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When Walls are No Longer Barriers: Perception of Wall Height in Parkour

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SHORT AND SWEET

When walls are no longer barriers: Perception of wall height in parkour

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Abstract. Through training, skilled parkour athletes (traceurs) overcome everyday obstacles, such as walls, that are typically insurmountable. Traceurs and untrained novices estimated the height of walls and reported their anticipated ability to climb the wall. The traceurs perceived the walls as shorter than did novices. This result suggests that perception is scaled by the perceiver's anticipated ability to act, and is consistent with the action-specific account of perception.

Walls are ubiquitous. They are the defining feature of our urban environment. Walls delineate structures and act as barriers that limit where we can and cannot go. This is not the case for a traceur—someone practiced in parkour. Instead of using the paths defined by architects and engineers, traceurs find their own path by climbing walls and jumping over gaps—parts of our environment that normal people would consider insurmountable. David Belle, founder of the parkour movement, has claimed that training in parkour changes the way you see the environment. Although Belle's insight is anecdotal, the current experiment confirms that skilled traceurs perceive the environment differently.

Traceurs were approached during a regional training event while practicing the wall jump (see figure 1). The traceurs all had at least one month of practice or instruction in parkour ($M = 16.77$ months, SD = 15.4 months) and self-identified as traceurs. They participated at the wall at which they were training ($n = 17$ for the 345 cm wall, $n = 5$ for the 229 cm wall, and $n = 5$ for the 194 cm wall). Those who trained at multiple walls were tested at multiple walls. Eighteen male novices estimated the height of all three walls in ascending or descending order. Novices were age- ($M = 19.9$ years), sex-, and height-matched ($M = 177.5$ cm) to the traceurs ($M = 19.5$ years, 176.7 cm). Participants were instructed to imagine jumping and climbing to the top of the wall.

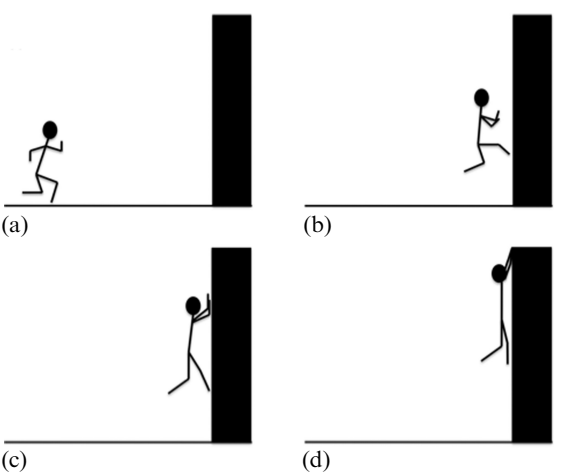

Figure 1. The wall jump. Horizontal movement is converted into vertical movement by kick-stepping off the wall for additional height.

They were asked to stand at a location where they would make final contact with the ground before jumping. An experimenter then moved an orange cone placed at their feet away from them, parallel to the wall, until the participant indicated that the distance from the outside of their foot to the cone matched the height of the wall. Then, participants rated how easy it would be to climb the wall on a 5-point scale (see table 1).

Table 1. Anticipated-ability questionnaire.

Rating	Value
1	I could never climb this wall
2	I could climb this wall less than half of the time
3	I could climb this wall on half my attempts
4	I could climb this wall most of the time
5	I could climb this wall every time

Traceurs anticipated that they could climb the walls more easily than novices (ps < 0.001), and perceived the walls to be shorter than did novices (see figure 2). This effect was significant for the tall ($t_{33} = 2.57$, $p = 0.015$) and medium ($t_{21} = 2.36$, $p = 0.028$) walls, but not for the shortest wall ($t_{21} = 0.98$, $p = 0.34$). Perceived height is scaled relative to anticipated ability. For both novices and traceurs, a wall is perceived as taller when they anticipate having a harder time climbing it.

Perception of the environment has long been thought to be linked to one's ability to act within it, an idea espoused by Gibson (1979) and recently expanded by the action-specific perception account (Witt 2011). According to these accounts, actors perceive the environment relative to the actions the environment affords. Much of this work focuses on how perception is scaled relative to body size (eg Warren 1984; Witt et al 2005; Linkenauger et al 2009) or moment-to-moment performance (eg Witt and Sugovic 2010). However, skill is also a factor that influences ability to act. Even when body-height was constant, skill influenced perception.

Interestingly, while novices tended to demonstrate the classic vertical–horizontal illusion by overestimating vertical heights when matching a horizontal extent (Finger and Spelt 1947), traceurs did not. Moreover, this illusion is typically exaggerated for real-world objects (Chapanis and Mankin 1967; Yang et al 1999), so by scaling perception to action, these traceurs resisted a powerful visual illusion.

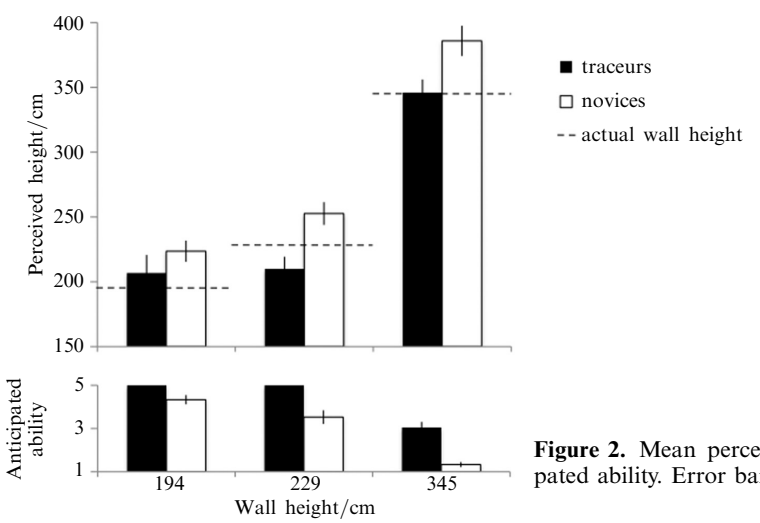

Figure 2. Mean perceived height and anticipated ability. Error bars represent ±1 SEM.

Intuitively, perceiving the environment differently from the 'accurate perception' of objective reality should be a liability. However, perceptual scaling based on skill may confer adaptive advantages. If perceptual processes inflate the size of the walls for people who are unable to act upon them, this bias may dissuade them from attempting dangerous maneuvers that, at best, they cannot do and would waste energy trying and, at worst, could result in injury or death. The relationship between skill and perception would be adaptive if it encourages safe decisions (see Jackson and Cormack 2007; Witt 2011).

One potential limitation of this study is that the traceurs may have had previous interactions with the walls. This may have improved their ability to judge heights, considering they had experience with the wall from different viewpoints, including from above. However, perceived height is exaggerated when viewed from above (Jackson and Cormack 2007; Stefanucci and Proffitt 2009). Given that only the traceurs experienced this viewpoint, a repeated-exposure explanation would predict that traceurs should see the walls as higher.

Another limitation is that the traceurs were tested in groups whereas the novices were not. A competition setting might incline traceurs to reduce their estimates. However, parkour is explicitly non-competitive and the traceurs were training rather than competing. Conversely, social support leads to perception of hills as less steep (Schnall et al 2008), so the social assistance setting could also explain the reduced height estimates in the traceurs. To explore these possibilities, we collected another sample of male novices ($N = 27$; $M = 20.1$ years; $M = 179.9$ cm tall) who were tested in groups on only one wall (same N_s per wall as traceurs). These participants also perceived the walls to be taller than the traceurs ($F_{1,48} = 5.12$, $p = 0.028$; $M = 252.6$ cm, SD = 44.6 cm; $M = 227.0$ cm, SD = 17.4 cm; $M = 364.6$ cm, SD = 39.5 cm; for short, medium, and tall walls, respectively) and did not differ from the original set of novices in perceived height ($ps > 0.13$) nor anticipated ability ($ps > 0.30$).

Skilled traceurs claim they see the urban environment differently than the rest of us. Corroborating these anecdotes, results from the current study suggest that traceurs perceive walls as shorter. This finding suggests that people of different skill levels will perceive the environment differently, and in a way that corresponds with their ability to act.

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