

Skateboarding as a Noisy Signal of Romantic Interest A Valentines Day Question

A Bayesian decision model with risk preferences

April 15, 2026

Idea Chris always skateboards, and Potato knows this. Potato may ask Chris to teach her. Asking *might* be a signal of romantic interest, but it can also reflect (i) genuine interest in learning to skate and/or (ii) a risk-seeking personality. This makes “asking” a *noisy* signal rather than a clean one.

Risk and preferences Skateboarding involves a small but non-zero probability of death $p \in (0, 1)$ and a disutility of death $D > 0$. Potato experiences the expected risk cost through her risk parameter $r > 0$:

$$\text{Perceived expected risk cost} = rpD.$$

We will allow risk preferences to vary across people.

Private information (Potato’s type) Potato has two private traits:

- **Romantic-interest type** $t \in \{L, N\}$, where L means she likes Chris romantically and N means she is not romantically interested.
- **Risk type** $r \in \{r_A, r_S\}$ where $r_A > r_S > 0$. Interpret r_A as risk-averse and r_S as risk-seeking.

Let the priors be

$$\Pr(t = L) = \pi, \quad \Pr(r = r_A) = \rho,$$

and assume (for simplicity) that t and r are independent.

Action Potato chooses

$$A \in \{0, 1\}, \quad A = 1 \text{ means “ask Chris to teach me”, } A = 0 \text{ means “do not ask.”}$$

Benefits from asking If Potato asks, she may receive:

- a **bonding benefit** $B > 0$ if she is romantically interested ($t = L$),
- a **learning/hobby benefit** $G \geq 0$ from learning to skateboard (regardless of t).

Decision rule (Potato) Potato compares the benefits to her perceived risk cost rpD .

If $t = L$:

$$U_N(A = 1 | L, r) = B + G - rpD, \quad \Rightarrow \quad A = 1 \text{ if } B + G > rpD.$$

If $t = N$:

$$U_N(A = 1 | N, r) = G - rpD, \quad \Rightarrow \quad A = 1 \text{ if } G > rpD.$$

Two confounding cases (why the signal is messy) This framework cleanly captures the two situations that break the naive “asking means she likes you” story.

(1) She likes you but is too risk-averse to ask.

This occurs when $t = L$ and $r = r_A$ but

$$B + G \leq r_A p D.$$

So she likes Chris, but the perceived cost of risk dominates.

(2) She does not like you but is risk-seeking and asks anyway.

This occurs when $t = N$ and $r = r_S$ and

$$G > r_{Sp}D.$$

So the ask is driven by learning/risk appetite rather than romance.

From types to observable probabilities Chris does not observe t or r , only Potato's action A . Define the indicator function

$$\mathbf{1}[\text{statement}] = \begin{cases} 1 & \text{if the statement is true} \\ 0 & \text{if the statement is false.} \end{cases}$$

Then, averaging over the unobserved risk type:

$$\Pr(A = 1 \mid L) = \rho \mathbf{1}[B + G > r_{Ap}D] + (1 - \rho) \mathbf{1}[B + G > r_{Sp}D],$$

$$\Pr(A = 1 \mid N) = \rho \mathbf{1}[G > r_{Ap}D] + (1 - \rho) \mathbf{1}[G > r_{Sp}D].$$

These expressions say: the probability of asking is a weighted average of whether each risk type would ask.

Belief updating (what Chris infers from asking) After observing $A = 1$, Chris updates using Bayes' Rule:

$$\Pr(L \mid A = 1) = \frac{\Pr(A = 1 \mid L)\pi}{\Pr(A = 1 \mid L)\pi + \Pr(A = 1 \mid N)(1 - \pi)}.$$

Asking is a strong romance signal when $\Pr(A = 1 \mid L)$ is large and $\Pr(A = 1 \mid N)$ is small. When risk-seeking non-romantics ask frequently (large $\Pr(A = 1 \mid N)$), the signal becomes noisy.

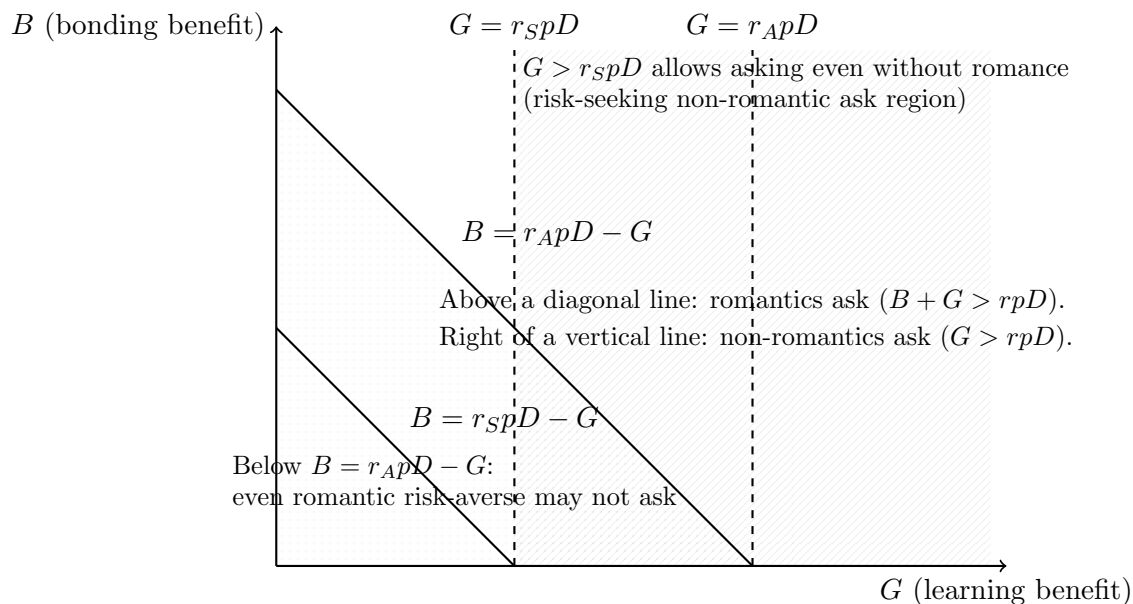
Parameter diagram (the noisy-signal regions) The diagram below uses the (G, B) plane (learning benefit vs. bonding benefit), holding (p, D, r_A, r_S) fixed.

Romantic asking thresholds are

$$B = r_{Sp}D - G \quad \text{and} \quad B = r_{Ap}D - G,$$

and non-romantic asking thresholds are

$$G = r_{Sp}D \quad \text{and} \quad G = r_{Ap}D.$$



Bottom line In this model, “she asked for a skate lesson” combines two forces: romantic value (B) and learning/risk appetite (G and r). Because a risk-averse romantic can choose $A = 0$ and a risk-seeking non-romantic can choose $A = 1$, the action is informative but not definitive: it is a noisy signal of romantic interest.