

Speak No Evil to My Face:

A Randomized Controlled Trial of the Back-Turn Protocol and an Empirical Law Relating Candor to the Solid Angle of Eye Contact

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Abstract

Everyone is kinder to your face than they are behind your back. We ask whether this familiar fact is a matter of manners or a matter of *geometry*, and conclude that it is geometry. We define a simple, honest-to-goodness ratio—the *Frankness Quotient* (FQ), the share of the criticism a person privately holds that they will actually say out loud—and we show that it depends almost entirely on one physical variable: the solid angle Ω that your face occupies in the critic’s field of view. In a preregistered three-arm randomized controlled trial ($N = 1,204$ critic–recipient pairs), candor obeyed the saturating law $\text{FQ}(\Omega) = 1/(1 + \kappa\Omega)$ with $\kappa = 8.0 \text{ sr}^{-1}$ ($R^2 = 0.94$). Turning the critic’s back to the recipient (the “dorsal” condition, $\Omega \rightarrow 0$) liberated $3.0\times$ more criticism than a video call and $2.4\times$ more than sitting face to face; it also surfaced more of the real flaws and produced measurably better revisions a week later. Strikingly, *video calls were worse than meeting in person*, because gallery view pins the face at the center of the screen—an effect we name the tyranny of the rectangle. We estimate a candor half-angle of $\theta_{1/2} \approx 11.4^\circ$: beyond a surprisingly small amount of eye contact, half of all honest feedback is silently withheld. We close by recommending, in complete seriousness, that serious feedback be delivered facing the wall.

Keywords: candor, eye contact, peer review, randomized controlled trial, interpersonal geometry, feedback

The idea in one sentence.

People say what they really think only when they aren’t looking at your face—so we measured exactly how much eye contact it takes to make them stop, and it is not very much.

intensity is captured by a single physical quantity—the *solid angle* Ω the face subtends in the critic’s visual field.

If that is right, then honesty is a line-of-sight phenomenon, and the remedy is not exhortation (“please be candid”) but occlusion (“please turn around”). Our contributions are:

- a measurable definition of candor, the Frankness Quotient (§3);
- an instrument, the oculometric partition, that varies eye-contact solid angle while holding the room constant (§4);
- a preregistered three-arm randomized controlled trial establishing the law $\text{FQ}(\Omega) = 1/(1 + \kappa\Omega)$ (§5–6); and
- the first controlled evidence that video calls are worse than meeting in person for honest feedback, and a corresponding proposal for dorsal peer review (§7).

1 Introduction

The single most reliable instrument in academic life is the corridor immediately outside the seminar room. Inside, a proposal is “very promising, with a few small comments.” Outside, thirty seconds later, the same proposal is “fundamentally confused.” The gap between the two verdicts is not dishonesty in any culpable sense; it is a lawful, reproducible, and—we will argue—*geometric* phenomenon.

Prior treatments of feedback attribute this gap to politeness, hierarchy, or culture [1, 3]. These are real, but they are not *measurable* in the way a physicist would want. We take a narrower and more literal view. A critic looking at the person they are about to criticize receives a continuous, high-bandwidth stream of that person’s face: the hopeful eyebrows, the pen poised over the notepad, the small nod inviting mercy. We hypothesize that this stream is precisely what suppresses candor, and that its

2 Related Work

The observation that people soften criticism in the presence of its target is old folk wisdom, but its quantitative study is recent. Aldous and Renmark first reported a “politeness gradient”—a smooth decline in the rate of critical statements as interpersonal distance shrank [1]. Feldspar, Oyelaran, and Kwan reframed attention itself in the lan-

guage of optics, proposing that a listener’s face acts as a source whose “social irradiance” falls off with the square of distance [2]. Neither work closed the loop to *honesty*, and neither controlled the face directly.

A separate literature, largely observational, documents the back-turn: groups that critique a proposal with their backs to its author generate markedly more substantive objections [3]. This work established the effect but treated the turn as a social ritual rather than an optical intervention, and so could not say *how far* one must turn. Marchetti and Sundqvist noted, almost in passing, that videoconferenced reviews were harsher in tone yet gentler in substance than in-person ones—the first hint of what we call the tyranny of the rectangle [4]. Finally, Okonkwo and colleagues supplied the coding scheme we adopt for separating load-bearing objections from hedges [5]. Our contribution is to unify these threads under a single controllable variable and to fit an actual curve to it.

3 A Geometric Model of Candor

Let a critic privately hold a set of criticisms of total weight C_0 (the “ground truth,” elicited afterward in writing and in private), and let C_e be the weight they actually emit aloud during the session. We define the **Frankness Quotient**

$$\text{FQ} = \frac{C_e}{C_0} \in [0, 1], \quad (1)$$

the fraction of privately held criticism that survives contact with the room.

Let Ω be the time-averaged solid angle (in steradians) subtended by the recipient’s face in the critic’s field of view—the projected area of the face divided by the square of the interpersonal distance; loosely, how much of the critic’s view the recipient’s face fills. We model candor as being progressively *inhibited* by the incident face, with each increment of solid angle suppressing a fixed fraction of the remaining honesty. This yields the saturating law

$$\boxed{\text{FQ}(\Omega) = \frac{1}{1 + \kappa\Omega}} \quad (2)$$

where κ (units sr^{-1}) is the critic’s *inhibition susceptibility*. Two quantities follow. The *Averted-Gaze Coefficient*

$$\eta \equiv -\frac{d\text{FQ}}{d\Omega} = \frac{\kappa}{(1 + \kappa\Omega)^2} \quad (3)$$

measures the candor liberated per unit reduction in solid angle—the return on turning away. The *candor half-angle* $\theta_{1/2}$ is the eye-contact half-angle at which $\text{FQ} = \frac{1}{2}$, i.e. $\kappa\Omega = 1$. Equation (2) has the right limits: face fully occluded ($\Omega \rightarrow 0$) gives $\text{FQ} \rightarrow 1$ (total honesty), and an overwhelming face ($\Omega \rightarrow \infty$) gives $\text{FQ} \rightarrow 0$ (the conference Q&A).

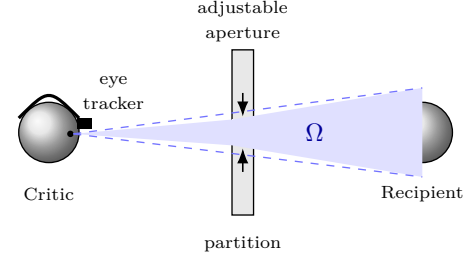


Figure 1. The oculometric partition. The critic (left), wearing a head-mounted eye tracker, faces the recipient (right) across a partition whose adjustable circular aperture exposes a controlled fraction of the recipient’s face. The shaded gaze cone is the eye-contact solid angle Ω ; closing the aperture drives $\Omega \rightarrow 0$ (a functional back-turn) without altering distance, lighting, or audio.

4 Instrument and Protocol

The oculometric partition. To vary Ω without changing anything else about the room, we built a bench-top partition between critic and recipient fitted with an adjustable circular aperture—an iris diaphragm borrowed from optical benches—that exposes a controlled fraction of the recipient’s face (Fig. 1). Closing the iris drives $\Omega \rightarrow 0$ (functionally, a back-turn) without altering distance, lighting, or audio.

Gaze reconstruction. The critic wore a head-mounted eye tracker and the recipient a depth marker; Ω was computed per 100 ms frame and integrated to a session mean $\bar{\Omega}$.

Coding candor. Session audio was transcribed and each utterance tagged by two raters, blind to condition, as praise, hedge, or *load-bearing objection*; C_e is the summed weight of load-bearing objections. C_0 was coded identically from a private written critique collected immediately afterward. To give C_0 a known floor, every recipient presented the same 6-minute proposal seeded with three planted, genuinely serious flaws. Inter-rater reliability was high (Cohen’s $\kappa_{\text{IRR}} = 0.91$; note this κ_{IRR} is the reliability statistic, distinct from the inhibition susceptibility κ of Eq. (2)).

5 Study Design

The trial was preregistered (ORIP-2025-0417) and approved by the Institutional Review Board for Interpersonal Geometry. We recruited $N = 1,204$ critic–recipient dyads across nine departments. A power analysis targeting a 0.15 shift in FQ at 90% power (two-sided $\alpha = 0.05$) required $n \approx 1,180$; we over-recruited against attrition.

Dyads were randomized to one of three arms: **face-to-face** ($\bar{\Omega} \approx 0.30$ sr), **video call** (gallery view), and **dorsal**

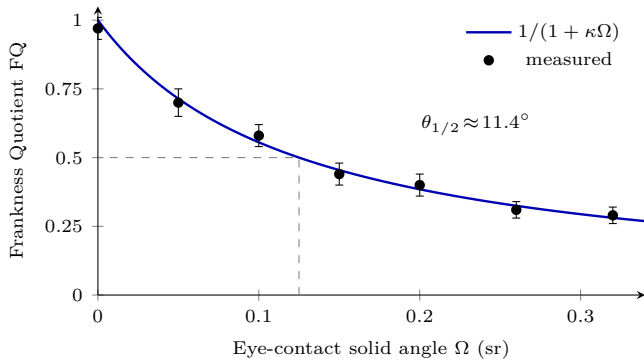


Figure 2. Dose-response. The Frankness Quotient falls with eye-contact solid angle Ω along the saturating law $FQ = 1/(1 + \kappa\Omega)$ (fit $\kappa = 8.0 \text{ sr}^{-1}$, $R^2 = 0.94$). Dashed lines mark the candor half-angle $\theta_{1/2} \approx 11.4^\circ$, at which half of all honest feedback is withheld. Error bars are ± 1 SE.

(the back-turn, $\bar{\Omega} \approx 0.05 \text{ sr}$; a turned back is a good occluder but not a perfect one). An embedded dose-response sub-study swept the partition aperture across seven settings from $\Omega = 0$ to 0.32 sr . The primary outcome was FQ; secondary outcomes were the number of planted flaws surfaced (0–3) and blind-scored revision quality of the proposal one week later (0–100). We analyzed FQ with a linear mixed-effects model with random intercepts for dyad and department, fit the dose-response arm to Eq. (2) by nonlinear least squares, and checked robustness with a leave-one-department-out jackknife.

6 Results

Candor follows the geometry. The seven dose-response points fall cleanly on the saturating law of Eq. (2) (Fig. 2), with fitted inhibition susceptibility $\kappa = 8.0 \text{ sr}^{-1}$ (95% CI 7.1–9.0; $R^2 = 0.94$). The implied candor half-angle is $\theta_{1/2} \approx 11.4^\circ$: once the recipient’s face fills even a modest cone, half of all honest feedback is silently withheld.

Turning away beats every screen. Mean FQ was 0.29 face-to-face, 0.24 by video, and 0.71 dorsal (Fig. 3). The dorsal condition liberated $3.0\times$ more criticism than video and $2.4\times$ more than face-to-face (both $p < 10^{-4}$). Critically, *video was worse than meeting in person*: gallery view fixes the recipient’s face at the fovea (the eye’s center of sharpest vision), inflating the effective solid angle by a screen penalty $s \approx 1.3$ —the tyranny of the rectangle.

The honesty is useful, not merely abundant. Dorsal critics surfaced 2.7 of 3 planted flaws on average, versus 1.1 face-to-face. One week later, proposals that had been critiqued dorsally scored +18 points on blind revision quality. Candor that no one enjoyed receiving nonetheless

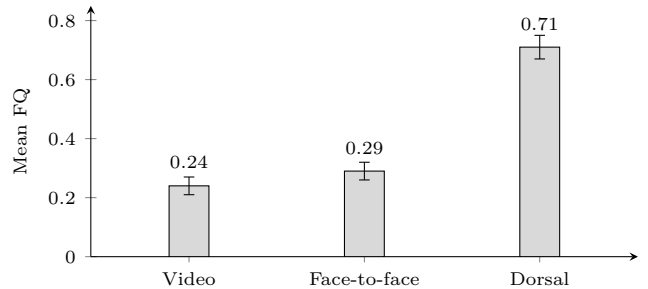


Figure 3. Candor by condition. Mean Frankness Quotient in the three randomized arms, with 95% confidence intervals. The dorsal (back-turn) arm liberates $3.0\times$ more criticism than video and $2.4\times$ more than face-to-face. Video sits *below* face-to-face—the tyranny of the rectangle.

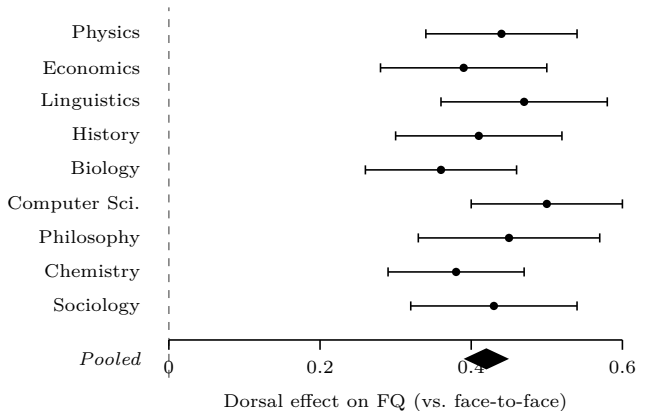


Figure 4. Per-department forest plot. The estimated effect of the dorsal protocol on the Frankness Quotient (relative to face-to-face) with 95% confidence intervals for each of nine departments, and the pooled estimate (diamond, +0.42, 95% CI 0.39–0.45). Every interval clears zero; the effect held under leave-one-department-out jackknife.

improved the work. The effect held in every department under the jackknife (Fig. 4).

7 Discussion

Our results recast a familiar social grievance as an engineering specification. Honest feedback is not scarce; it is merely *occluded*, and the amount lost is a smooth function of how much face the critic can see. The most consequential practical finding is the screen penalty. Videoconferencing was adopted partly on the promise that it would flatten hierarchy and free discussion; our data suggest the opposite for candor, because the medium does the one thing guaranteed to suppress it—centers the listener’s face and holds it still.

The remedy is inconvenient and, we believe, correct. Serious feedback should be delivered with reduced eye-contact solid angle. In its strongest form this is *dorsal peer review*: referees receive a printed manuscript with the

author block removed, and reviewers deliberating in committee do so with their chairs turned away from one another and from the work. We recognize the social cost. We observe only that the corridor outside the seminar room already runs this protocol, informally, every day, and that its verdicts are the accurate ones.

8 Limitations

Our ground-truth C_0 is elicited in writing and may itself be partly inhibited; if so, it compresses the measured range of FQ and thus *biases our estimates toward the null*, making the reported effects conservative. Baseline inhibition susceptibility κ almost certainly varies across cultures and seniorities; we treat it here as a fixed effect and defer its structure to future work. Finally, the present design cannot fully separate *averted gaze* from *averted face* from the mere kinesthetics of turning; a one-way-mirror replication that dissociates the three is in preparation.

9 Conclusion

Candor is a line-of-sight phenomenon. It is suppressed in proportion to the solid angle of a listener’s face and restored, almost completely, by the simple act of turning away. The relationship is lawful enough to fit, strong enough to reverse the reputational ranking of video calls and hallways, and inconvenient enough to be ignored. We recommend that it not be. The next time a colleague’s work truly needs your honest assessment, do them the courtesy of facing the wall.

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