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You Should Really Think This Through: Cross-Domain Variation in Preferences for Intuition and Deliberation

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Abstract

Decisions are often better when pursued after deliberation and careful thought. So why do we so often eschew deliberation, and instead rely on more intuitive, gut responses? We suggest that in addition to well-recognized factors (such as the costs of deliberation), people hold normative commitments concerning how decisions ought to be made. In some cases (e.g., when choosing a romantic partner), relying on deliberation (over intuition) could be seen as inauthentic or send a problematic social signal. In Experiment 1 (N = 654), we show that people in fact hold such domain-sensitive processing commitments, that they are distinct from reported descriptive tendencies, and that they contribute to predicting reported choice. In Experiment 2 (N = 555), we show that choosing intuitively vs. deliberately supports different inferences concerning confidence and authenticity, with the domain variation in inferences in Experiment 2 closely tracking the domain variation in normative commitments observed in Experiment 1. In Experiment 3 (N = 1002), we rule out an alternative explanation. These findings inform theories of judgment and decision-making, as well as efforts towards improving decision-making through critical thinking.

Keywords: intuition; deliberation; domain; authenticity; social signaling; normative commitments; decision-making

Introduction

Deliberative analysis—a foundational component of critical thinking—enables us to weigh features, simulate futures, and arrive at good, tractable decisions. Yet in many cases, people approach decisions by instead relying on gut feelings and intuition, even when doing so leads to error (Frederick, 2005). Notably, the extent to which people rely on intuition and deliberation varies not only across individuals (Cacioppo & Petty, 1982), but also across domains (Gallo et al., 2016; Inbar, Cone, & Gilovich, 2010; Pachur & Spaar, 2015). What accounts for this variation?

Here we investigate a novel hypothesis about the roles of intuition and deliberation across domains, premised on the idea that intuition is sometimes favored because it is taken to reflect an individual's deeper commitment or more authentic decision-making. This hypothesis can be broken down into several components with corresponding empirical predictions. First, we posit (a) that people have *normative commitments* about when intuition or deliberation should be employed. That is, people think one *ought to* approach some decisions through analysis (i.e., through System 2-like

processing), and that for other decisions one *ought to* rely on gut feelings or intuitions (i.e., System 1-like processing). It is important to note that in distinguishing between deliberation and intuition, we intend to capture people's lay theories of reasoning, which may or may not map onto dual process theories of cognition. In fact, we do not have a stake in whether dual process accounts are accurate models of the mind. However, we do posit (b) that these commitments can be dissociated from *descriptive beliefs* concerning the conditions under which intuition and deliberation are typically employed. People might think, for example, that one *ought to* deliberate for an adoption decision, but that they and others would typically rely on an intuitive impression instead. Third, we predict (c) that these normative commitments play a causal role in decision-making—that they are not merely epiphenomenal or post-hoc rationalizations, but rather part of the decision process itself. Finally, we propose (d) that these normative commitments are driven in part by the role of intuition as a self or social signal: to the extent an intuitive decision is taken to uniquely signal commitment (Critcher, Inbar, & Pizarro, 2012) or authenticity (Morewedge, Giblin, & Norton, 2014), people will believe intuitive processing is a more appropriate choice. We further motivate these predictions below.

Prior Work: Reasoning Across Domains

Why don't people approach all decisions through deliberation? Prior work has emphasized that deliberation is costly (e.g., Tversky & Kahneman, 1974; Sloman, 1996; see also Lieder & Griffiths, 2019) and, some have argued, not always associated with better outcomes (Mikels et al., 2011; Wilson & Schooler, 1991; see also Maglio & Reich, 2020). Beliefs about whether deliberation is worth the cost, or likely to yield a better outcome, plausibly figure into judgments of when deliberation or intuition ought to be employed.

Broadly consistent with these ideas, Inbar, Cone, and Gilovich (2010) propose a 'task cuing' account according to which people are cued to adopt the processing associated with features of the decision problem, such as its objectivity and complexity (see also Gallo et al., 2017). For example, they report that preferences for basing a decision "mainly on the basis of 'reason,' or through rational analysis," vs. "on the basis of 'intuition,' or by consulting the 'gut'" correlated highly with the perceived objectivity of those decisions ($r \sim$

.85). Martinez, Gorlin, and Lombrozo (2019) also report cross-domain sensitivity to the objectivity of means and ends.

Pachur and Spaar (2015) found that preferences for intuition vs. deliberation varied significantly across six domains ranging from purchasing clothing to electronics shopping. Moreover, domain-specific preferences for intuition were correlated with self-rated domain expertise ($r \sim .40$), which is thought to increase the reliability of intuition as a guide to the better choice.

Finally, Berman, Levine, and Small (2018) report that participant beliefs in the importance and effectiveness of using ‘objective measures’ over ‘personal feelings’ varies significantly across domains. They found that participants are more likely to think objective measures are a better way to make decisions about investments than charities, and correspondingly rely on objective metrics more often when making investment (vs. charity) decisions. These findings indicate that people do not simply rely on their intuitions in some domains due to the unavailability of objective information, or the effort required to obtain it—rather, they have processing preferences that lead them to differentially value such information, even when it is readily available.

A Signaling Hypothesis

We propose that in addition to the roles of expertise, objectivity, and other documented factors in driving processing tendencies, people could differentially favor intuition versus deliberation because these approaches to decision making send different self- or social signals. For instance, Maglio and Reich (2018) found that decisions based on feelings (vs. deliberation) led to greater subsequent certainty and were more strongly perceived to reflect one’s “true self.”

Relatedly, Morewedge, Gliblin, and Norton, (2014) provide evidence that different forms of thought license different inferences about the thinker. They found that participant ratings of the amount of meaningful self-insight that spontaneous thoughts (including intuitions) generate was significantly higher than deliberative methods of reasoning.

In the moral domain, Critcher, Inbar, and Pizarro (2012) found that immoral decisions (e.g., stealing money) were judged more harshly when they were made more quickly (suggesting they were made intuitively), whereas moral decisions (e.g., returning stolen money) were judged more harshly when they were made slowly (suggesting deliberation was involved). They further found that the impact of decision speed was mediated by the perceived certainty of actors in their decisions, which has both direct and indirect effects (through the perceived commitment of actors to their motives) on moral character evaluations. This suggests that when it’s important to signal certainty in a decision or in an associated value (e.g., respecting others’ property), people could feel pressure to respond on the basis of intuition.

Here we report three studies investigating the role of normative commitments in driving cross-domain processing tendencies. In Experiment 1, we develop a standard paradigm

to measure descriptive and normative processing judgements and use it to investigate the relationship between these factors and decision-making across twelve domains. In Experiment 2 we use the same paradigm to investigate whether different decisions in fact send different signals. In Experiment 3, we rule out an alternative explanation.

Experiment 1

Experiment 1 had three aims. Our first aim was to offer a conceptual replication of prior work documenting robust differences in the perceived role of intuition and deliberation across domains. Our second aim was to investigate whether people have normative commitments regarding the appropriate roles of intuition and deliberation in decision making, where these depart from their descriptive judgments about how decision making typically unfolds. Finally, our third aim was to investigate whether normative commitments can predict reported decisions, and (most stringently) whether they make a contribution above and beyond the influence of descriptive judgments, objectivity, and expertise.

Methods

Participants Participants were 654 adults (319 male, 333 female, 2 other, mean age = 40) recruited on Amazon Mechanical Turk in exchange for monetary compensation (\$0.67 for a 5-minute survey). An additional 346 participants were eliminated for failing to meet pre-registered criteria of spending enough time on the task (2+ mins) and passing both attention checks (described below). Participation across all studies was restricted to users with an IP address within the United States, and with an approval rating of at least 98% on 500 previous tasks. Repeat participation within or across studies was restricted using the TurkGate platform (Goldin & Darlow, 2013).

Materials and Procedure Participants were randomly assigned to one of twelve real-life decision domains (romance, vacations, pet adoption, politics, investing, hiring, electronics shopping, medical treatment, picking songs, house purchases, donations, watching movies), and received a vignette involving a detailed description of a binary decision within that domain, where the detail was intended to reduce cross-participant variance in relevant properties of the decision (Olds & Link, 2016). Intuition pointed to one choice and deliberation (with initial guidance from a domain expert) pointed to the other. For example, in the domain of romance, participants read:

“Suppose that you are interested in starting a new romantic relationship. You were recently at a café and separately met two individuals: Alex and Taylor. At the café, you really felt in your gut that you and Alex were likely to be a good fit for each other. When you were interacting with Taylor, you did not feel like you and Taylor were a good fit for each other at all. Both

interactions were long enough that you are convinced your gut feelings about them would not change even if you had an opportunity to chat further.

Later, you consult a relationship counselor and spend an afternoon listing out and weighting the characteristics that are important to you about potential romantic partners like Alex and Taylor (such as their personality, priorities, etc.). After developing the list, you are convinced of two things: first, that scores generated from the list would truly reflect the extent to which Alex or Taylor is a good match for you, and second, that even if you had more time to think about the list, your analysis would not change.

That evening, you score Alex and Taylor using the criteria that you developed with the relationship counselor. You calculate a score of 35% match for Alex and 65% for Taylor. These scores run counter to your gut reactions.”

Participants were asked to indicate which response they would choose (*descriptive choice judgment*) or should choose (*normative choice judgment*), from “definitely [the intuitive choice]” (1) to “definitely [the deliberative choice]” (5). These judgments were made in two counterbalanced blocks that also included 7-point agreement ratings with the following two sets of *intuition/deliberation processing judgement* items (shown with labels not seen by participants):

Descriptive: I rely on intuition and gut feeling [reasoning and deliberative analysis] when making this type of decision.

Normative: One ought to rely on intuition and gut feeling

[reasoning and deliberative analysis] when making this type of decision.

Participants subsequently responded to items indicating the extent to which they thought each decision was objective (“To what extent are the outcomes of decisions in this domain a matter of objective or subjective determination?”) on a 9-point scale borrowed from Inbar, Cone, & Gilovich (2010) and whether they had relevant expertise on a 7-point scale (“How much expertise do you have in making decisions similar to the one you encountered in the prompt...?”). Randomly intermixed with these measures were two attention checks: the first asking participants whether they had seen a politician’s picture in the previous section, and the second asking participants to only select two options across four multiple choice questions with four possible answers. Finally, participants provided demographic information.

Results and Discussion

To pursue our aims of (a) replicating domain differences in processing tendencies and (b) investigating the presence of normative commitments that differ from reported descriptive tendencies, we analyzed responses to the *processing judgement* items as a function of domain and judgement type (descriptive/normative). A mixed ANOVA with domain as a between-subjects factor, judgment type (normative or descriptive) as a within-subjects factor, and intuition judgement ratings as the dependent variable yielded significant main effects of domain, $F(11,642) = 15.77, p < .001$, and judgement type, $F(1,642) = 91.65, p < .001$ (see

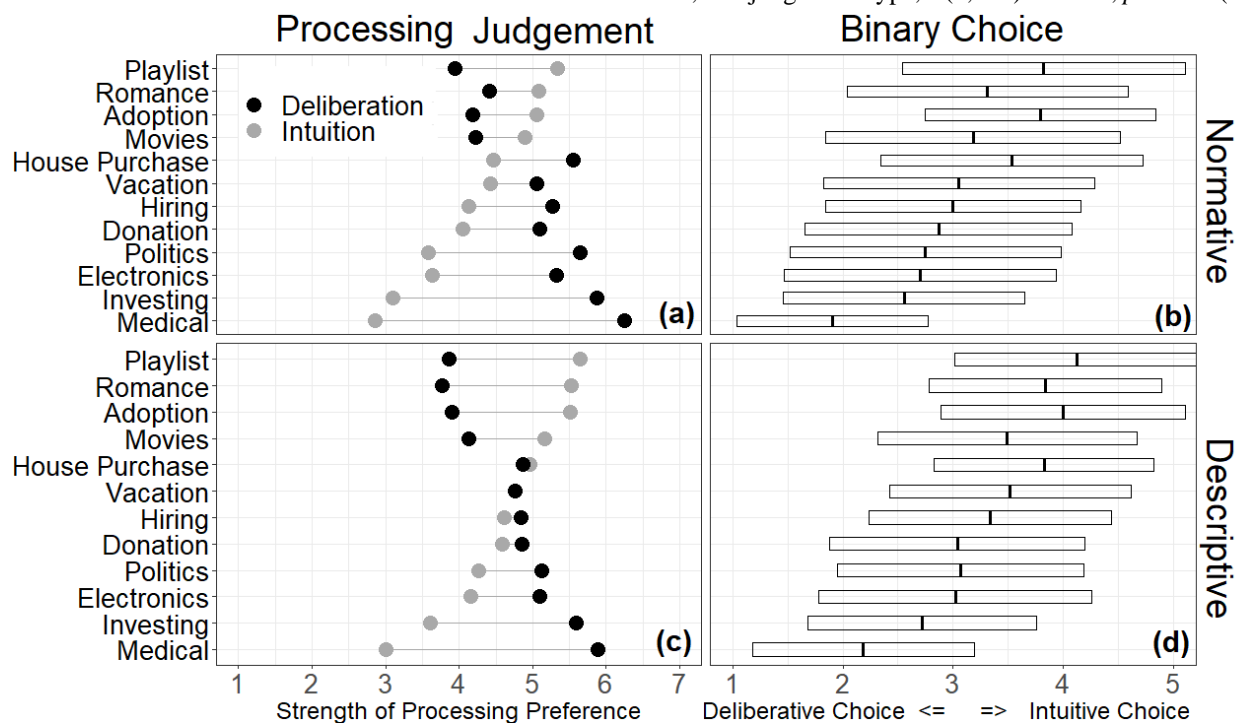


Figure 1: Cross-domain processing judgement results from Experiment 1. (a) and (b) show variation in processing judgements for deliberation (black) and intuition (gray). (b) and (d) shows mean choice ratings ($\pm 1 SD$).

Figure 1a, 1c). In addition to significant variation across domains, descriptive intuition ratings ($M = 4.69$, $SD = 1.72$) were significantly higher than normative intuition ratings ($M = 4.25$, $SD = 1.73$). These results provide support for our hypothesis that there is significant variation in tendencies to rely on intuition across domains, and that normative commitments to processing can be distinguished from descriptive tendencies. The interaction effect was not significant, $F(11,642) = 0.85$, $p = .58$, indicating that the distinction between normative and descriptive factors is consistent across domains.

A second mixed ANOVA with the same factors but deliberation judgements as the dependent variable similarly yielded significant main effects of domain, $F(11,642) = 15.90$, $p < .001$, and judgement type, $F(1,642) = 54.27$, $p < .001$, but no interaction, $F(11,642) = 1.46$, $p = .14$ (see Figures 1a and 1c). In addition to significant variation across domains, descriptive deliberation ratings ($M = 4.68$, $SD = 1.59$) were significantly lower than normative deliberation ratings ($M = 5.03$, $SD = 1.51$). These results exactly mirror the results for intuition and further support our hypotheses: for both intuition and deliberation, people have distinct normative commitments and tendencies that consistently vary across domains.

One concern is that differences between descriptive and normative judgments could be driven by variation in the wording of our items, where the former involved a first-person pronoun (“I rely,,”) and the latter a third-person pronoun (“one ought...”). However, an effect of 1st vs. 3rd person pronouns would most plausibly have manifested in higher deliberation ratings for the former, or in an interaction such that 1st-person judgments exaggerated the preferred processing type; neither of these effects were observed.

We next analyzed responses to the self-reported *choice judgments* to investigate whether normative and descriptive choices also differ meaningfully across domains. To that end, we conducted a mixed ANOVA with domain as a between-subjects factor and judgment type (descriptive/normative) as a within-subjects factor (see Figures 1b, 1d). This analysis revealed a main effect of domain, $F(11,642) = 13.76$, $p < .001$, mirroring the findings for processing judgments. It also revealed a main effect of judgment, $F(1,642) = 75.47$, $p < .001$: descriptive choices were closer to the intuitive option ($M = 3.37$, $SD = 1.21$) than were normative choices ($M = 3.06$, $SD = 1.28$).

Finally, we considered whether *descriptive choice judgments* could be predicted from *normative processing commitments*, even after taking *descriptive processing tendencies*, objectivity, and expertise into account.

A regression predicting *descriptive choice judgment* from domain, descriptive and normative intuition and deliberation judgements, participant expertise, and perceived objectivity revealed that normative intuition ratings significantly predicted descriptive choice, even after taking all of the aforementioned factors into account (see Table 1).

In sum, our results support all three initial predictions: normative processing commitments vary across domains,

differ from reported descriptive tendencies, and (for intuition) significantly predict decision-making beyond the effects of previously established predictors, namely objectivity and expertise.

Table 1: Regression analysis predicting descriptive choice

Predictor	<i>b</i>	95% CI	β	<i>r</i>
(Intercept)	2.34**	[1.85, 2.84]		
Descriptive Intuition	0.34**	[0.27, 0.40]	0.48	.73**
Descriptive Deliberation	-0.14**	[-0.20, -0.09]	-0.19	-.58**
Normative Intuition	0.08**	[0.02, 0.15]	0.12	.64**
Normative Deliberation	-0.01	[-0.08, 0.05]	-0.02	-.53**
Objectivity	-0.05**	[-0.08, -0.02]	-0.09	-.45**
Expertise	0.02	[-0.03, 0.06]	0.02	.08*

Note. $R^2 = .583$ ($p < .001$). *b* represents unstandardized (and β the standardized) regression weights. *r* represents the zero-order correlation between the predictor and outcome. * indicates $p < .05$. ** indicates $p < .01$.

Experiment 2

In Experiment 2, we investigated whether people draw different inferences about a person depending on whether that person makes a decision on the basis of intuition versus deliberation. We hypothesized that when a person makes a decision on the basis of intuition (vs. deliberation), she will be regarded as being more committed and confident, as better reflecting her true self, and as responding more authentically. For such factors to drive normative commitments, they would have to show similar patterns of interaction across domains—we thus hypothesized that these effects would interact with domain, and do so in a manner that corresponds to the cross-domain variation observed in Experiment 1.

Methods

Participants Participants were 555 adults (246 male, 308 female, 1 other, mean age = 40) recruited from Amazon Mechanical Turk in exchange for monetary compensation (\$0.67 for a 5-minute survey). An additional 165 participants were eliminated from the original sample following the same pre-registered criteria as Experiment 1, but with 1.5 minutes as the minimum completion time.

Materials and Procedure Participants were randomly assigned to one of 24 conditions. In each condition, participants saw a prompt drawn from one of twelve decision domains from Experiment 1, and received a vignette about a character who either relies on her intuition or deliberation to decide between the same two options that participants from

Experiment 1 were asked to choose from. Afterwards, participants responded to the following four items regarding their perceptions of the character based on her decision: commitment (“How committed was Sarah to her choice?”) and confidence (“How confident was Sarah in her choice?”) were measured on 7-point scales, from (1) very uncommitted / unconfident to (7) very committed / confident, and two measuring self-reflection (“Sarah’s choice was reflective of her true self.”), and authenticity (“Sarah made her choice authentically.”) on 7-point agreement scales. Participants also completed exploratory measures (not reported here).

Results and Discussion

To investigate whether participants drew different inferences about decision-makers when the decision-maker relied on intuition versus deliberation (see Figure 2), we performed two-way ANOVAs with character decision (intuitive or deliberative choice) and domain as between-subjects variables, and each of commitment, confidence, self-reflection, and authenticity as dependent variables. Because we tested four distinct measures, we adopted a Bonferroni-corrected p-value of $p < .0125$.

For commitment, we found a significant main effect of choice type, $F(1,531) = 77.61, p < .001$, but no significant main effect of domain, $F(11,531) = 1.01, p = .44$, and no significant interaction, $F(11,531) = 0.45, p = .93$. Similarly, the analysis of confidence revealed a significant main effect of choice type, $F(1,531) = 95.74, p < .001$, but no significant main effect of domain, $F(11,531) = 1.00, p = .44$, and no significant interaction, $F(11,531) = 0.94, p = .50$. In both cases an intuitive choice licensed a stronger inference.

The analysis of self-reflection, by contrast, found a significant main effect of choice type, $F(1,531) = 297.14, p < .001$, and no significant main effect of domain, $F(11,531) = 1.32, p = .20$, but did find a significant interaction, $F(11,531) = 4.06, p < .001$, indicating that the inferences drawn from choice type varied across domains. Similarly, the analysis of authenticity revealed a significant main effect of choice type, $F(1,531) = 58.04.14, p < .001$, and no significant main effect of domain, $F(11,531) = 1.61, p = .09$, but did find a significant interaction $F(11,531) = 4.00, p < .001$.

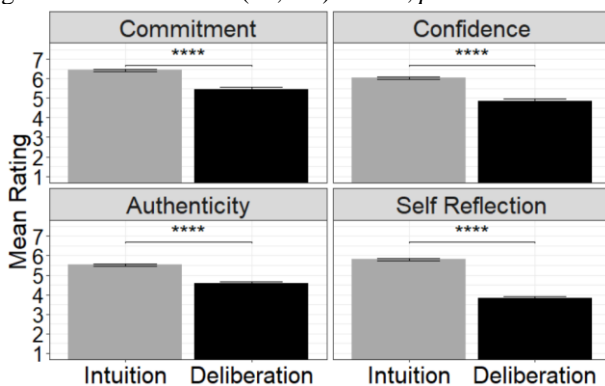


Figure 2: Mean ratings for four inferential judgements of a character based on choice types in Experiment 2. All comparisons are significant at $p < .001$.

To investigate whether these measures could explain the cross-domain variation in normative commitments found in Experiment 1, we performed the following analysis. For Experiment 1, we calculated difference scores for each domain by subtracting normative processing ratings for deliberation from normative processing ratings for intuition. For Experiment 2, we calculated difference score for each domain by subtracting inference ratings from the deliberative choice from inference ratings for the intuitive choice. These difference scores were significantly correlated for self-reflection, $r(10) = .80, p < .001$, and authenticity, $r(10) = .85, p < .001$, but not for confidence, $r(10) = .69, p = .013$, nor commitment $r(10) = -.23, p = .47$ (see Figure 3). These correlations provide evidence for our hypothesis that some of these inferences drive cross-domain variation in normative processing commitments, though we note that correlations with relatively few datapoints must be interpreted with caution.



Figure 3: Correlations between difference scores for four inferential judgements (*character inference for intuitive – deliberative choice*) and Experiment 1’s cross-domain difference scores (*commitment to intuition – deliberation*).

In sum, Experiment 2 investigated whether people draw different inferences regarding others based on their choice of an intuitive or deliberative option. All four factors showed significant variation based on whether the intuitive or deliberative option was chosen, though cross-domain variation was only found for self-reflection and authenticity, which were also strongly correlated with Experiment 1’s cross-domain processing commitments.

Experiment 3

The primary aim of Experiment 3 was to address a possible confound: in Experiments 1 and 2, deliberation always involved consultation with an expert. Participants could have been influenced by this role for expert opinion (Mieg, 2001), perhaps resulting in lower judgments of self-reflection and

authenticity for deliberative decisions in some domains. Experiment 3 therefore aimed to replicate the domain variation between an intuition-dominant domain (romance) and a deliberation-dominant domain (investment) without introducing an expert in the process of deliberation.

Experiment 3 also begins to address the relationship between two (potentially consistent) hypotheses: that people favor intuition in some domains because it is taken to signal a more authentic choice, and that people favor intuition in some domains because it is simply taken to be a *more reliable guide* to identifying the best outcome in those domains. In an effort to differentiate these possibilities, Experiment 3 introduced a subtle manipulation. Half of participant were asked to indicate how a character *should decide*, a judgment that presumably takes considerations of both authenticity and reliability into account. The other half of participants were asked to identify the *best outcome*, which should track reliability more closely, if not exclusively. Thus, if these measures diverge, it suggests that judgments of how someone *should decide* go beyond an evaluation of how much evidence they have concerning the quality of each option based on the outcomes of intuition and deliberation.

Methods

Participants Participants were 1002 adults (473 male, 527 female, 2 other, mean age = 41) recruited from Amazon Mechanical Turk in exchange for monetary compensation (\$0.45 for a 3.5 minute survey). An additional 198 participants were excluded as in Experiments 1 (i.e., with a 2-minute exclusion criterion).

Materials and Procedure Participants were randomly assigned to one of two domains (romance or investment) and provided with a prompt like that in Experiment 2, but where the deliberative analysis was performed solely by the character (e.g., “Sarah spends an afternoon listing out and weighting the characteristics that are important to her...”). After reading the prompt, participants indicated either the best outcome (“Which investment is better for Sarah?”) or what Sarah should decide (“What should Sarah do?”). Participants also provided the normative commitment ratings from Experiment 1. Then, they read that Sarah eventually chose either the intuitive or deliberative option and provided the four judgements from Experiment 2, in addition to exploratory measures (not reported here).

Results and Discussion

Experiment 3 succeeded in replicating the results of Experiments 1 and 2 within the domains of romance and investment, suggesting that at least in these domains, the involvement of an expert did not drive any qualitative patterns in results. Specifically, for processing judgements we found a significant interaction between domain and processing type, $F(1,998) = 870.88, p < .001$ (see Figure 4b). For character inferences, we found significant interactions between domain and confidence, $F(1,994) = 6.58, p < .012$,

self-reflection, $F(1,994) = 13.13, p < .001$, and authenticity, $F(1,994) = 131.96, p < .001$, but not commitment, $F(1,994) = 5.68, p = .02$ (see Figure 5), mirroring the pattern of results we observed in Experiment 2’s correlational analyses.

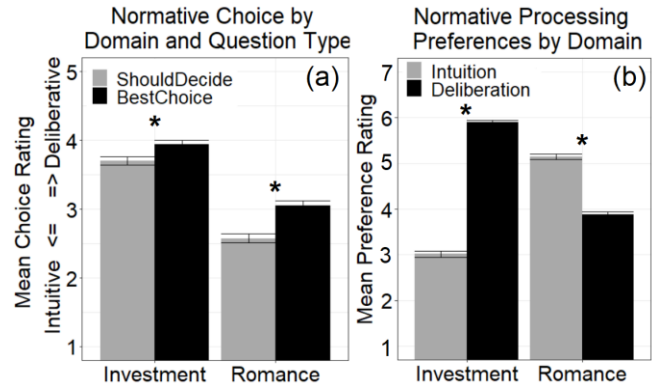


Figure 4: Normative judgements based on question type (a) and (b) processing type across domains. All comparisons are significant at $p < .001$.

Addressing our second aim, a two-way ANOVA with domain (romance vs intuition) and question type (best option vs should choose) as between-subjects factors and normative choice as the dependent variable revealed a main effect of question type, $F(1,998) = 31.67, p < .001$, a main effect of domain, $F(1,998) = 248.11, p < .001$, and a marginal interaction, $F(1,998) = 3.36, p = .07$ (see Figure 4a). This suggests that responses to the normative choice questions in Experiments 1-2 were not solely a function of the perceived reliability of intuition and deliberation as sources of information about the quality of each outcome.

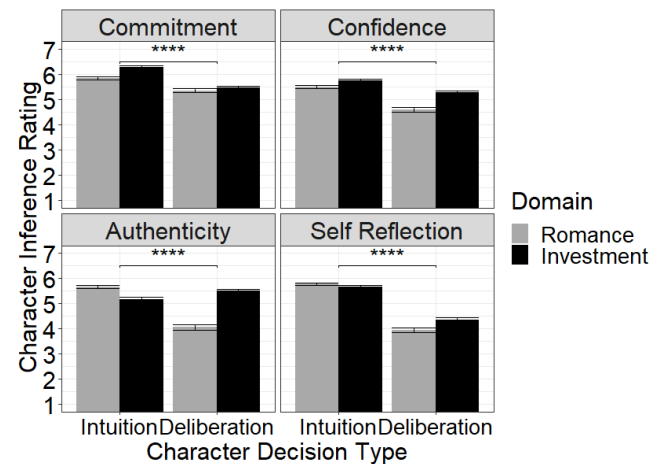


Figure 5: Character inferences across domains and character choice (intuitive vs deliberative choice). All comparisons are significant at $p < .001$, including interactions for all measures except for commitment.

General Discussion

Across three studies, we show that people have systematic beliefs concerning the domains in which they ought to rely on intuition vs. deliberation, that these beliefs are distinct from descriptive beliefs, and that they play a role in predicting choice (Experiment 1). We also show that decisions made through intuition (vs. deliberation) are generally thought to signal greater commitment, confidence, self-reflection, and authenticity, with the latter two varying across domains (Experiment 2). Crucially, we show that for both self-reflection and authenticity, cross-domain variation in inferences drawn from intuitive vs. deliberative choice closely track cross-domain differences in the prescribed role of intuition vs. deliberation, consistent with the idea that intuition is sometimes prescribed in part because of what it will signal. Finally, Experiment 3 bolsters our interpretation of Experiments 1-2 by showing that effects are not driven by the inclusion of an expert consultant in our vignettes, and that judgments about what a character “should decide” reflect more than assumptions about the reliability of intuition and deliberation as guides to the actual quality of outcomes.

There is a large body of work on improving decision-making, with many efforts targeting over-reliance on heuristics and other forms of intuitive reasoning by providing people with effective reasoning strategies and other ‘thinking tools’ (e.g., Maule & Maule, 2016). Our results are significant as they suggest an alternative point of intervention: people might have all the tools they need, but if they consider their use to be inappropriate in some cases, then they will rely on their intuitions regardless of their access to objective information or deliberative thinking strategies. An important question for future research from an applied perspective is therefore to investigate when such normative commitments interfere with good decisions, and how these decisions can be improved. In terms of extending the novel signaling account put forth in this research, several opportunities lay ahead: from investigating individual differences in cross-domain sensitivity to potential moderators of normative commitments to intuition and deliberation, our theoretical perspective provides fertile ground for much future work.

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