



Reports

Rising up to higher virtues: Experiencing elevated physical height uplifts prosocial actions

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ARTICLE INFO

Article history:

Received 25 September 2010

Revised 1 December 2010

Available online 22 December 2010

Keywords:

Prosocial behavior

Metaphor-enriched cognition

Embodiment

Helping

Cooperation

ABSTRACT

Many challenges of society involve getting people to act prosocially in ways that are costly for self-interests but beneficial to the greater good. The authors in four studies examined the novel hypothesis that elevating (vertical) height promotes prosocial actions. In Study 1, shoppers riding up (vs. down) escalators contributed more often to charity. In Study 2, participants sitting higher (vs. lower) helped another longer, while in Study 3 participants sitting higher (vs. lower) were more compassionate. In Study 4, watching video primes depicting scenes from a high perspective led to more cooperative resource conservation. These studies contribute uniquely to the prosociality literature by documenting previously unexamined effects of metaphor-enriched social cognition, and to the metaphor-enriched social cognition literature by documenting effects of elevated height on real prosocial actions.

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Many of the most challenging issues of society involve getting people to act in prosocial ways that may be effortful or costly in terms of individual self-interests, but are beneficial to society as a whole in terms of collective-interests. Contributing to charities, helping others, acting compassionately, and cooperating are but a few common examples of actions that are routinely viewed as virtuous precisely because people must often sacrifice their own self-interests (time, effort, or money) to promote the greater good. Theories about why people might forego self-interests to act in prosocial ways are varied but typically focus on explanatory variables such as norms, reciprocity, incentives, or individual motives and dispositions (for reviews see Dovidio, Piliavin, Schroeder, & Penner, 2006; Galinsky, Marsh, & White, 2010; Oppenheimer & Olivola, 2010; Van Jaarsveld, Snyder, & Tyler, 2000).

Metaphor-enriched social cognition

We explore a new route to virtue. On the basis of theorizing about metaphor-enriched social cognition (for a review see Landau, Meier, & Keefer, 2010), we tested the novel hypothesis that elevated (vertical) height can promote – uplift – prosocial actions. One common approach has been to examine metaphor effects through embodiment (for reviews see Barsalou, 2008; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005; Semin & Smith, 2008). Both metaphor and embodiment theories involve representations of abstract concepts in bodily states (Landau et al., 2010). For example, Williams and Bargh

(2008; Zhong & Leonardelli, 2008) noted that friendliness is associated with physical temperature sensations, such as warmth (e.g., warm embraces). However, sensations of gripping warm paper cups are not among these. Thus, the key to understanding the observed link between warm-cups and greater friendliness (Williams & Bargh, 2008) is a transfer between two superficially dissimilar but metaphorically related (i.e., warm-cup and friendliness) concepts (Landau et al., 2010).

The metaphor-enriched social cognition approach also suggests that metaphoric transfer effects can occur through alternative modes that do not primarily involve embodiment, such as through priming (Landau et al., 2010). For example, merely priming participants with words related to cleanliness (e.g., pure) led them to make harsher moral judgments (Schnall, Benton, & Harvey, 2008); merely asking participants to first recall past transgressions (e.g., adultery) led them to request antiseptic wipes (Zhong & Liljenquist, 2006); and merely inducing participants to think of stock markets as active agents (e.g., climbing) led them to think price trends would continue (Morris, Sheldon, Ames, & Young, 2007). In short, metaphorical connections between concepts can be drawn from generalized commonplace knowledge, and may or may not be tied directly to specific bodily states (Landau et al., 2010). That is, theoretically, once a particular metaphor is activated, whether through embodiment, priming, or perhaps something else, it could produce corresponding metaphor-consistent changes in judgments and behaviors.

Elevated height and prosociality

We predicted that elevating height can serve as more than a metaphor for heightening virtue and correspondingly increase real

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prosocial actions, promoting greater charity, helping, compassion, and cooperating. This adds theoretically to the multilevel approach increasingly espoused by prosocial behavior researchers (Penner, Dovidio, Piliavin, & Schroeder, 2005) by demonstrating that height experiences can serve as a previously unexplored route to prosociality. There are several reasons for our predictions. First, conceptually, elevated height appears as a metaphor for virtue across many cultures. For example, associations between up and good (down and bad) can be seen in ideas about God and heaven above and devil and hell below, birth and reincarnation to higher or lower planes of existence depending on one's past (mis)deeds, or simply in widespread colloquialisms about "moral high-ground" or "higher virtues."

Second, empirically, there are observed associations between the concepts of up, good, moral, and divine (Landau et al., 2010). For example, photographs of others were judged to have stronger beliefs in God (Chasteen, Burdzy, & Pratt, 2009; Meier, Hauser, Robinson, Freisen, & Schjeldahl, 2007), and reaction times to words expressing high morality were faster (Meier, Sellbom, & Wygant, 2007), when positioned high (top) on computer screens. Beyond these conceptual associations, we examined whether elevated height experiences, induced through embodiment or priming, can influence real positive behaviors – prosocial actions. This extends research on simple conceptual relations between up and positivity (Landau et al., 2010). It also extends research on metaphors and virtues. For example, hand-washing decreases the expressed need to volunteer after recalling unethical acts (Zhong & Liljenquist, 2006) and clean smells increase trust and intentions to donate (Liljenquist, Zhong, & Galinsky, 2010).

Overview of the research

On the basis of these conceptual and empirical associations and theorizing about metaphor-enriched social cognition (for a review see Landau et al., 2010), we conducted four studies in multiple contexts, manipulations, and measures to triangulate on our hypotheses. Elevated height was varied by embodiment (Studies 1–3) and priming (Study 4) while measuring actual prosocial behaviors: charitable contributing, helping another, being compassionate, and cooperative resource conservation. In Study 1, we took advantage of an escalator configuration in a shopping mall to vary height and measured real contributions to charity. In Study 2, we manipulated height via seating arrangements and measured time spent helping another. In Study 3, we again manipulated height via seating arrangements and ruled out the alternative explanation that elevated height simply leads people to do more of whatever is asked of them. In Study 4, we manipulated height experiences via video primes, and measured cooperation on a resource dilemma analogue. Together, the four studies provide strong support for our hypothesis that elevating height correspondingly increases virtuous actions.

Study 1: elevating charity

Our first study was conducted in a realistic context. In a field study, we examined charitable contributions among mall-shoppers who had just experienced increased or decreased physical elevation while riding either up or down escalators. We predicted that shoppers who experienced increased physical elevation by riding up escalators would exhibit greater charity than those who experienced decreased physical elevation by riding down escalators.

Participants

Participants were 1109 shoppers at a mall near Raleigh, NC.

Method

On two consecutive Saturday mornings in mid-December 2009, three research assistants volunteered as "bell-ringers" to solicit contributions for the Salvation Army (SA) red-kettle Christmas campaign. This campaign has become a fixture at U.S. malls during the holidays, with donations providing food, clothing, and other necessities to millions.

Physical elevation was "varied" by taking advantage of the particular configuration of escalators in the mall. On one side of a large atrium was a single up-escalator; on the other side of the atrium was a single down-escalator. Kettles were placed at the top of the up escalator (*high condition*) or at the bottom of the down escalator (*low condition*). The two escalators, each about 11-m between floors, were far apart and not immediately accessible from each other. Two additional research assistants positioned near each kettle unobtrusively recorded the number of shoppers who, after riding the escalators) contributed and passed by without contributing. A third kettle was placed in an area accessible from all escalators (*control condition*); again, shoppers contributing and passing were unobtrusively recorded.¹ Research assistants were kept unaware of our hypotheses until the study was completed.

Results and discussion

The proportions of shoppers who contributed to the SA kettles during two 30-min sessions indexed charity (see Table 1).² As predicted, shoppers who rode the up escalator (*high condition*) contributed more often than those who rode down (*low condition*) and the control condition, both $z > 2.03$, $ps < .05$; the low and control condition differed marginally, $z = 1.77$, $p = .075$. In short, experiencing elevated physical height – in this case by riding up vs. down mall escalators – increased the virtuous act of making real charitable contributions.

Our field setting was realistic. People go to shopping malls, and frequently ride escalators in them. Also, people are often solicited for charitable contributions in such settings. We tried to select areas of the mall to conduct our study that were equated (e.g., in terms of pedestrian traffic, crowding, proximity to exits, lighting, etc.). Of course, we could not directly control contextual factors. Thus, we mention the caveat that our findings may be open to alternative interpretations, as is common in field studies. Our participants also could not be randomly assigned to condition, an aspect later rectified by our laboratory studies.

Study 2: elevating helping

Study 1 provided evidence for our hypothesis in a realistic context. To generalize beyond any possible idiosyncrasies of shoppers on escalators (e.g., the experience of riding) we conceptually replicated the design of Study 1 in a setting with more experimental control, and where we could randomly assign participants to condition. Also in Study 2, we varied physical height in another conceptually related way and for another virtuous act, helping another. We predicted that

¹ We had approval from SA and mall officials to place the kettles as indicated, but there were several rules of conduct. For example, in this case bell-ringers actually did not ring bells because solicitations were being made indoors (too loud); the kettles could not restrict pedestrian traffic; and we were required to be pleasant whether or not shoppers contributed. Also, we were not allowed to open the kettles to count the actual amount of money donated.

² Two sessions were conducted on Dec. 12 and 19. There were more shoppers on the second Saturday than the first, likely reflecting greater proximity to Christmas. However, the proportions contributing did not differ by day, so these results combine across day. Although proportions might seem small to some they did not seem unusual to SA officials when discussing our results; however, the SA does not actually track these proportions.

Table 1
Charitable contributions, helping, compassion, and cooperating and moods by physical (vertical) height.

Study/measure	Physical (vertical) height		
	High	Low	Control
Study 1			
Proportion contributing	.16 (59/368)	.07 (26/391)	.11 (37/350)
Study 2			
Mean time helping (minutes)	11.36 (2.82)	6.77 (2.75)	8.74 (2.96)
Study 3			
Mean compassion (hot sauce grams)	39.74 (25.09)	85.74 (24.58)	65.73 (25.65)
Study 4			
Mean cooperating (fish returned)	32.93 (9.24)	20.60 (9.54)	23.66 (9.82)
Mean moods	5.70 (1.13)	5.46 (1.19)	5.59 (1.11)

Note. Proportions rounded to nearest decimal with numbers contributing and totals in parentheses for Study 1; standard deviations in parentheses for Studies 2–4.

participants who experienced increased physical elevation would be more helpful to another than those who experienced decreased physical elevation.

Participants

Sixty undergraduates participated in exchange for course credit.

Method

Participants, who were randomly assigned to condition, arrived at an auditorium and were escorted by experimenter up a set of stairs to a stage (about 1.67 m; *high condition*), down a set of stairs to an orchestra-pit (about 3.35 m; *low condition*), or, with no change in height, to a level floor area (*control condition*). Experimenters were unaware of the hypotheses. Participants, who had signed up for an experiment to fill out various personality questionnaires (masking our true purpose), were seated at a wooden desk with a chair. The cover story explained to participants that we obtained permission to use the auditorium because our labs were being relocated, but that we were only allowed to use the respective areas, which varied by condition.

Participants began answering personality questionnaires, and were told that they could leave when finished. After about 10-min, we began the true task of interest. A second experimenter entered and handed some papers to the first experimenter. These papers included additional consent forms and a pair of geometric tracing tasks (unbeknownst to participants) (Buckley, Branstetter, Branstetter, Muraven, & Tice, 1998). After finishing the questionnaires (about 25 min), participants were prompted with an explicit request for help; they were asked if they would be willing to stay to help the second experimenter by working on the tracing tasks. These tasks required participants to trace the figures without retracing any lines and without lifting pencils from the paper. Several sheets of tracing paper were given to participants so they could try multiple times as desired. Participants were told that they could work on these tasks for as long or as short as they wanted (“whatever they did would help”) while still getting credit for the full hour. The amount of time spent tracing was secretly timed.

Results and discussion

The amount of time spent tracing indexed helping, which varied by condition, $F(2, 57) = 13.09, p < .001, \eta^2 = .18$ (Table 1). As predicted, participants onstage (high condition) spent longer tracing than did those in the orchestra-pit (low condition), $t(57) = 5.10, p < .001, \eta^2 = .19$; the control condition differed from both other conditions, $t(57) > 2.17, ps < .04, \eta^2s > .07$. In short, varying elevated height with

more experimental control than Study 1, with random assignment of participants to conditions, and using a different virtuous act produced conceptually similar findings. Participants who experienced being physically higher helped (a second experimenter) longer than did those who experienced being physically lower.

We note that staying longer to work on the tracing tasks was a response to an explicit request for help, making the amount of time spent tracing a reasonable index of helping. Both the high and low conditions also differed from the control condition. In this sense, helping was “turned on” in the high condition – in comparison to the low and control conditions – and helping was “turned off” in the low condition – in comparison to the high and control conditions. Nonetheless, although we think it is unlikely that working longer on the tracing tasks might indicate something other than helping, an aspect addressed in our next study.

Study 3: elevating compassion

One feature of our previous studies was that the higher physical elevation always led people to help more. That is, physical elevation led to more contributing (Study 1) and to more helping (working longer, Study 2). Thus, it is possible to argue that perhaps elevated height simply leads people to do more of whatever is asked of them. Study 3 addressed this possibility using a task where the most prosocial action was to do less of something that was helpful and disliked—that is, to display more compassion, another virtue that commonly gives rise to a desire to lessen another’s suffering (Keltner et al., 2010). We predicted that participants who experienced increased physical elevation would be more compassionate by being less hurtful to another person, than those who experienced decreased physical elevation.

Participants

Forty-five undergraduates participated in exchange for course credit.

Method

Procedures were identical to Study 2, except that the tracing tasks were replaced with the task of choosing hot sauce for a purported participant in another experiment. As before, all experimenters were unaware of the hypotheses.

Participants were told that the second experimenter needed help with an unrelated “food tasting” experiment being run in a backroom of the auditorium—all agreed. The task of true interest involved allocating hot sauce to be ostensibly consumed by another participant (unbeknownst to actual participants there was no other participant or experiment), a paradigm used to indicate hurting (e.g., aggressing towards) another (Ayduk, Gyurak, & Luerksen, 2008; McPherson & Joireman, 2009). The hot sauce was prepared according to the recipe of Leiberman, Solomon, Greenberg, and McGregor (1999), mixing five parts Heinz chili sauce with three parts Tapatio salsa picante to make a sufficiently hot and evenly consistent sauce.³

It was explained that the participant in the food-tasting experiment was randomly assigned to a “hot and spicy” condition, but that the researchers needed to remain blind to food portions. Participants were told that normally another participant would have allocated portions but this person did not show up, so they would fill in. From a basket, the second experimenter gave participants a 36-oz container of hot sauce, 12-oz opaque cup with lid, and tablespoon; there was also a sealed envelope with a brief taste-survey to be read only by

³ To ensure the sauce was hot and could be considered hurtful, an independent sample of 12 participants tasted the sauce and rated the degree to which it could be considered hot and painful (1 = not at all; 7 = extremely). The sauce was considered to be quite hot ($M = 5.66, SD = 0.88$) and painful ($M = 5.58, SD = 0.79$).

“allocators” indicating the other participant’s dislike of hot and spicy foods (McPherson & Joireman, 2009).⁴ Participants were instructed simply to put as much hot sauce into the cup as they wanted using the tablespoon and to replace the lid (they were told they had to put some and that a variety of portions were needed); the other participant had to consume it all. Before allocating hot sauce, participants sampled it with a small stick so they knew how hot it was (water was available).

Results and discussion

Compassion gives rise to a prosocial desire to lessen another’s suffering, and was indexed by allocating *less* of the painful (see footnote 3) and disliked (see Method) hot sauce, which varied by condition, $F(2, 42) = 12.68, p < .001, \eta^2 = .23$ (Table 1). As predicted, participants onstage (high condition) allocated less hot sauce than did those in the orchestra-pit (low condition), $t(42) = 5.04, p < .001, \eta^2 = .37$; the control condition also differed from both other conditions, $t(42) > 2.19, ps < .04, \eta^2s > .10$.

These findings rule out the potential alternative explanation that elevated height simply leads people to do more of whatever is asked of them. That is, unlike Studies 1 and 2 where elevated height led to more contributing and time spent helping, respectively, elevated height led to less hot sauce allocated when the behavior of allocating less represented the most prosocial, compassionate action. Thus, people do not indiscriminately do more of anything when experiencing higher elevation but instead discriminately do more of what is most prosocial. In short, although the most prosocial response was reversed, and although we used a different virtuous act for generality, Study 3 produced conceptually similar findings.

Study 4: elevating cooperating

Studies 1–3 provided support for our hypotheses when participants were faced with a simple choice between acting prosocially or not. To generalize beyond this, in Study 4 we further examined the boundary conditions of our effect for another virtue – cooperation – using a resource dilemma task where there is a simultaneous tension between motives to be prosocial (cooperating) and selfish (competing; for a review see Komorita & Parks, 1996). In Study 4, moving beyond embodiment manipulations, we also examined whether the height metaphor could be primed via video clips and we measured moods as a possible mediator. We predicted that primed experiences of higher elevation would lead to more cooperation.

Participants

Forty-five college graduates participated in exchange for course credit on which they believed they would be graded on a series of unrelated tasks.

Method

On a study purportedly about imagination, height was primed with video clips (about 5-min each). One clip depicted mundane scenes of steadily flying over clouds filmed from an airplane passenger window (*high condition*); another clip depicted scenes filmed from an automobile passenger window (*low condition*).⁵ Participants were asked to imagine themselves in the depicted videos, after which they wrote about what they observed for 3-min. Other participants did not watch videos (*control condition*). All participants rated their current

moods on items (*happy, glad, joyful, cheerful, sad, miserable, gloomy, and depressed*; 0–9 point scales) from the PANAS (Watson, Clark, & Tellegen, 1988).

On a purportedly unrelated computerized cooperation task (Sanna, Chang, Parks, & Kennedy, 2009), participants played one of two fishers, with goals to be profitable without depleting the resource. Essentially, from a lake stocked at 100, participants in several seasons (trials) decided how many fish to keep and return without going below 70. Fish returned and kept each season had to total 15. A tone signaled when responses were recorded, while another signaled responses of “another participant”; unbeknownst to actual participants this was rigged, with no other participant. After tones, this message appeared: “There continue to be more than 70 fish in the lake.” Five seasons were played, but this was not reported at the outset.

Results and discussion

The numbers of fish returned indexed cooperation, which varied by condition, $F(2, 42) = 6.79, p = .003, \eta^2 = .14$ (Table 1).⁶ As predicted, participants who watched the airplane clip (*high condition*) cooperated by returning more fish than did those who watched the automobile clip (*low condition*) and the control condition, $t(42) > 2.66, ps < .01, \eta^2s > .15$. Moods (negative reverse-scored and averaged; $\alpha = .83$) did not differ by condition, $F < 1.0$.

Study 4 extends prior research by demonstrating that participants were more prosocial when primed with elevated height in a resource dilemma analogue where there is a simultaneous tension between acting prosocially (cooperatively) and selfishly (competitively). Importantly, supporting our hypotheses, there was more cooperation in the high- than the low-condition. In retrospect, perhaps the low and control conditions might not have differed because looking out a car window is relatively routine and not “low” in height. Nonetheless, at the very least, inclusion of the car-video condition controls for influences of watching videos on cooperation. Future researchers might examine alternative video manipulations of low. Moods were unaffected by our experimental manipulations, suggesting they did not mediate this effect.

General discussion

Our four studies contribute uniquely to the prosociality literature by documenting previously unexamined effects of metaphor-enriched social cognition, and to the metaphor-enriched social cognition literature by documenting novel effects of elevated height on real prosocial actions—in this case uplifting charity, helping, compassion, and cooperating. In Study 1, shoppers who rode up (vs. down) escalators contributed more often to charity. In Study 2, participants who sat higher (vs. lower) helped another person longer, while in Study 3 participants who sat higher (vs. lower) displayed more compassion for another person. In Study 4, watching video primes of scenes filmed from a high perspective led to more cooperative resource conservation. It is noteworthy that conceptually similar findings were obtained across all four studies despite using several manipulations of elevated height and several measures of virtuous actions, suggesting that these results have high generalizability.

Implications and future research

These findings have important theoretical and applied implications for a fuller understanding of people’s prosocial actions in previously unexplored ways. Prosocial behavior researchers have increasingly espoused a multilevel approach, but the role of unconscious or implicit cognitions has thus far received relatively little attention (Dovidio et al.,

⁴ The taste-survey included the purported other participant’s answers to questions asking about their preferences for “sweet and sugary” (answer = 6), “sour and tart” (answer = 5), and “hot and spicy” (answer = 2) foods on 7-point scales (1 = *not at all*; 7 = *very much*).

⁵ These two videos were equated during pilot-testing for a number of variables, including pleasantness, excitement, and arousal (all $ts[28] < 0.97, ps > .34$).

⁶ Because numbers of fish returned and kept had to sum to 15 on each trial, we report only numbers of fish returned. The numbers of fish kept simply mirrors this.

2006; Penner et al., 2005). However, some research has shown that prosociality can be increased through behavioral mimicry (Van Baaren, Holland, Kawakami, & van Knippenberg, 2004) and decreased through priming bystander apathy (Garcia, Weaver, Moskowitz, & Darley, 2002), and people are unaware of these influences. Likewise, people are generally unaware of metaphorical and embodied influences on their behaviors (Barsalou, 2008; Landau et al., 2010; Niedenthal et al., 2005; Semin & Smith, 2008), so beyond specific findings our research also extends theoretically to what is known more broadly about implicit or unconscious effects on prosociality.

By examining elevated height and prosociality, our findings also expand theoretically to prior research demonstrating empirical relations between the concepts of up and positivity (Landau et al., 2010). Elevated height in our research was varied by embodiment (Studies 1–3) and priming (Study 4). Thus, not only can word or photo positioning on computer screens influence people's judgments (Meier, Hauser, et al., 2007), but the results of Studies 1–3 suggest that the actual embodied experience of being physically higher that can also lead people to literally “rise up to higher virtues” and this influences their actual behaviors. Moreover, the metaphor-enriched social cognition approach also suggests that metaphoric transfer effects can occur through alternative modes that do not primarily involve embodiment, such as through priming (Landau et al., 2010), an idea supported by the results of Study 4. Together, our findings thus add to the theoretical proposition that once a particular metaphor is activated, whether through embodiment or priming, it may produce metaphor-consistent changes in judgments and behaviors. Elevating height may be another route to virtue, leading people to sacrifice their own self-interests.

We noted both conceptual and empirical reasons for predicting that elevated height may increase prosocial actions. In particular, elevated height appears as a metaphor for virtue across many cultures, such as ideas about God and heaven above (devil and hell below), birth and reincarnation to high (low) planes of existence depending on one's past good (bad) deeds, and colloquialisms depicting morality and virtue as “high.” Height metaphors are commonly used in other ways to designate virtuous qualities (e.g., we look “up” to people who do good things and “down” on people who do bad things). Our empirical research also supports these associations (Landau et al., 2010). Perhaps it is not such a large metaphorical leap from the heat of allocating more hot sauce when lower (Study 2) to the heat of Dante's inferno. Military pilots and astronauts also commonly report divinity experiences when flying above the earth (Gawron, 2004), perhaps consistent with Study 4. The precise origin of these associations, and the degree to which they are cross-cultural, are intriguing questions for future research.

Finally, our findings add to theoretical research on directional metaphors. Forward (vs. backward) motion primes lead to thinking about the future (vs. past) (Cassasanto & Boroditsky, 2008) and thinking about the future (vs. past) leads people to physically lean forward (Lewinsohn, Nind, & Macrea, 2010). Because thinking about the future increases prosociality (Penner et al., 2005) other spatial metaphors may affect virtues. We note that only our Study 1 involved appreciable movement and this was equivalently forward in the high and low conditions. Relative heights may also matter. For example, shoppers in Study 1 started low and rode up or high and rode down, and participants primed with videos from a plane took a perspective “above” others, although relative height may not as easily explain Studies 2 and 3. General moods (Schnall et al., 2008) were unaffected in Study 4. However, specific emotions like “elevation” (Schnall, Roper, & Fessler, 2010) may be relevant: Both physical and emotional “height” might uplift prosocial actions. Power could be another variable to explore, given its association with up (Giessner & Schubert, 2007). In short, we hope our studies help lead to a newly heightened appreciation for exploring prosociality from this perspective.

Acknowledgment

We thank several anonymous reviewers and the Better Decision Making (betterdecisionmaking.org) laboratory group members at the University of North Carolina at Chapel Hill for comments on versions of this article and several research assistants for their help with various aspects of the research.

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