As in our previous experiments, we excluded participants who failed the attention check (i.e., did not correctly recall the target's floor). We analyzed 202 responses (65 in the low-floor condition, 66 in the high-floor condition, and 71 in the intermediate-floor condition).

Results

Power inference. We find the overall effect of floor level was marginally significant on the main dependent measure—objective work-related power, $F(2,199)=2.77$, $p=.065$, $\eta^2=0.027$. Planned comparisons revealed that, as expected, participants inferred that a target living on a high floor had more power ($M=3.89$, $SD=.81$) than a target living on a low floor ($M=3.55$, $SD=.79$), $t(199)=2.29$, $p=.023$, 95% CI [0.47, 0.633], $d=.42$. The intermediate condition ($M=3.79$, $SD=.93$) differed neither from the high-floor condition, $t(199)=.69$, $p=.488$, 95% CI [-0.387, 0.185], $d=-.11$, nor from the low-floor condition, $t(199)=1.64$, $p=.102$, 95% CI [-0.048, 0.527], $d=.28$. We did not find an effect of residential floor level on subjective sense of power at work, $F(2,199)=.428$, $p=.653$, $\eta^2=0.004$.

Experiment 5: Do People Infer Power from Workplace Floor Location?

The findings from Experiment 4 provided initial support for the inferred power that stems from information on one's residential floor level, where a higher (compared to lower) floor indicates greater perceived power. In Experiment 5, we aimed to extend these findings to the workplace context (i.e., working on a particular floor), thereby also matching the context of the floor-level manipulation with the work context of the power measure. Additionally, to address the possibility that participants perceived the intermediate-floor condition in Experiment 4 as high, we included here a neutral control group that was not given any information about floor level. We predicted the high-floor-location condition, compared to the low-floor-location and control conditions, would lead to inferences of high power.

POWER AND HIGH FLOORS

Method

Participants and procedure. We randomly assigned 201 MTurk workers to read about a target who works in a 20-floor office building, either on the 18th floor (high-floor condition) or the 3rd floor (low-floor condition). Participants in the control condition did not receive information about the target's floor. The procedure and measures were identical to Experiment 4. Participants rated the target's objective power (three work-related power items; $\alpha=.91$) and the target's subjective power (sense of power at work; $\alpha=.89$). Finally, participants recalled the floor level of the target's office and reported their demographic information.

We used the exclusion criteria from Experiment 4, excluding 14 participants who failed to recall the target's floor. We analyzed 187 responses (66 in the low-floor condition, 63 in the high-floor condition, and 58 in the control condition).

Results

Power inference. We found the predicted main effect of floor level, $F(2,184)=8.13$, $p<.001$, $\eta^2=0.081$. As expected, participants in the high-floor condition rated the target as having more objective power at work ($M=3.97$, $SD=1.13$) than did participants in the low-floor condition ($M=3.27$, $SD=.79$), $t(184)=3.99$, $p<.001$, 95% CI [0.354, 1.047], $d=.72$. The control condition ($M=3.71$, $SD=1.05$) significantly differed from the low-floor condition, $t(184)=2.42$, $p=.017$, 95% CI [0.080, 0.788], $d=.48$, but not from the high-floor condition, $t(184)=1.47$, $p=.143$, 95% CI [-0.625, 0.091], $d=-.24$.

Additionally, we found the predicted main effect of floor level on subjective sense of power, $F(2,184)=3.55$, $p=.031$, $\eta^2=0.037$. Participants in the high-floor condition rated the target as more powerful ($M=4.43$, $SD=1.15$) than participants in the low-floor condition ($M=4.01$, $SD=.91$), $t(184)=2.29$, $p=.023$, 95% CI [0.059, 0.779], $d=.41$, but not more than participants in

POWER AND HIGH FLOORS

the control condition ($M=4.43$, $SD=1.04$), $t(184)=-.036$, $p=.971$, 95% CI [-0.365, 0.379], $d=0.00$. The target was also perceived as less powerful in the low-floor than in the control condition, $t(184)=2.28$, $p=.023$, 95% CI [-0.794, -0.058], $d=-.43$.

General Discussion

The urbanized world of the 21st century is characterized by accelerated development of high-rise structures. Based on the socioecological perspective (Oishi & Graham, 2010), we used this real-world framework to test the association between power and verticality. Specifically, we tested whether power is bi-directionally, positively linked to one's vertical floor location, that is, whether power signals floor preference and location, and whether floor location signals power level. Across three experiments, we consistently find that information regarding an individual's high power affects perceptions about high-floor preference and location, within both residential and organizational contexts. We further demonstrate an important economic downstream implication of this power-to-floor effect, namely, that the WTP for a higher (vs. lower) floor increases for a powerful (but not for a powerless) individual. In other words, whereas, *ceteris paribus*, higher floors are generally pricier, the WTP for higher floor location is influenced by the individual's perceived power.

Furthermore, we provide evidence supporting the hypothesis that floor location signals power. We demonstrate that one's location either within a residential (Experiment 4) or organizational (Experiment 5) high-rise building influences people's perception of the individual's power. Specifically, an individual located on a higher versus lower floor of a high-rise structure was perceived as more powerful. This effect was stronger in an organizational context than in a residential context, possibly due to the better fit between the manipulation context (office floor) and the dependent measure (power at work) employed in Experiment 5. An

POWER AND HIGH FLOORS

office floor could also be a stronger or clearer power signal than a residential floor, suggesting individuals more readily connect power to an organizational hierarchy (Kifer et al., 2013), both psychologically and in the physical environment.

Our results contribute to the relatively limited literature on the antecedents of power by establishing causality from floor to power. Moving beyond previously established individual and social antecedents of power, our findings indicate a novel, physical-external source of power, namely, that power resides within the vertical dimension of the physical environment, thereby enhancing our understanding of where power is located and how power translates and manifests in everyday, real-world life contexts (Smith & Hofman, 2016). We demonstrate that high floor location conveys information regarding social power, and as such provides a desired real-world signal of power. Furthermore, because floor level affects the perception of power, it carries important practical implications for the establishment of social hierarchies; for example, locating on a higher floor can be strategically used as a means for achieving power, available to and effective for those who seek to enhance their perceived power.

Importantly, the demonstrated bi-directional power–floor-level link indicates locating on higher floors may serve as a mechanism for reinforcing and exacerbating existing social power hierarchies (see also Magee & Galinsky, 2008; Smith, Wigboldus, & Dijksterhuis, 2008). Perceived power triggers the inference of high floor location, and the latter, in turn, enhances others' perceptions of one's power. This self-reinforcing floor-power loop, channeled by the physical-urban space, contributes to the maintenance of power hierarchies. Moreover, if the powerful prefer higher floors, and high-floor occupancy in turn reinforces the perceived level of power, it follows that the continuous trend of high-rise development leads to an adverse effect on social cohesion: higher floors both pull together (self-select) and strengthen the more powerful in

POWER AND HIGH FLOORS

society, excluding the less powerful, and resulting in further power-based physical-vertical segregation and increased social polarization and inequality. The latter is arguably an important factor in the discussion of regulatory measures that may accompany high-rise construction, including, among others, implications for more inclusionary social policies to be considered in the continuing trend of high-rise development (e.g., Madar & Willis, 2015).

Finally, our findings introduce power as a significant economic good that is incorporated in the price paid by costumers of high floors. Whereas the real estate economic literature traditionally focuses on the economic value of the physical (“rational”) features of high floors, such as the associated nicer view and reduced noise (e.g., Bourassa, Hoesli, & Sun, 2004; Wilhelmsson, 2000), our study reveals the power construct as an (arguably central) factor that is related to elevated vertical locations. This economic insight may provide real estate customers with a better understanding of their floor preference, and thereby assist them in reaching more informed, “rational” decisions related to residential and corporate vertical locations. In that vein, our findings may also be useful to other real estate players (e.g., entrepreneurs and real estate agents) in understanding the demand (and consumers’ WTP) for high floors. From a broader perspective, the demonstrated power-floor link may provide insights into the worldwide high-rise building movement and its psychological, social, and economic implications.

POWER AND HIGH FLOORS

Authors' contribution

All authors contributed to the study concept and study design. Testing and data collection were performed by A. Dorfman. A. Dorfman performed the data analysis and interpretation. A. Dorfman drafted the manuscript, and D. Ben-Shahar and D. Heller provided critical revisions. All authors approved the final version of the manuscript for submission.

Declaration of Conflicting Interests

The authors declared they had no conflicts of interest with respect to their authorship or the publication of this article.

Funding

A grant from the Alrov Institute for Real Estate Research, Tel Aviv University, to D. Ben-Shahar and D. Heller, and a grant from the Henry Crown Institute of Business Research to D. Heller funded this research.

POWER AND HIGH FLOORS

References

- Anderson, C., John, O. P., & Keltner, D. (2012). The personal sense of power. *Journal of Personality, 80*, 313-344.
- Anderson, C., Srivastava, S., Beer, J. S., Spataro, S. E., & Chatman, J. A. (2006). Knowing your place: self-perceptions of status in face-to-face groups. *Journal of Personality and Social Psychology, 91*, 1094-1110.
- Berger, J., Ridgeway, C. L., Fisek, M. H., & Norman, R. Z. (1998). The legitimation of power and prestige orders. *American Sociological Review, 63*, 379-405.
- Blader, S., & Chen, Y. R. (2014) What's in a name? Status, power, and other forms of social hierarchy. In: Cheng J., Tracy J., Anderson C. (Eds.) *The Psychology of Social Status*. Springer, New York, NY.
- Bonam, C. M., Bergsieker, H. B., & Eberhardt, J. L. (2016). Polluting black space. *Journal of Experimental Psychology: General, 145*, 1561-1582.
- Bourassa, S. C., Hoesli, M., & Sun, J. (2004). What's in a view? *Environment and Planning, 36*, 1427-1450.
- Brinol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93*, 1040-1053.
- Chen, S., Lee-Chai, A. Y., & Bargh, J. A. (2001). Relationship orientation as a moderator of the effects of social power. *Journal of Personality and Social Psychology, 80*, 173-187.
- Domhoff, G. W. (1998). *Who rules America?* Mountain View, CA: Mayfield Publishing.

POWER AND HIGH FLOORS

- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191.
- Fragale, A. R., Overbeck, J. R., & Neale, M. A. (2011). Resources versus respect: Social judgments based on targets' power and status positions. *Journal of Experimental Social Psychology, 47*, 767-775.
- Funder, D. C., Levine, J. M., Mackie, D. M., Morf, C. C., Sansone, C. V., & West, S. G. (2014). Improving the dependability of research in personality and social psychology: Recommendations for research and educational practice. *Personality and Social Psychology Review, 18*, 3-12.
- Galinsky A.D., Rucker D.D., & Magee J.C. (2014). Power: Past findings, present considerations, and future directions. In *APA Handbook of Personality and Social Psychology*, Vol. 3, ed. M Mikulincer, J Simpson, P Shaver, J Dovidio, pp. 421–60. Washington, DC: APA.
- Giessner, S. R., & Schubert, T. W. (2007). High in the hierarchy: How vertical location and judgments of leaders' power are interrelated. *Organizational Behavior and Human Decision Processes, 104*, 30-44.
- Hall, J.A., Coats, E.J., & Smith LeBeau, L. (2005). Nonverbal behavior and the vertical dimension of social relations: A meta-analysis. *Psychological Bulletin, 131*, 898–924.
- Henley, N. M. (1997). *Body politics: Power, sex, and nonverbal communication*. Englewood Cliffs, NJ: Prentice-Hall.
- Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review, 110*, 265–284.

POWER AND HIGH FLOORS

- Keltner, D., Van Kleef, G. A., Chen, S., & Kraus, M. W. (2008). A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in Experimental Social Psychology, 40*, 151-192.
- Kifer Y., Heller, D., Perunovic, W. Q. E., & Galinsky, A. D. (2013). The good life of the powerful: The experience of power and authenticity enhances subjective well-being. *Psychological Science, 24*, 280–288.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology, 97*, 992–1004.
- Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Landau, M. J., Meier, B. P., & Keefer, L. A. (2010). A metaphor-enriched social cognition. *Psychological Bulletin, 136*, 1045-1067.
- Landau, M. J., Robinson, M. D., & Meier, B. P. (Eds.). (2013). *The power of metaphor: Examining its influence on social life*. Washington, DC: American Psychological Association.
- Madar, J., & Willis, M. (2015). Creating affordable housing out of thin air: The economics of mandatory inclusionary zoning in New York City. *Housing for an Inclusive New York: Affordable Housing Strategies for a High-Cost City*, pp. 1-15. New York: Furman Center.
- Magee, J. C., & Galinsky, A. D. (2008). Social hierarchy: The self-reinforcing nature of power and status. *Academy of Management Annals, 2*, 351–398.
- Meier, B. P., Moller, A. C., Chen, J. J., & Riemer-Peltz, M. (2011). Spatial metaphor and real estate: North–south location biases housing preference. *Social Psychological and Personality Science, 2*, 547–553.

POWER AND HIGH FLOORS

Oishi S., & Graham, J. (2010). Social ecology: Lost and found in psychological science.

Perspectives on Psychological Science, 5, 356-377.

Panczak, R., Galobardes, B., Spoerri, A., Zwahlen, M., & Egger, M. (2013). High life in the

sky? Mortality by floor of residence in Switzerland. *European Journal of Epidemiology, 28*, 453-462.

Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and

compensatory consumption. *Journal of Consumer Research, 35*, 257-267.

Schubert, T. W. (2005). Your highness: Vertical positions as perceptual symbols of power.

Journal of Personality and Social Psychology, 89, 1-21.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). A 21 word solution. *Dialogue, The*

Official Newsletter of the Society of Personality and Social Psychology, 26, 4-7.

Smith, P. K., & Hofmann, W. (2016). Power in everyday life. *Proceedings of the National*

Academy of Sciences, 113, 10043–10048.

Smith, P. K., Wigboldus, D. H. J., & Dijksterhuis, A. (2008). Abstract thinking increases one's

sense of power. *Journal of Experimental Social Psychology, 44*, 378-385.

Srivastava, S., & Anderson, C. (2011). Accurate when it counts: Perceiving power and status in

social groups. In J. L. Smith, W. Ickes, J. Hall, S. D. Hodges, & W. Gardner (Eds.),

Managing interpersonal sensitivity: Knowing when—and when not—to understand others

(pp. 41–58). Hauppauge, NY: Nova Science Publishers.

Tower-Richardi, S. M., Brunyé, T. T., Gagnon, S. A., Mahoney, C. R., & Taylor, H. A.

(2014). Living the high life: Social status influences real estate decision making. *Journal of Applied Social Psychology, 44*, 611-621.

POWER AND HIGH FLOORS

Van Kleef, G. A., Homan, A. C., Finkenauer, C., Gündemir, S., & Stamkou, E. (2011).

Breaking the rules to rise to power: How norm violators gain power in the eyes of others.

Social Psychological and Personality Science, 2, 500-507.

Wilhelmsson, M. (2000). The impact of traffic noise on the values of single-family houses.

Journal of Environmental Planning and Management, 43, 799-815.

Yuen, B. (2005). Romancing the high-rise in Singapore. *Cities*, 22, 3-13.

Zanolie, K., van Dantzig, S., Boot, I., Wijnen, J., Schubert, T. W., Giessner, S. R., & Pecher, D. (2012). Mighty metaphors: Behavioral and ERP evidence that power shifts attention

on a vertical dimension. *Brain and Cognition*, 78, 50-58.

Zitek, E. M., & Tiedens, L. Z. (2012). The fluency of social hierarchy: the ease with which

hierarchical relationships are seen, remembered, learned, and liked. *Journal of*

Personality and Social Psychology, 102, 98-115.