CURRENT RESEARCH IN SOCIAL PSYCHOLOGY
http://www.uiowa.edu/~grpproc/crisp/crisp.html

Submitted: July 2, 2013
Revised: September 20, 2013
Accepted: September 25, 2013

LOOKING UP FOR ANSWERS: UPWARD GAZE INCREASES RECEPTIVITY TO ADVICE

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ABSTRACT

Upward vertical space has been associated with and occupied by those who possess power, knowledge, and expertise. These individuals also have been shown to exert influence over others. The current study hypothesized and found that upward gaze engenders receptivity to advice. Participants made judgments, were given the opportunity to revise these judgments while gazing upward, straight-ahead, or down and received a previous participants' judgments. Participants gazing upward were more likely to adopt the previous participants' position, particularly for difficult or ambiguous judgments. Through an embodied cognition framework, implications for the role of spatial arrangements for receptivity to advice are discussed.

INTRODUCTION

Where do people find answers? Tradition holds that, in the days before the Internet, people looked to the heavens, consulted scholars in ivory towers, or climbed mountains to petition the wisdoms of gurus and oracles. The sources of knowledge, insight, and sage advice reside upward in vertical space. The present study examines how upward gaze might nudge people toward changing their positions on previous judgments.

Verticality→Status and Expertise

Social science traditions imply that knowledge and sage advice might be found in higher vertical positions. In the cognitive linguistic tradition, for example, higher vertical position is associated with happiness, but also with status and rationality (Lakoff & Johnson, 1980). These associations are evident in linguistic patterns: People climb the ladder, use their higher faculties, and consult higher courts. The associations derive from culture (e.g., omniscient gods are in the sky) as well as experience (e.g., high vantage points help identify oncoming threats). During the formative years, children gaze upward at adult caregivers and teachers. This upward gaze helps predict when resources, comfort, or guidance are forthcoming. Given the physical position of caregivers and teachers, upward gaze also can be a nonverbal communicative gesture to solicit

guidance and resources (cf. Kleinke & Singer, 1979; McKessar & Thomas, 1978). Observed individuals may gaze upward when thinking, suggesting that upward gaze signals effort to find answers, at least in Western cultures (McCarthy, Lee, Itakura, & Muir, 2008).

The link between physical and social upward position also is explicitly articulated in Relational Models Theory (RMT; Fiske, 1991) and is supported empirically (Dannenmaier & Thumin, 1964; Higham & Carment, 1992; Schwartz, Tesser, & Powell, 1982). The RMT argues that human relations are structured around four fundamental types of relations (authority ranking, communal sharing, equality matching, and market pricing). Particularly relevant is authority ranking, which orders people with respect to space, time, magnitude, or force. Higher ranked individuals are associated with above, in front, more, earlier in time, and having more power or force (Fiske, 2004). High-ranking individuals occupy physically high places: residences on hilltops or penthouses, occupations in tall temples or sky-scrapers, places of judgment and consultation approached by stairways. Rather than simply having coercive or reward power, individuals ranked higher in the social hierarchy are accorded greater authority and possess valued knowledge (Schubert, Waldzus, & Seibt, 2008): they have legitimate and expert power. Advice, commands, wisdom, laws, and judgment thus are associated with higher positions in both social and physical space.

Status and Expertise→ Influence

In addition to upward vertical and social space being linked to status and knowledge, those possessing these qualities exert influence over others. Status characteristics theory sets forth predictions for influence in small group settings where a correct answer is to be formulated, but is not immediately accessible or apparent (Berger, Cohen, & Zelditch, 1972). According to this theory, perceived competence accords greater influence and high-rank can serve as a proxy for competence. For example, people accept answers of higher-status individuals and experts more readily than those of lower-status individuals and non-experts (Cialdini & Goldstein, 2004; Eagly & Chaiken, 1993; Oldmeadow, Platow, Foddy, & Anderson, 2003). Information presented by experts also may be more memorable and elicit enhanced neural processing and memory (Klucharev, Smidts, Hernández, 2008). Thus, status and expertise potentially impact how perceivers process information and what they report as correct answers.

Verticality→ Influence

Empirical support linking physical verticality and influence is less direct than the relations between verticality-status and expertise-influence, but certainly is plausible. High-status physical spaces and expertise are known to be associated. Experts or high-status individuals who are physically more distant (i.e., in their socially ascribed upward position) exert the greatest level of influence when compared to closer physical proximities. Hart, Stasson, and Karau (1999) showed that an expert at the typical "high status" distance was most influential; he was essentially the 'head of the table.' Not only are high status individuals more influential at more distant interpersonal spaces, they are significantly less influential at close interpersonal proximities (Albert & Dabbs, 1970). Thus, positions of status may be most effective when spatial position is congruent with social position. These findings provide evidence to suggest that upward space alone may be a sufficient cue to invoke influence.

Ambiguous Judgments

In some instances, people might adopt an expert's position rather mindlessly, relying on the peripheral cue of body position (i.e., Answers (and Experts) Are Up). Under still other conditions, people might feel little need to consult an expert's position. A good candidate for distinguishing between these conditions is ambiguity. Early on, studies demonstrate that perceptual ambiguity increased adherence to a group norm (Asch, 1956; Sherif, 1936). Relatedly, Wu and Shaffer (1987) demonstrated that attitudes formed through indirect experience, compared to those formed through direct experience, are most susceptible to influence from the peripheral cue of source credibility (a common proxy for expertise). Judgments for which a correct answer is difficult or potentially subjective thus might be most susceptible to manipulations of vertical space.

The Current Study

Upward vertical space is associated with status and expertise and these qualities may encourage receptivity to advice, especially for difficult or ambiguous judgments. In order to test this prediction, we experimentally manipulated verticality through the spatial location of a computer monitor. Participants were given the opportunity to accept the advice of a previous participant while gazing upward, straight ahead, or down. We hypothesized that participants gazing upward would be more likely to accept the alleged participants' answers, particularly when a correct response was not obvious. For those participants gazing straight ahead or down, without a cue to expertise or status, we hypothesized no detectable influence effects.

METHOD

Participants

Sixty-one (45 females, mean age=18.95) students at a private, Southern university participated in exchange for extra credit in their psychology course. Manipulated condition accidentally was not recorded for 3 participants, so their data were discarded.

Judgment Stimuli

Common Objects

Participants viewed digital photos of 8 common objects and estimated their weight in ounces. The photos comprised: box of tissues, cordless telephone, pineapple, ring of keys, stuffed monkey, hammer, flashlight, single-serving blender. An independent sample verified that the objects' weights were moderately difficult to guess without handling them (M=4.55 on a scale; 7=very difficult).

Interview Qualifications

Interview qualifications comprised seven attributes relevant to obtaining an interview for a research internship; participants rated the importance of each qualification on a 7-point scale. An independent sample verified that three qualifications were rated as moderately subjective (attire, interest, nonverbal behavior; *M*=2.86; 7 = very objective) and four were rated as moderately objective (grade point average, knowledge of project, prior relevant coursework, relevant post-graduate plans; *M*=4.68).

Procedure

An experimenter unaware of hypotheses led participants individually through procedures. After securing informed consent the experimenter provided a broad overview of the computerized procedure, explaining that the study was interested in the effects of ergonomics, such as the height of the computer screen, keyboard distance, and chair height, on judgments, thus the reason for completing the same questionnaire at two different computer set-ups (i.e., one computer set up in typical desktop fashion, and a second computer with the manipulated computer monitor). The experimenter then confirmed that the procedure was clear and then left the room for the duration of the study. Participants began the first part of the study seated at a typical computer desktop configuration. Participants first recorded each of their weight estimates for the eight common objects, and then made ratings of the importance of the seven interview qualifications; they recorded their answers both onto the computer as well as onto a sheet of blank paper. Weight estimates always preceded ratings of interview qualifications, however presentation of objects and qualifications were randomized within each block. Participants took their written answers to a second computer, so that they could remember their previous responses [1].

The second computers' monitor was arranged in one of three randomly determined manners: UP (the top of the monitor was 30 inches above the surface of the desk and its keyboard), LEVEL (top of the monitor was 15 inches above the desk surface, which was typical eye-level for the chair height) or DOWN (bottom of the monitor was flush with the desk surface). Each of the objects and qualifications appeared again, but this time the alleged answer of a previous participant was included (e.g., Participant #127 estimated a weight of 24 ounces). Participants again provided weight estimates of the common objects and importance of the interview qualifications; at this second time point participants had access to their previous answers and the alleged response of a previous participant. Thus, participants had the opportunity to stick with their original estimate, move towards the previous participants' response, change their estimate to match the previous participants' response, or change their answer away from the previous participants' response. As before, order was random within the block of objects and qualifications. Then, on a 5-point scale participants recorded their confidence in their weight estimates and interview qualification ratings, as well as how much they would appreciate another person's opinions; these items were aggregated for weight and for qualifications as indicators of uncertainty. Finally, participants self-reported their gender, age, and height (potentially to control for participant height contaminating the manipulation of computer monitor position) [2], and were debriefed.

Coding

Each estimate (8 weights, 3 subjective and 4 objective qualifications) provided participants the opportunity to revise their original answer, having access to both their original estimate and the estimate of a 'previous participant' participants could rely on the 'advice' of the previous participant or disregard it. Therefore, data for each estimate were coded for advice acceptance (i.e., change original answer to match estimate of the previous participant), or not (e.g., retaining original estimate).

RESULTS

For weight estimates, advice acceptance was first examined with a one-way between groups analysis of variance (ANOVA), which detected the main effect of vertical position, $F(2,58)=4.90$, $p<.02$; we then followed with an a priori comparison of upward gaze to the other conditions. As seen in Table 1, advice acceptance occurred more often for participants who gazed upward. Given that the weight judgment task was viewed as moderately difficult, it therefore would appear that the participants gazing upward relied on the upward cue in revising some of their decisions.

Table 1. *Advice acceptance on weight estimates, as a function of gaze direction*

	UP	LEVEL	DOWN	Contrast *F, p*
Weight Estimates: Accepted Advice	1.00	0.27	0.50	$F(1,58)=8.60$, $p<.005$
	(+2)	(-1)	(-1)	

Note. Contrast coefficients in parentheses.

Because the number of objective and subjective qualifications differed (4 and 3 respectively), responses were averaged rather than aggregated. Advice acceptance first was entered into a 3x2 two-way mixed model ANOVA, vertical position (up, level, down) by type (subjective, objective), with repeated measures on the last factor. This analysis detected the vertical position-by-type interaction, $F(2,58)=3.455$, $p<.04$, which then were followed with a priori contrasts on each type of qualification. As seen in Table 2, upward gaze prompted more advice acceptance than other gaze directions on subjective qualifications but not on objective qualifications. Generally speaking, this finding parallels the finding with weight judgments.

Table 2. *Advice acceptance on qualification ratings, as a function of gaze direction*

	UP	LEVEL	DOWN	Contrast *F, p*
Qualifications: Accepted Advice Subjective	0.13	0.05	0.04	$F(1,58)=4.65$, $p<.04$
Objective	0.08	0.1	0.04	$F(1,58)=0.08$, *ns*
	(+2)	(-1)	(-1)	

One-way between groups ANOVAs failed to detect differences on uncertainty about weight estimates, $F(2,58)=.74$, ns, nor on uncertainty about judging qualifications, $F(2,58)=1.01$, ns. However, in line with expectations, uncertainty about weights predicted advice acceptance on weight estimates [$r(59)= .29$, $p<.03$].

Finally, zero-order correlations showed evidence of convergent validity (e.g., advice acceptance on weight estimates correlated with advice acceptance on subjective qualifications, $r(59)=.51$, $p<.01$; and uncertainty about weight estimates correlated with uncertainty about qualifications, $r(59)=.61$, $p<.01$. Table 3 shows the intercorrelations among all variables. As mentioned above, the uncertainty variables represent the aggregate of the two items assessing confidence in judgments and appreciation of another person's opinion, for both interview qualifications and weight estimates.

Table 3. Correlations among Variables ($N=61$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Weights Accepted Advice	1.00								
(2) Objective Qualifications Accepted Advice	.11	1.00							
(3) Subjective Qualifications Accepted Advice	.51**	.19	1.00						
(4) Uncertainty for Weight Estimates	.29*	.002	.17	1.00					
(5) Uncertainty for Qualification Estimates	-.03	-.09	-.02	.61**	1.00				

*$p<.05$, **$p<.01$

Table 4. Means and Standard Deviations for all Variables

	UP	LEVEL	DOWN
Weight Estimates: Accepted Advice	1.00 (1.00)	0.27 (.63)	0.50 (.62)
Subjective Qualifications: Accepted Advice	.13 (.20)	0.05 (.11)	0.04 (.1)
Objective Qualifications: Accepted Advice	.08 (.14)	0.1 (.2)	0.04 (.1)
Uncertainty for Weight Estimates	8.9 (2.7)	9.4 (2)	8.5 (2.6)
Uncertainty for Qualification Estimates	9.5 (2.0)	10.3(2)	9.7 (1.6)
N	21	22	18

Note. Standard deviations in parentheses. Higher numbers represent levels for each variable.

DISCUSSION

The current study demonstrated that cues derived from upward vertical space can affect judgments. Supporting our hypotheses, participants gazing upward were significantly more likely to accept the answer of the 'previous participant,' compared with participants gazing straight ahead or down. While there is evidence that upward vertical space is associated with positions of status and expertise, and that status and expertise influence judgments, the current study completes the link by showing upward vertical space influences judgments.
Further, we found partial support for our prediction about ambiguous judgments. Upward gazing individuals accepted advice on the difficult weight judgment task; they also accepted advice more for subjective interview qualifications than objective qualifications. This finding is consistent with previous research that demonstrates that expert power is more influential when an individual is uncertain (e.g., Deutsch & Gerard, 1955). Taken together, participants appear to be relying upon cues derived from upward vertical gaze when opinions are subjective or weakly formed.

Theoretically, the notion that cues derived from upward vertical space increase advice receptivity is consistent with embodied cognition frameworks (e.g., Barsalou, Niedenthal, Barbey, & Rupert, 2003). These theories contend that conceptual knowledge is grounded in the bodily states and proprioceptive qualities associated with a given concept, and that a given concept can elicit its associated bodily state and vice versa. In the present study, we manipulated verticality to determine if the concepts associated with upward vertical space (e.g., expertise) are embodied representations. The data suggest that the link between upward vertical space and expertise may be embodied through upward gaze and head tilt. Importantly, without the presence of actual expertise, these bodily cues increased participants' advice receptivity. Moreover, there are practical implications for the role of spatial arrangements when influence or advice-receptivity is relevant.

The current findings suggest that spatial arrangements may, in some situations, exert influence or increase receptivity to advice. For instance, in courses that present challenging material, physical classroom arrangements where individuals literally look up to the teacher (i.e., a "stage" arrangement) might result in less questioning of the instructor's position. Along this vein, a related study from our lab found that individuals under high cognitive load who were seated in a lower physical position and were gazing upward were more receptive to opinions (Van Bommel & Ruscher, 2012). Whether or not such impact is long lasting or ephemeral is unclear, but it seems likely that those in power exert greater influence when situated in higher spatial locations. The current research suggests that these spatial configurations are more than just symbolic, through their associations with power and influence, upward vertical space exerts influence.

In sum, we found that upward gaze and vertical space influenced participants to change previously made judgments, and especially when upward gaze was combined with judgment uncertainty. The prevalence of socio-cultural and linguistic associations between upward vertical space and status, power, knowledge, and expertise, in light of the current findings, suggest that these associations have become embodied in our understanding of them.

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ENDNOTES

1. Post-procedural interviews with pilot participants revealed that they often could not remember their original estimates, which seemed a critical feature for influence.

2. Including participant height as a covariate did not alter which effects were statistically significant nor change the patterns of means.

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