JUMO HEALTH WHITE PAPER

The Science of Choice in Clinical Trials

Designing decisions that patients can understand, trust, and sustain

> **Every trial creates a decision environment. The only question is whether it was designed deliberately.**

Andy Proctor | Head of Behavioral Science | August 2026

EXECUTIVE BRIEF

Patients do not decide inside a consent form.

A clinical trial decision is shaped by diagnosis, emotion, trust, family influence, time pressure, treatment alternatives, practical burden, and the way information is presented. The formal consent process is only one moment inside that larger decision environment.

The science of choice combines behavioral economics, cognitive psychology, social psychology, and decision science to understand how context shapes judgment and action. Applied ethically, it helps trial teams reduce avoidable cognitive load, make trade-offs understandable, structure next steps, include the people who influence the decision, and support follow-through without compromising autonomy.

This paper translates five core principles into clinical trial design: cognitive load, framing, defaults, social proof, and commitment. It then applies those principles across awareness, screening, consent, participation, and completion, with explicit ethical guardrails.

> **Clarity.** Reduce the effort required to understand what matters.
>
> **Context.** Present risks, benefits, and burden in usable terms.
>
> **Agency.** Preserve voluntary choice and make opting out easy.
>
> **Support.** Design the environment around real behaviors and constraints.

Behavioral design does not tell patients what to choose. It makes the choice easier to understand and act on.

THE DECISION ENVIRONMENT

Choice is shaped before the patient answers.

A choice never arrives neutrally. The order of information, the language used, the messenger, the number of steps, the default appointment, the visibility of support, and the emotional state of the patient all influence what happens next.

Conventional trial processes often assume a highly analytical patient with unlimited attention. In reality, patients may be processing a diagnosis, uncertainty, and unfamiliar concepts under stress. Adding dense information can increase disclosure while reducing usable understanding.

The ethical response is not to eliminate complexity or steer the answer. It is to design a decision environment that makes essential information salient, allows reflection, supports questions, and reduces irrelevant friction. FDA guidance similarly emphasizes key information, organization, comprehension, time, questions, and continuing communication in consent.[45]

Unmanaged environment	Deliberately designed environment
All information arrives at once	Key information leads; detail follows in layers
The patient must discover the next step	Timing, ownership, and next action are visible
Silence is treated as a decision	Questions and hesitation trigger support
One experience is used for everyone	Support changes with context and readiness

FIVE BEHAVIORAL PRINCIPLES

Design the conditions around the decision.

The most useful behavioral principles are not tricks. They are design lenses that reveal why an otherwise ethical and accurate process may still be difficult to navigate.

Cognitive load asks how much working memory and attention the process demands. Framing asks whether information is balanced, meaningful, and understandable. Defaults ask what happens when the patient takes no action and whether the next step is unnecessarily difficult. Social proof asks who makes the option credible and how family, peers, clinicians, and community shape the decision. Commitment asks how an initial intention becomes sustained behavior.

These principles work together. A default appointment fails if the patient does not trust the site. A peer story fails if the protocol burden remains hidden. A simplified consent summary fails if nobody checks comprehension. Behavioral design must be systemic.

Principle	Design question	Clinical trial application
Cognitive load	What effort is required to understand and act?	Layer information; simplify steps; use visual timelines.
Framing	How are trade-offs made meaningful?	Balance gain, risk, uncertainty, and practical consequence.
Defaults	What happens when no extra action is taken?	Propose appointments; include reminders; make support standard.
Social proof	Who makes the option credible?	Use trusted clinicians, peers, caregivers, and community voices.
Commitment	How does intention survive over time?	Use planning, feedback, milestones, and problem-solving.

COGNITIVE LOAD AND COMPREHENSION

More information can produce less understanding.

Clinical trial information is complex because the decision is complex. The solution is not to remove material facts. It is to organize them around the decisions patients must make.

Start with the essentials: purpose, alternatives, duration, major procedures, likely burden, key risks, possible benefits, uncertainty, and the right to decline or withdraw. Use progressive disclosure so detail remains available without competing with the first mental model. Translate technical concepts through plain language, visual structure, examples, and conversation.

Evidence on consent comprehension shows persistent gaps, particularly around randomization and placebo.[10] Research focused on lower literacy suggests that one-to-one explanation and teach-back can be more effective than readability changes alone.[11] That is a critical design lesson: comprehension is interactive, not typographic.

Sequence. Explain what matters first, then add detail in logical layers.

Externalize. Use timelines, visit maps, and task previews to reduce memory demand.

Translate. Use patient-relevant language without weakening accuracy.

Test. Ask the patient to explain the decision in their own words.

Reinforce. Repeat material information when the study experience changes.

Readable information supports comprehension. Dialogue, feedback, and reinforcement create it.

FRAMING AND TRUST

Accuracy is required. Meaning is designed.

Framing changes which aspect of a decision becomes salient. A trial can be described as a list of procedures or as a time-bound participation experience with procedures, purpose, uncertainty, support, and alternatives. Both may be factually accurate. Only one helps the patient understand what the decision means.

Balanced framing gives risks and burdens appropriate weight while also explaining purpose, monitoring, possible benefit, contribution to research, and available support. It uses absolute frequencies where possible and avoids language that implies guaranteed benefit. It also explains what declining means so the patient can compare real options.

Trust depends on both content and source. A treating clinician, study coordinator, patient advocate, community leader, caregiver, or former participant may each answer a different credibility question. Behavioral design chooses the messenger as carefully as the message.

Avoid	Use instead
'Experimental opportunity' without context	Clear explanation of investigational status, uncertainty, and safeguards
Percentages without a denominator	Absolute frequencies and relevant comparators
Altruism as pressure	Altruism as one possible value among personal and practical considerations
Generic reassurance	Specific information about monitoring, contacts, and what happens if concerns arise

DEFAULTS AND FRICTION

Make support the default. Keep participation voluntary.

Defaults influence behavior because they remove a decision or extra action. In trial operations, the safest applications are often not defaults to participation, but defaults to support.

Offer a proposed screening time instead of requiring the patient to call again. Provide calendar invitations and reminders automatically. Make travel assistance, interpretation, caregiver materials, and a human contact visible rather than hidden behind an opt-in request. Schedule the next visit before the patient leaves. None of these actions changes the patient's right to decline. They reduce the friction required to carry out a decision already made.

Direct evidence continues to develop. A 2026 study within a randomized trial compared opt-in and opt-out framing for recruitment, underscoring that outreach architecture itself can affect participation and protocol completion.[12] Any stronger default must be transparent, proportionate to risk, approved, and easy to reverse.

> **Good default.** Makes an appropriate next step or support easier.
>
> **Ethical requirement.** The patient understands the choice and can change it without penalty.
>
> **Operational test.** The default removes friction rather than hiding information or urgency.

> **The strongest default in a trial is not enrollment. It is a system prepared to help.**

SOCIAL PROOF AND SHARED DECISIONS

The patient is not the only decision-maker in the room.

Health decisions are social. Patients interpret uncertainty through clinicians, caregivers, family members, peers, advocacy organizations, and community norms. Ignoring that system does not remove its influence. It simply moves the influence outside the trial's view.

Use social proof to normalize consideration, not to pressure agreement. Accurate peer stories can make unfamiliar experiences more concrete. Trusted clinicians can explain why a trial is a legitimate option. Caregiver education can reveal whether the practical support required for participation exists. Community partnerships can address historical mistrust through sustained relationships rather than a campaign.

The design must also account for disagreement. A patient may be willing while a caregiver anticipates unmanageable burden. A clinician may support the trial while the family fears placebo. Bringing these perspectives into the process early allows the study to resolve concerns or recognize that participation is not currently sustainable.

Influencer	Question they help answer	Design response
Clinician	Is this a credible care option?	Equip with accurate, patient-ready explanation.
Caregiver	Can our lives sustain the protocol?	Include burden, schedule, and support planning.
Peer	What might this feel like in practice?	Use authentic stories with clear limits.
Community	Can this research be trusted here?	Build relationships through credible local partners.

COMMITMENT AND RETENTION

A decision must be supported after it is made.

Enrollment is an intention. Completion requires repeated behavior under changing conditions. Behavioral design therefore continues after consent.

Implementation planning helps patients connect trial tasks to real life: when, where, how, and with whose help each action will occur. Reminders cue behavior, but feedback and problem-solving make it sustainable. Milestones make progress visible. Timely reimbursement removes avoidable resentment. Human outreach after a missed activity creates a recovery path instead of a judgment.

Retention support should be proportionate and adaptive. A patient who is stable may need little. A patient showing burden accumulation, silence, confusion, or support loss may need immediate human contact. The objective is not to make participation artificially sticky. It is to keep the decision informed, feasible, and voluntary as conditions change.

Plan. Translate protocol tasks into specific real-life actions.

Cue. Use reminders and environmental prompts at the right time.

Reinforce. Make progress, contribution, and appreciation visible.

Recover. Treat missed activity as a signal to diagnose, not a reason to blame.

Reassess. Confirm that participation remains understood and sustainable.

Retention is not a reminder program. It is continuous decision support.

ETHICS AND GOVERNANCE

Behavioral design is powerful enough to require guardrails.

Every choice environment influences behavior, including one that was never intentionally designed. Ethical behavioral design makes that influence visible and governable.

The core standard is autonomy. Information must be accurate and balanced. Patients must have time and opportunity to ask questions. Opting out must remain clear and easy. Incentives must compensate time and burden without becoming undue influence. Personalization must not exploit vulnerability. Predictive signals must support human judgment, not replace clinical or ethical oversight.

Governance should document the intended behavioral mechanism, the patient benefit, the risks of misuse, the data involved, the escalation path, and the review requirements. Patient and caregiver input should test whether an intervention feels supportive, transparent, and culturally appropriate before deployment.[1]

Guardrail	Operational requirement
Transparency	Patients can recognize what is being asked and why.
Reversibility	Defaults and choices are easy to change without penalty.
Proportionality	The influence is appropriate to risk and decision stakes.
Fairness	Support does not exclude people with lower literacy, access, or technology.
Human oversight	Clinical and ethical decisions remain with qualified people.

IMPLEMENTATION

Treat participation as a design problem you can measure.

Begin with a journey review. Identify every point where a patient must notice, understand, decide, schedule, travel, perform, disclose, or persist. For each point, document the likely cognitive, emotional, social, and practical friction.

Select the smallest intervention that addresses the diagnosed barrier. Define the intended mechanism, the ethical guardrail, the signal of success, and the owner. Test language and workflows with patients and caregivers. Train sites in the behavior the design expects from them. Then instrument the experience so the team can see where progression improves or weakens.

Measure more than conversion. Examine comprehension, question quality, time to next step, productive screening, missed activities, burden, support use, early withdrawal, completion, and patient-reported experience. Behavioral design should earn its place through better decisions and more durable participation.

1. **Map the decision.** What must the patient understand or do at this moment?
2. **Diagnose friction.** What is making that action difficult or uncertain?
3. **Choose the mechanism.** Which behavioral principle directly addresses the barrier?
4. **Add guardrails.** How will autonomy, fairness, and oversight be protected?
5. **Test and measure.** Did the intervention improve understanding and progression?

The future of trial execution belongs to teams that design for human behavior with the same rigor they apply to clinical science.

ABOUT THE AUTHOR AND SOURCES

The people and evidence behind the argument.

Andy Proctor

Head of Behavioral Science

Andy is a social and health psychologist and mixed-methods researcher whose work examines social connection, health behavior, psychophysiology, and human interaction with AI. At Jumo, he translates cognitive, emotional, social, and practical friction into experiences and interventions designed to support durable participation.

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Editorial note: This publication is educational and does not provide medical, legal, or regulatory advice. Trial design and patient-facing interventions require protocol-specific clinical, ethical, legal, privacy, and IRB review.