Do as I say, not as I do:

Decision-makers choose to follow their own intuitive judgment, but recommend others adhere to a structured process

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Abstract

Important decision-making tasks often feature a choice between using one's own intuitive judgment versus following a structured process. We investigate whether people endorse systematically different judgment strategies for others as compared to themselves, and find that individuals are more likely to choose their own intuitive judgment, while recommending process for others (Studies 1-3). This preference for one's own intuitive judgment is detrimental to judgment accuracy (Studies 1, 3, and 4) and emerges under incentivized conditions (Studies 1 and 4), and even in professional contexts (Study 4). Interestingly, this preference is driven less by confidence in one's intuitive judgment, but instead by differing beliefs regarding the enjoyability of both strategies (Study 2). Our data also suggest an intervention: merely considering how someone else should behave, leads individuals to abandon their own intuitive judgment in favor of a less enjoyable, but more accurate structured process (Studies 2 and 3).

Keywords: Judgment; Decision-Making; Intuition; Self-Other Decision-Making; De-Bias

Imagine trying to cook an appetizing new dish that you recently encountered at a local restaurant. In embarking on this challenge, you must first choose whether to diligently follow a step-by-step recipe, or to use your own recollection of the dish and culinary intuition to throw in a dash of this and a pinch of that. Although you may recognize that executing the recipe may be most likely to result in an edible meal, the joy of following your intuition, combined with your confidence in your skills, may still lead you to favor a more intuitive approach. Your preference for intuition, however, may not extend to a scenario wherein *someone else* is attempting to recreate the same dish. In this case, you may be more likely to recommend that this person resist their intuitive desires and instead plod carefully through each step of the recipe.

In the present research, we examine whether individuals subscribe to a double standard when it comes to reliance on intuitive judgment. Specifically, do we embrace *our own* intuitive judgment over a more structured process, while recommending that *others* do the opposite, toiling carefully through recipes, checklists, scoring systems, and instruction manuals in order to achieve the desired results?

This question is important because many consequential decision-making tasks, ranging from choosing a new hire, to funding a venture, to deciding which product to launch, feature a choice of decision-making strategy. Through four empirical studies, we investigate whether when faced with this choice, individuals endorse systematically different recommendations for themselves versus others. Exploring this self versus other difference in preference regarding how judgments should ideally be made, will help to illuminate fundamental beliefs about judgment and choice, and highlight the potentially inconsistent standards by which we evaluate our own and others' decisions.

Intuitive judgment versus structured process

In the present research, we evaluate people's preference for two judgment strategies that can be utilized in a variety of contexts and often appear to the decision-maker as presenting a set of trade-offs. Specifically, our studies compare the preference for intuitive judgment versus a structured judgment process.

We conceptualize intuitive judgment as a strategy in which an individual can arrive at a judgment using any informal approach he or she deems appropriate for the situation. This might involve quickly following one's "gut feeling," engaging in some rumination before a judgment is rendered, or doing some combination of the two. A critical feature of an intuitive process is that it lacks a pre-ordained structure from the point of view of the decision-maker, either internally or externally imposed. In other words, the decision-maker at no point feels constrained to following a particular procedure. In this way, following intuitive judgment provides the decision-maker with the impression of maximum freedom and decisional autonomy. In our studies, we operationalize this approach by instructing participants to follow their "intuition," "intuitive judgment," or "gut feeling" to make judgments – terms that we believe encourage participants to engage in the type of informal reasoning that we have described above.

By contrast, we conceptualize structured process as a more methodical judgment strategy that relies on specific mandated decision rules and procedures. Such rules can be self-generated, as in a case of a person who creates an attribute matrix to choose between two apartments, but more frequently are externally imposed, such as the case with procedures used to calculate investment decisions or actuarial probabilities. Although

there are many structured processes that individuals can use to make judgments under uncertainty, the common feature that distinguishes them from intuitive judgment is that they eliminate the user's ability to "just wing it." Other scholars have referred to decision-based and evidence-based rules as "algorithms" (Dietvorst, Simmons, & Massey, 2016; Dietvorst, Simmons, & Massey, 2015), and for our purposes we view algorithms as one kind of structured process.

In our studies, we operationalized structured process in three different ways. In Study 1, participants chose between following intuitive judgment versus a statistical table created from a large body of relevant data. In Study 2, participants chose between intuitive judgment versus a multi-step process that required the ordered consideration and calculation of various inputs into the judgment. In Studies 3 and 4, participants chose between intuitive judgment versus reliance on the "wisdom of crowds," or a calculated average of others' judgments (Mannes, Larrick, & Soll, 2012). We use several types of structured processes in order to demonstrate that individuals show a consistent reversal in their endorsement of intuitive judgment versus structured processes when it comes to their own versus others' decision-making.

System 1 versus System 2

A long-standing research tradition articulates two different decision-making approaches available to individuals across a variety of situations: one that is intuitive, fast, effortless, and associative; and another that is deliberate, slow, effortful, and analytical (Chaiken & Trope, 1999; Epstein, 1994; James, 1950; Kahneman, 2003; Sloman, 1996; Stanovich & West, 2000). And while this "dual-process" model of

decision-making has engendered some controversy regarding how these two approaches relate to each other (Keren & Schul, 2009; Kruglanski & Thompson, 1999; Osman, 2004), the overall literature posits two high-level "systems."

The main difference between these systems hinges on deliberation. System 1 is characterized by lack of deliberation, while System 2 relies upon it (De Neys, 2014; Epstein, 1994; Evans, 2008; Handley & Trippas, 2015; Kahneman & Frederick, 2002; 2005; Pennycook, Fugelsang, & Koehler, 2015; Sloman, 1996; 2014; Stanovich, 1999). In contrast, we see the main difference between the two judgment strategies addressed in the present research as hinging on decisional autonomy. Following one's intuitive judgment maximizes decisional autonomy, while relying on a structured process minimizes it.

Relying on intuitive judgment can sometimes be fast and automatic like System 1, and most certainly contains moments of non-conscious reasoning during the course of the decision process. However, our conceptualization of intuitive judgment refers to a broader set of decision-making approaches than does System 1, and can include elements of System 2, such as when one deliberates at length without following any particular process or structure. Similarly, although following a structured process might at first blush appear more effortful and deliberate—in line with System 2—in reality, processes vary greatly in the amount of effort required. For example, carrying out mental arithmetic, although always requiring a process, may be slow and effortful for a young child but fast and entirely effortless for a well-practiced adult. In this way, System 1 can be used for one or more components of a structured process (e.g., "Step 4: Determine the correct change and hand it to the customer".)

The majority of dual-process research has focused on the situations and individual differences that lead to reliance on one rather than the other system, and how to engage System 2, given the well-documented perils of relying exclusively on System 1 (Epstein, 1994; Evans, 2007; Kahneman & Frederick, 2002; Sloman, 1996; Stanovich, 2004). In the present research we address a different question: Do individuals subscribe to a double standard regarding the merits of intuitive judgment for themselves versus other people?

Whose Intuitive Judgment?

Prior work examining use of intuitive judgment has focused on theories which explain why people prefer to employ their *own* intuition, rather than following a more structured process. These theories, however, have not addressed whether individuals apply the same considerations to others and their choices of judgment strategy.

For example, using intuition could be quicker and less effortful than using some structured processes, and to the extent that individuals are lazy cognitive misers, following intuitive judgment can be attractive. And although a large literature demonstrates the superiority of using a structured approach to judgment tasks (Epstein, 1994; Evans, 2007; Kahneman & Frederick, 2002; Sloman, 1996; Stanovich, 2004), individuals tend to be overconfident in their decision-making abilities and may believe that they have no need for more effortful methods (Klayman, Soll, Gonzalez-Vallejo, & Barlas, 1999; Moore & Dev, 2018).

Relatedly, individuals may rely on their own intuition if they feel that this is a truer reflection of their "own" judgment, compared to a structured process that may arise from outside advice or expertise. For example, the literature on advice-taking in the

domain of quantitative estimation tasks has found that individuals exhibit a general tendency to discount advice and over-rely on their own judgments (Bonaccio & Dalal, 2006; Yaniv & Kleinberger, 2000; Yaniv, 2004). This tendency to discount advice has in turn been linked to the unique role of the self in the weight given to multiple estimates (Larrick & Soll, 2006; Soll & Mannes, 2011).

Finally, individuals may also prefer intuitive judgment given the autonomy and lack of accountability afforded to them when using their intuition. While there is little to no variance in the execution of a structured process, there can be a profound amount of variance in how individuals arrive at an intuitive judgment. Using your intuition could mean going with the first decision that comes to mind, or it could be a result of some idiosyncratic deliberation. Given that self-determination has been associated with greater motivation in learning and work performance (Deci & Ryan, 1985), relying on one's intuitive judgment may appear desirable because it allows for greater autonomy, compared to following a mandated process.

As the above discussion suggests, however, the considerations that lead individuals to follow their own intuitive judgment might not apply when they consider the path others should take. Thus, for example, people often believe their own judgment to be better than that of others (Alicke & Govorun, 2005; Moore & Healy, 2008; Larrick et al., 2007), reserving their overconfidence for themselves. In believing they are less susceptible to biases than others (Pronin, Lin & Ross, 2002; Pronin, Gilovich, & Ross, 2004; Scopelliti, Morewedge, McCormick, Min, LeBrecht, & Kassam, 2015), individuals could consequently believe the accuracy of their own intuitions would be less compromised by biases than the intuitions of other people.

Furthermore, to the extent that individuals are habitually egocentric in attending to their own pleasure and pain before that of other people (Faro & Rottenstreich, 2006; Loewenstein, 1996), they may be less concerned with the enjoyment others derive from making judgments that feel more autonomous or more reflective of their own skill or beliefs. In this way, individuals may select the ideal judgment strategy for themselves considering both accuracy and enjoyment, but focus solely on accuracy when making recommendations for others. This differential preference would align with prior theory and research demonstrating that individuals consider multiple, sometimes conflicting attributes when making decisions for themselves, but tend to focus on one attribute when making decisions for others (Keeney & Raiffa, 1976; Kray, 2000; Kray & Gonzalez, 1999).

In the current work, we show that individuals subscribe to a double standard with regard to the recommended judgment strategy for self versus others. Thus, it is not simply the case that individuals overvalue intuitive judgment over structured process across the board: rather they overvalue *their own* intuitive judgment. We find that while some of this preference is driven by beliefs in the relative superiority of one's own intuition, our evidence suggests that people are choosing to follow their intuitive judgment (while recommending process to others), because of motivations that only apply to the self. Specifically, our data demonstrate that people are concerned with the utility they derive from actually executing the more enjoyable and autonomous decision-making approach (i.e. intuitive judgment), but are much less concerned with the enjoyment experienced by others. In sum, people favor intuition for themselves but structured process for others not

only because they harbor an undue faith in the outcomes of their intuitive judgments, but because they are not overly concerned with others' enjoyment of decision tasks.

Overview of studies

We present four studies to test the hypothesis that individuals are more likely to follow their own intuitive judgment, while recommending others use a structured process. In Study 1, we demonstrate this basic phenomenon under incentivized conditions. In Study 2, we replicate our findings using a different task, and a different kind of structured process. By asking individuals to predict their confidence and enjoyment in following both judgment strategies when thinking about themselves and others, we are able to infer what drives these differential choices. In Study 3, we replicate our findings again, with a different task and structured process, and also examine the implications of these choices for judgment accuracy. Importantly, we find the tendency towards choosing intuitive judgment for the self can be mitigated with the simple intervention of making a recommendation for others first. Finally, in Study 4, we explore the implications of this self versus other difference on how individuals evaluate peer decisions in a professional context, as well as the role of impression management in selection of judgment strategies. All of our data and stimuli are publicly available (see Appendix A for the OSF link and a detailed description of our data collection protocol).

Study 1

In Study 1, we examine whether participants choose different judgment strategies for the self versus another participant when outcomes are incentivized. In our design, participants were randomly assigned to have their bonus payment tied to their own or

someone else's outcome in a hand of Blackjack. Participants were free to choose whether they or the other participant followed their intuition or a process to determine how to play the hand. This study allows us to test whether individuals believe that the optimal judgment strategy differs for the self versus another person.

Method

Participants

We recruited workers on Amazon's Mechanical Turk (N = 378, M_{age} = 37.65 years, SD = 11.68 years; 48% male) to participate in a card game study in exchange for $0.25, with the potential bonus opportunity of $0.25.[1]

Design and Procedure

We introduced all participants to the card game, Blackjack, using stimuli based on Walco & Risen (2017), and gave participants the opportunity to review a short description of the basic rules. Afterwards, we told participants that in the single hand they would play during the study, they would have two options for making the decision on whether to "stand" (keep hand as is) or "hit" (take another card from the deck). We told participants they could look at the hand (their own two cards plus the dealer's "upcard") and follow their intuition, relying on their gut feeling to make the decision to stand or hit. Alternatively, participants could use a step by step process to make the decision methodically by reading a strategy table we provided to them. We told participants the table was created from running computer simulations on millions of Blackjack hands and

[1] Four participants did not provide consent and were excluded from participating in the study. Twenty-six participants failed to pass a basic attention check and were also excluded. Six participants dropped out of the study before beginning the main task. The 378 participants referenced above passed the attention check, and began the main task.

would display the optimal strategy based on calculated probabilities (see Appendix B for the hand and strategy table made available to participants).

We then randomly assigned participants to have their bonus opportunity tied to their own outcome (*self*) or tied to another participant's outcome (*other*). We told participants in the *self* condition that they would play one hand of Blackjack and would win a $0.25 bonus if they won the hand against the dealer. Participants had to choose, before they were presented with their hand, whether they wanted to make the decision to stand or hit using their intuition or by relying on the step by step process. We told participants they had to follow the method they chose.

We told individuals in the *other* condition that they would be paired with another participant, who would play one hand of Blackjack and they would win a $0.25 bonus if their partner won the hand against the dealer. Before seeing the partner's hand, participants could instruct their partner to make the decision to stand or hit using intuition or relying on the step by step process. We told participants their partners would follow the method chosen for them.

After participants in the *self* and *other* conditions made the choice regarding judgment strategy, we showed all participants the Blackjack hand on which their bonus would be based. All participants saw the same hand of 9 and 4, where the dealer's "upcard" was a 4. This particular starting hand was also used in Walco & Risen (2017) after it was pre-tested to be a hand where participants have the faulty intuition to hit, whereas the optimal strategy, as dictated by the strategy table, is to stand.

Participants in the *self* condition who chose to use their intuition were shown the starting hand and asked to follow their intuition to decide whether to stand or hit.

Participants in the *self* condition who chose to use the step by step process were shown the strategy table, in addition to the starting hand. We provided detailed instructions on how to use the table and told these participants to make the decision to stand or hit, using the step by step process. If participants incorrectly used the table and made the decision to hit, we prompted them to try again. Participants could only proceed in the study if they made the decision to stand, which was the decision dictated by the table.

Participants in the *other* condition who had instructed their partner to use intuition were randomly assigned with equal probability to see their partner having used their intuition to stand or hit.[2] Participants in the *other* condition who instructed their partner to use the step by step process were shown the strategy table, in addition to the starting hand. We then told these participants that their partner had used the step by step process correctly to make the decision to stand.

Finally, we showed all participants their outcome. Outcomes were tied to the actual possibility of winning with this particular starting hand with the decision to stand or hit. Since the optimal strategy here was to stand, participants who had chosen to stand (in the *self* condition) and participants whose partners had chosen to stand (in the *other* condition) had a greater likelihood of winning (40.0%), than participants who had chosen to hit and participants whose partners had chosen to hit (37.5%).

After we showed all participants their outcome, we asked, "*How experienced are you with playing Blackjack?*" on a 1-5 Likert scale labeled "*Not experienced at all*," "*Slightly experienced*," "*Moderately experienced*," "*Very experienced*," and "*Extremely*

[2] In reality, there was no partner, so participants in the *other* condition who had instructed their "partner" to use their intuitive judgment were randomly assigned, with equal probability, to see their "partner" had decided to stand or hit. These participants actually had a greater chance of winning because the intuitive tendency was to make the sub-optimal decision to hit.

experienced." We finished the study with demographic questions. Participants who won the hand and participants whose partners' won the hand were paid a $0.25 bonus within 24 hours of completing the study.

Results

Despite being incentivized to win their hand with a bonus that would double their earnings for the study, the majority of participants in the *self* condition (68.4%) chose to use their intuition to make the decision on whether to stand or hit, instead of relying on a strategy table based on millions of simulated hands. By contrast, when participants decided how another participant should make an identical decision they were more evenly split - 51.8% instructed their partner to use intuition. In sum, participants were significantly more likely to choose to follow intuition for themselves than to recommend it for others, $x^2(1) = 10.88$, $p = .001$.

The hand we used in this study, where the player's cards displayed a combined total of 13 and the dealer's upcard is a 4, is one where using intuition can often lead to a suboptimal decision. Individuals have the incorrect intuition to hit, when the optimal strategy is to stand. Indeed, the majority (59.4%) of our participants who chose to use intuition elected to hit in this situation.[3]

Discussion

Study 1 provides initial evidence that, under incentivized conditions, participants endorse different judgment strategies for themselves versus others. When given the opportunity to double their payment, the majority of participants still chose to follow

[3] We found that participants' reported experience with playing Blackjack was unrelated to their decision to choose intuition or the process for themselves (B = -.22, Wald x^2 = 1.70, df = 1, p = .192), or others (B = .08, Wald x^2 = .28, df = 1, p = .599). Similarly, experience did not affect individual decisions to stand or hit (B = -.01, Wald x^2 = .002, df = 1, p = .960).

their intuition over a process they were told was designed to provide the optimal strategy. However, this preference for intuition decreased markedly when considering what another participant should do.

Paradoxically, of the participants whose bonus was tied to their own outcome the majority chose to use intuition, and the majority of those then chose to hit instead of stand, a choice that decreased their chances of winning. Given that following the process required almost no effort, it seems unlikely that participants were simply being lazy. Instead it appears that the unwarranted faith in one's own gut, potentially combined with the joy of exercising it, led participants to make a suboptimal choice even when that choice carried real financial consequences.

Study 2

In this next study, we sought to replicate the effects of Study 1 with a different task and a different structured process, involving a prediction in a business context. We asked all participants to predict an entrepreneur's likelihood of receiving investor funding after watching a product pitch, either by using their intuitive judgment or by utilizing a multi-step process. Participants made this choice for themselves and also made a recommendation for a fellow participant in a within-subject design.

A second goal of Study 2 was to determine whether participants attended to different factors for themselves and others when making their choice. With this purpose in mind, we also measured participants' reported confidence in the accuracy of their own and other's predictions, as well as how enjoyable they expected the task to be, both for themselves and for others.

Method

Participants

We recruited workers on Amazon's Mechanical Turk (N = 200, M_{age} = 33.55 years, SD = 9.14 years; 54% male) to participate in a study on judgment and decision-making in exchange for $0.35.[4]

Design and Procedure

We introduced participants to the reality television show, SharkTank, where entrepreneur contestants make business presentations to a panel of investors ("Sharks"), who then choose whether or not to invest in the entrepreneur's venture. In order to familiarize participants with SharkTank, all participants watched a video-clip of one of the presentations. We told participants that this particular presentation was not related to the main task they would engage in, but was instead being shown as an example.

After watching the video-clip, we told all participants about another SharkTank presentation, which was the focus of the study. We asked all participants to imagine watching a pitch by a 43-year old entrepreneur who was pitching an idea about a novel consumer kitchen product. We gave participants the goal of accurately predicting whether the entrepreneur would receive funding from at least one of the Sharks. Participants could make this prediction by following their intuitive judgment or by using a multi-step process that we provided to them.

We showed all participants a 7-step process which broke down the evaluation into smaller components, such as how well the entrepreneur grabbed the attention of the investors; how clearly the value proposition was conveyed; and how familiar the

[4] 1 participant did not provide consent and was excluded from participating in the study. 10 participants failed to pass a basic attention check and were also excluded. 16 participants dropped out of the study before beginning the main task. The 200 participants referenced above gave consent, passed the attention check, and completed the main task.

entrepreneur was with the relevant financial information (see Appendix C for the complete process). After seeing the process, each participant chose which judgment strategy they would follow if they had to perform the task with the goal of being as accurate as possible.

We also asked participants to imagine a fellow mTurk participant completing the same prediction task. We asked participants to recommend whether this other participant should make the prediction by following his/her intuitive judgment or by using the same multi-step process described above. Thus, all participants made a choice for themselves and a recommendation for another participant, with the order counter-balanced.

Afterwards, all participants rated how confident they would be in their own decision and the fellow mTurk participant's decision, for both intuitive judgment and the structured process. We asked participants, "*How confident would you be that this prediction is correct?*" on a 1-7 Likert scale ranging from "*Not at all confident*" to "*Extremely confident*" with "*Somewhat confident*" as the mid-point.

Similarly, all participants rated how much they would enjoy the task and how much they predicted the fellow mTurk participant would enjoy the task, for both intuitive judgment and the structured process. Specifically, we asked participants, "*How much do you think [you/the fellow participant] would enjoy this task?*" on a 1-7 Likert scale ranging from "*Not at all enjoy*" to "*Extremely enjoy*" with "*Somewhat enjoy*" as the mid-point. Finally, we collected demographic information.

Results

Choice for self and others. We estimated a logistic regression that predicted method (intuition vs. structured process) as a function of the target (self vs. other) and

task order (self first vs. other first). We used the method of generalized estimating equations (GEE) to account for the fact that each participant provided multiple observations (Allison, 2012).

We observed a significant target × order interaction ($z = 2.61$, $p = .009$), which indicates that the difference between one's own choice and recommendation for others was moderated by task order. To follow up, we examined the simple effect of target within each order. When choosing first for themselves, 67.7% of participants (65 out of 96) favored intuition for themselves, compared to 41.7% (40 out of 96) who favored intuition for others, $z = 4.18$, $p < .001$. However, when participants considered others first, 43.3% (45 out of 104) chose intuition for themselves and 36.5% (38 out of 104) chose it for others, $z = 1.71$, $p = .086$.

Differences in rated confidence and enjoyment. To explore whether participants' choices of judgment strategy can be explained by their ratings of confidence and enjoyment, we compared those ratings in separate repeated measures ANOVA analyses (see Figures 1 & 2). Each analysis is a mixed design with target (self vs. other) and method (intuition vs. process) as within-subject factors, and order (self first vs. other first), as a between-subject factor (see Tables 1 & 2).

We first consider confidence. As there was a method × target interaction, $F_{1, 198} = 3.44$, $p = .065$, $\eta_p^2 = .02$, we followed up with separate analyses for self and other. For their own decisions, participants were similarly confident in predictions based on intuition and process, $M = 4.68$ vs. 4.83, $F_{1,198} = 1.81$, $p = .181$, $\eta_p^2 = .01$. For others, however, participants were less confident in predictions derived by following intuitive judgment, $M = 4.50$ vs. 4.82, $F_{1,198} = 8.89$, $p = .003$, $\eta_p^2 = .04$. Whereas participants were

similarly confident in predictions made via process for themselves and others (a little over 4.8 in each case), they were more confident in predictions based on their own intuition than in the intuition of others, M = 4.68 vs. 4.50, $F_{1,198}$ = 4.41, p = .037, η_p^2 = .02. There was no three-way interaction in the full design, $F_{1,198}$ = .30, p = .586.

Ratings for enjoyment followed a different pattern. There were no target effects, suggesting that participants saw little difference in how much they would enjoy a given judgment strategy compared to another person. However, participants clearly perceived intuitive judgment as being more enjoyable than a structured process, M = 4.99 vs. 4.05, $F_{1,198}$ = 70.26, p < .001, η_p^2 = .26. This large effect was moderated by an order × method interaction, $F_{1, 198}$ = 5.20, p = .024, η_p^2 = .03. There was a larger gap in enjoyment ratings when participants completed the task for themselves before making a recommendation for others.

Weighting of confidence and enjoyment. We expanded the logistic regression from above (with choice as the dependent variable), to include the four ratings of confidence and enjoyment, each of which was centered on the mean of the entire sample for that variable. Because there was a three-way interaction (target × order × method, z = 2.02, p = .044), we proceeded to recode the model so that the weights could be compared across conditions. This was implemented by using dummy coding, such that the weights for a given condition would appear as the simple effects. The coefficients for each condition are shown in Table 3.

In all four conditions, participants attended similarly to confidence in intuition versus process. The main difference that drove choices of judgment strategy for self versus other seemed to lie in how participants weighted enjoyment. When participants

chose for themselves prior to choosing for another, their choices were strongly reflective of how enjoyable they believed the structured process to be. For example, consider a case where confidence in intuition, confidence in process, and enjoyment of intuition are all at their mean levels. A rating of 2 for enjoyment of process would lead to an 11% chance of selecting process in Condition 1 (choices for self when self is considered first) and a 58% chance of recommending process to others in Condition 4 (choices for other when other is considered first). In contrast, a rating of 6 would lead to a much narrower gap – 62% in Condition 1 and 68% in Condition 4.

We can also use the model to determine the extent to which having greater confidence in one's own intuition may have produced the self-other gap in choices of strategy for the self versus recommendations for others. An interesting comparison involves selections for the first task encountered (Condition 1 versus Condition 4). Here, we assume that all ratings are at their mean levels, except we set the confidence in intuition ratings at their levels within each condition (4.82 and 4.44 from Figure 1). The question is this: Does this difference in confidence account for the self-other difference in selecting intuition versus process? Inputting these values (after mean-centering) into the logistic model leads to predicted chances of selecting process of 29% in the self condition and 64% the other condition. If, on the other hand, confidence in intuition is set to the same average level of 4.63 in both conditions, the chances of selecting process are 32% and 63% in the self and other conditions, respectively. Thus, the difference in confidence expanded the gap in selecting process from 31 percentage points (the difference between 63 and 32) to 35 percentage points. Although the difference in confidence had an impact, it clearly does not explain the bulk of the difference between conditions.

Finally, we need to conduct additional tests to establish that the weighting of enjoyment differed between conditions (Table 3 only indicates whether it differed from zero within each of the conditions). A comparison of Conditions 1 and 4 shows that participants accounted for their anticipated enjoyment of the process more so for themselves than for others (target × $enjoy_{process}$, $z = -2.01$, $p = .045$).[5] Also, a comparison of Conditions 1 and 2 shows that participants accounted for their anticipated enjoyment of the process more so when deciding first for themselves compared to deciding for themselves after making a recommendation for others (order × $enjoy_{process}$, $z = -2.24$, $p = .025$).

Discussion

Study 2 demonstrates that individuals espouse a double standard when considering the most appropriate judgment strategy for themselves versus others. With the goal of accuracy in mind, participants were more likely to choose intuitive judgment for themselves, while recommending that others follow a structured process. Interestingly, these choices were moderated by task order. Participants were more likely to recognize the value of using a structured process even for themselves, after first making this recommendation for a peer.

Furthermore, whereas participants considered both anticipated confidence in accuracy and anticipated enjoyment of the task in making choices for themselves, they primarily focused on accuracy when making recommendations for others. This falls in line with prior theory and research indicating individuals weigh multiple and conflicting

[5] This comparison and the subsequent one required new specifications of the model. A dummy for the conditions of interest (set to 0 for the first task encountered) replaced the dummy for order. With this specification, if the attribute is weighted differently between the two conditions on the first task, it will show up as an interaction between target and the attribute.

attributes when making choices for the self, but take a more simplified approach and focus on one attribute when making recommendations for others (Keeney & Raiffa, 1976; Kray, 2000; Kray & Gonzalez, 1999). In Study 3, we replicate and extend these findings by carefully controlling the amount of effort that both judgment strategies require.

Study 3

In Study 2, we found participants' predicted confidence in the accuracy of their own intuitive judgment was greater than that of others. Furthermore, participants generally recognized that following intuition was more enjoyable for everyone. Given that the multi-step process in Study 2 was notably more effortful than simply making an intuitive guess likely had an effect on these results – participants anticipated low enjoyment for the process, and this may have influenced their choices for themselves. Therefore, in Study 3, we replicate our effect with a different task and structured process enabling us to test whether participants still favor intuition for themselves even when process requires no more effort and can lead to demonstrably more accurate judgments.

Method

Participants

We recruited workers on Amazon's Mechanical Turk (N = 800, M_{age} = 36.10 years, SD = 11.32 years; 49% male) to participate in a study exploring how people make estimates in exchange for $0.50.[6]

Design and Procedure

[6] 44 participants failed to pass a basic attention check and were excluded from participating in the study. 5 participants dropped out of the study before beginning the main task. 13 participants failed to complete the study and we included the participants' data up to the point at which they left (though our results are unchanged if we exclude these data entirely). The 800 participants referenced above passed the attention check, and began the main task.

We told participants that their main task was to guess the age of an individual pictured in a photo. However, instead of showing the photo to participants, we instead showed them the estimates made by seven other participants from a prior pilot study, each of whom had seen the photo, made estimates, and had written brief explanations for those estimates. We instructed participants to read the estimates and explanations given by these other participants to help them make their own final estimate. Participants were then given the choice to either use their own intuitive judgment to come up with the final estimate of the age of the person in the photo, or to use the calculated average of the seven estimates from the other participants. We told participants that this latter approach often results in highly accurate estimates (Mannes, Larrick, & Soll, 2012), and that we would do the arithmetic for them. If participants chose to use their intuitive judgment, we then asked them to provide their estimate.

Participants also imagined another mTurker doing this task and recommended whether the other participant should use intuitive judgment or the calculated average of the seven prior estimates as their final estimate. Again, we reminded participants that the latter approach often leads to highly accurate estimates. As in Study 2, we counter-balanced the order in which participants made choices for themselves versus a peer.

In separate pre-tests, a different group of participants on Amazon's Mechanical Turk saw two photos, one of a 41-year old male (N = 105, M_{age} = 34.17 years, SD = 11.68 years; 46% male), and one of a 29-year old female (N = 106, M_{age} = 34.10 years, SD = 10.14 years; 49% male) (Moore, Carter, & Yang, 2015). Pre-test participants estimated the age of the individual pictured and provided a brief explanation for their estimate.

Participants in the main study saw seven estimates from this pretest that represented the estimate distribution.[7]

We randomly assigned participants in the main study to see estimates and explanations for one of the two photos (see Appendix D for an example). We also randomly assigned participants to see the seven estimates in ascending or descending order. Neither which photo participants saw, nor which order the estimates were presented in, affected our main outcomes of interest and therefore we collapse across these variable in all our analyses.

After participants in the main study chose whether they preferred using their intuition or the average of the seven estimates and provided their own estimate (if they chose to follow their intuition), we asked about their confidence and enjoyment of their chosen strategy, counterbalancing the order of the confidence and enjoyment items. We asked participants, "*How confident are you that your final age estimate is within 10% of the correct answer?*" on a 1-7 Likert scale ranging from "*Not at all confident*" to "*Extremely confident*" with "*Somewhat confident*" as the mid-point. We also asked, "*How much did you enjoy this task?*" on the same 7-point scale. Similarly, after participants made a recommendation for their peer, we asked about their confidence in their peer's estimate assuming the peer had followed their recommendation in judgment strategy and asked them to predict their peer's enjoyment of the task. Finally, we collected demographic information.

[7] A total of 105 participants looked at the photo of the 41-year old man and gave an estimate of his age along with an explanation for their estimate. We took these 105 estimates and sorted them from lowest (30 years) to highest (60 years). We divided these 105 estimates into seven categories from lowest to highest, with 15 estimates in each category. In other words, the first category represented the 15 lowest age estimates while the seventh category represented the 15 highest age estimates. For the main study, we presented participants seven estimates – one estimate randomly drawn from each of the seven categories. We did this to ensure that participants would be see a representative set of age estimates. The same process was followed for the other photo.

Results

Choice for self and others. We estimated a logistic regression that predicted choice of method (intuitive judgment or structured process) as a function of the target (self vs. other) and task order (self first vs. other first). We used the method of generalized estimating equations (GEE) to account for the fact that each participant provided multiple observations (Allison, 2012).

Replicating Study 2, there was a significant target × order interaction ($z = 2.47$, $p = .013$), which indicates that the difference between one's own choice and recommendation for others was moderated by task order. To follow up, we examined the simple effect of target within each order and found the same pattern of results as in Study 2. When choosing first for themselves, 55.4% of participants (222 out of 401) favored intuition for themselves, compared to 47.1% (189 out of 401) who favored intuition for others, $z = 3.22$, $p = .001$. When participants considered others first, 43.4% (173 out of 399) chose intuition for themselves and 43.6% (174 out of 399) chose it for others, $z = .11$, $p = .912$.

Confidence in accuracy. Participants generally recognized that following the structured process, or relying on the average, would lead to more accurate estimates, than intuitive judgment. For themselves, participants reported higher confidence in the accuracy of their estimates using process ($M_{\text{selfprocess}} = 4.67$, $SD = 1.27$), compared to participants who decided to use their intuitive judgment ($M_{\text{selfintuitive}} = 4.29$, $SD = 1.30$), $t(798) = 4.22$, $p < .001$, $d = .30$. The same pattern emerged for others, where participants reported higher confidence in the accuracy of estimates when another participant had relied on process ($M_{\text{otherprocess}} = 4.73$, $SD = 1.25$), compared to when another participant

had relied on intuitive judgment ($M_{otherintuitive}$ = 4.39, *SD* = 1.17), Welch *t*(786.86) = 3.96, $p < .001$, $d = .28$.[8]

Task enjoyment. Participants reported greater enjoyment following intuitive judgment ($M_{selfintuitive}$ = 4.90, *SD* = 1.54), compared to participants who decided to use the process ($M_{selfprocess}$ = 4.64, *SD* = 1.47), *t*(798) = 2.51, $p = .012$, $d = .17$. The same pattern emerged for others, where participants predicted greater enjoyment when another participant used intuitive judgment ($M_{otherintuitive}$ = 4.79, *SD* = 1.33), compared to when another participant relied on process ($M_{otherprocess}$ = 4.53, *SD* = 1.39), *t*(798) = 2.65, $p = .008$, $d = .19$.

Accuracy. In this study, we were able to determine whether participants were sacrificing accuracy in their decision to follow their intuitive judgment. We compared the estimates generated by the participants who chose to use their intuition to the calculated average of the seven estimates provided by our pre-test study. When we compared the absolute difference between participants' estimates and the correct age, we found that participants who followed their intuitive judgment were significantly less accurate than participants who relied on the average both for the 29 year-old ($M_{intuitive}$ = 3.77 years difference from the correct age, *SD* = 3.44, $M_{process}$ = 1.37, *SD* = 1.18, Welch *t*(261.74) = 9.64, $p < .001$, $d = .93$), and the 41 year-old ($M_{intuitive}$ = 4.63, *SD* = 4.36, $M_{process}$ = 1.88, *SD* = 1.25, Welch *t*(208.9) = 8.18, $p < .001$, $d = .86$).

[8] Given the violation of the assumption of homogeneity of variance, we have used an adjustment to the degrees of freedom using the Welch-Satterthwaite method (Welch, 1938). Additionally, one must be cautious in interpreting these confidence estimates, as they were captured post-choice for the only the strategies participants had chosen for themselves and recommended for others. We captured the measures in this order because we did not want our elicitation of confidence affecting choices. We did not ask participants to estimate confidence for the strategies they did not choose, because we believed participants would have a difficult time making these judgments.

It should be noted that since we provided participants with a stratified sample from the 105 estimates, the informational equivalent was actually closer to n = 105 than it was to n = 7. However, even averages from random samples of 7 were more accurate than participants' intuitive judgment: 10,000 simulated groups of 7 missed the correct age by 2.52 (*SD* = 1.57) years for the 29 year-old and by 1.67 (*SD* = 1.30) years for the 41 year-old.

Discussion

In a task where participants had extremely limited information about the judgment they had to make (i.e. they could not see the photo to estimate the age), and were explicitly told that use of the process would result in the most accurate estimates, nearly half still relied on their intuitive judgment, which, in this case, was actually more effortful. When it came to thinking about what someone else should do, participants were more likely to recommend that others rely on the process. The choice of judgment strategy had accuracy implications, as participants who followed their intuitive judgment were significantly less accurate than those who relied on the process.

Replicating the results of Study 2, this self-other effect disappeared when participants first considered how someone else should make this judgment. This effect of task order suggests a simple de-biasing strategy to move individuals away from their desire to follow their intuition.

Participants recognized that following the structured process was going to lead to more accurate estimates, but they enjoyed intuition more. Apparently, the pleasure people derived from following their intuitive judgment was difficult to give up, despite recognizing that accuracy would be sacrificed.

Study 4

In Studies 1-3 we demonstrate that participants endorse systematically different judgment strategies for themselves versus their peers. In Study 4, we explore the implications of our phenomenon by examining the extent to which professionals rely on intuitive judgment and whether they have an appreciation for the accuracy costs of doing so. Finally, we look at how judgment strategy affects perceptions of peer decisions in a professional context. We hypothesized that the self versus other difference documented in our prior studies would affect not only different choices in judgment strategy, but different evaluations of the decision-maker. To test these hypotheses, in Study 4, we asked lawyers to render a legal estimate by choosing between intuitive judgment versus a structured process, as well as to evaluate their peers doing the same.

Method

Participants

We recruited a sample of experienced lawyers (N = 176, M_{age} = 36.06 years, SD = 9.91 years; 46% male; $M_{experience}$ = 7.36 years practicing as a lawyer), to participate in a study exploring how attorneys make and evaluate decisions, in exchange for the opportunity to enter a raffle for a $100 Amazon gift card. We recruited participants through the American Bar Association (ABA) email distribution list, as well as through personal and professional contacts.

Design and Procedure

In this study, we asked participants to consider a scenario in which a lawyer is trying to impress a potential client with his/her legal expertise. To this end, the potential client would watch and evaluate the lawyer's decision-making on a legal judgment task.

The task was to accurately estimate the size of the verdict in a personal injury case that had gone to trial and had been decided in favor of the plaintiff. The target lawyer's task was to estimate the amount of pain and suffering damages the jury had awarded.

We used descriptions of two personal injury cases that were tried in California (see Appendix E) and had been used in prior research (Jacobson, Dobbs-Marsh, Liberman, & Minson, 2011). In that study, 28 experienced personal injury lawyers had made estimates of the jury awards after reading the case descriptions. For each case, we divided the 28 available estimates into four sets of seven estimates, representing the estimate distribution.[9]

Our study featured two conditions. In the *self* condition, participants took on the role of the target lawyer in the scenario, who was evaluating the case and estimating the pain and suffering damages, in order to impress a client. We randomly assigned participants to see a description of one of the cases as well as one of the four sets of seven estimates made by the lawyers who participated in Jacobson et al. Participants then made a choice regarding whether to estimate the damages using their own intuitive judgment, or by averaging the estimates of the seven personal injury lawyers. Similar to Study 3, we instructed participants that averaging often results in highly accurate estimates and reminded them that they were trying to impress a potential client. We incentivized participants for accuracy by instructing them that if their estimate was within 10% of the

[9] For each case, we sorted the 28 estimates from lowest to highest. We divided these 28 estimates into seven categories from lowest to highest, with 4 estimates in each category. In other words, the first category represented the 4 lowest estimates while the seventh category represented the 4 highest estimates. For the main study, we presented participants seven estimates – one estimate randomly drawn from each of the seven categories. We did this to ensure that participants would be see a representative set of award estimates. The same process was followed for the other case.

actual damages, they would be entered into the raffle for the $100 Amazon.com gift card twice.

After choosing a judgment strategy, participants who decided to use their intuitive judgment were prompted to report their estimate. Participants who chose to rely on process were provided with the calculated average of the seven estimates they had seen. We used the same measures and scales as in Study 3 to ask participants in the *self* condition about their confidence in their accuracy and their enjoyment of the task, given their chosen strategy. Finally, participants answered demographic questions.

Participants in the *other* condition were presented with the same information regarding the legal judgment task, as well as one of the two case descriptions and the seven estimates made by the other lawyers. We then randomly assigned participants in this condition to evaluate a peer lawyer who had chosen to use his/her intuitive judgment, or a peer lawyer who had chosen to use the calculated average of the other lawyers' estimates. Similar to the *self* condition, we reminded participants that averaging is an approach that often results in highly accurate estimates.

We then asked participants to evaluate this peer lawyer's performance on several dimensions. Participants reported their confidence in the accuracy of the peer lawyer's estimate and predicted his or her enjoyment of the task. Specifically, we asked, "*Given how this lawyer made the estimate, how confident would you be this lawyer's estimate is within 10% of the correct answer?*" and "*Given how this lawyer made the estimate, how much do you think this lawyer enjoyed doing the task?*" We used the same 7-point Likert scales as in Study 3.

To identify the reputational consequences of using intuition versus a structured process, we also asked participants to rate the extent to which they saw the peer lawyer as confident, competent, decisive, and having good judgment. Participants answered these four questions on a 1-5 Likert scale from "*Not at all*" to "*Extremely*," with "*A moderate amount*" as the mid-point. Additionally, we asked participants to estimate their peer's legal experience. Participants answered this question on a 1-5 Likert scale ranging from "*0-3 years*" to "*Over 15 years*," with "*8-11 years*" as the mid-point. Finally, participants in the *other* condition answered demographic questions.

Results

Self choice. Even though we instructed lawyers that the process of averaging often leads to highly accurate estimates, nearly half of the lawyers (48.9%) still chose to use their intuitive judgment. In doing so, these lawyers chose to disregard the information generated by seven domain experts. This is especially surprising given the participants' own lack of domain knowledge (only one participant in the *self* condition reported personal injury to be his/her practice area).

Accuracy. The choice to use their intuitive judgment led lawyers to incur a large accuracy cost. Because we know the actual pain and suffering damages the jury had awarded in each case, we calculated the error of estimates derived by lawyers using their own intuitive judgment versus the average of seven domain experts. We found that lawyers using intuitive judgment produced significantly greater errors than participants relying on the process, or calculated average, for both the Reyes case ($M_{\text{intuitive}}$ = \$557,202.38 difference from actual, SD = \$646,018.59, M_{process} = \$76,011.74, SD = \$60,864.67, Welch $t(20.28) = 3.40$, $p = .003$, $d = 1.05$) and the Rocha case ($M_{\text{intuitive}}$ =

$1,135,208.33, *SD* = $921,843.00, $M_{process}$ = $127,853.20, *SD* = $136,406.13, Welch $t(24.20) = 5.28$, $p < .001$, $d = 1.53$).[10]

Because we used a stratified sample, the average of the seven estimates actually has an informational equivalent closer to n = 28. However, even random samples of 7 substantially outperformed intuitive judgment. Ten thousand simulated groups of 7 missed the jury award value by $129,466 (*SD* = 100,527) for the Reyes case and by $417,187 (*SD* = 306,165) for the Rocha case.

Confidence in accuracy. We observed a significant interaction between target (self versus other) and method (intuitive judgment versus process) on confidence in judgment accuracy, $F_{1,176} = 5.89$, $p = .016$, $\eta_p^2 = .03$, see Figure 3. Similar to the results of our prior studies, lawyers were similarly confident regardless of whether they selected intuitive judgment ($M_{selfintuitive}$ = 3.18, SD = 1.62) or process ($M_{selfprocess}$ = 2.77, SD = 1.42), $F_{1,176} = 1.67$, $p = .198$.

By contrast, when it came to evaluations of peer judgment strategies, lawyers believed that their peers who used intuitive judgment ($M_{otherintuitive}$ = 2.77, *SD* = 1.36) would be significantly less accurate than peers who relied on process ($M_{otherprocess}$ = 3.47, *SD* = 1.71), $F_{1,176} = 4.56$, $p = .034$, $\eta_p^2 = .05$. In line with prior studies demonstrating individuals' belief in the superiority of their own intuitive judgment, we find that professionals believe their intuitive judgment to be more accurate than that of their peers.

Enjoyment. The mean rating of enjoyment for each condition and selected judgment strategy is shown in Figure 4. Overall, using intuitive judgment was evaluated

[10] A non-parametric test reveals the same result, where lawyers using intuition produced significantly greater errors than lawyers relying on the process for both the Reyes case ($Median_{intuitive}$ = $396,250 vs. $Median_{process}$ = $87,321; $x^2(1, N = 48) = 19.05$, $p < .001$) and the Rocha case ($Median_{intuitive}$ = $1,050,000 vs. $Median_{process}$ = $35,714; $x^2(1, N = 44) = 30.56$, $p < .001$)

as more enjoyable ($M_{intuitive}$ = 3.79, SD = 1.43) than following a process ($M_{process}$ = 2.98, SD = 1.34), $F_{1,178}$ = 15.58, $p < .001$, $\eta_p^2 = .08$ across conditions. There was no interaction between target and method, $F_{1,178} = 2.20$, $p = .139$.

Perceptions of others. Choice of judgment strategy had important implications for the inferences that lawyers made about their peers. Lawyers evaluated peers who had used their intuitive judgment to be significantly more confident ($M_{confident\_intuitive} = 4.05$, $SD = .78$) and decisive ($M_{decisive\_intuitive} = 3.77$, $SD = .71$), relative to peers who had followed the process ($M_{confident\_process} = 2.80$, $SD = .95$; $M_{decisive\_process} = 3.14$, $SD = .93$), $t(86) = 6.74$, $p < .001$, $d = 1.44$; $t(86) = 3.61$, $p = .001$, $d = .76$, see Figure 5. While these evaluations might at first blush suggest an endorsement of intuition, participants also evaluated the use of intuition as indicative of significantly lower competence ($M_{competent\_intuitive} = 2.80$, $SD = .80$) and as displaying worse decision-making judgment ($M_{judgment\_intuitive} = 2.64$, $SD = .92$), relative to following a process ($M_{competent\_process} = 3.23$, $SD = 1.03$; $M_{judgment\_process} = 3.30$, $SD = 1.19$), $t(86) = 2.20$. $p = .030$, $d = .47$; $t(86) = 2.91$, $p = .005$, $d = .62$, see Figure 5.

Finally, lawyers predicted peers who had relied on intuitive judgment ($M_{intuitive}$ = 3.39 of 5, SD = 1.34) to be significantly more experienced than peers who followed the process ($M_{process}$ = 2.04, SD = 1.05), $t(90) = 5.36$, $p < .001$, $d = 1.12$. Indeed, the data appears to comport to participant expectations. Our demographic information allows us to look at age and experience, which were highly correlated, $r(89) = .81$, $p < .001$. The lawyers who chose intuition were in fact older ($M_{intuitive}$ = 39.91 years, SD = 11.23; $M_{process}$ = 35.53, SD = 7.86), Welch $t(76.43) = 2.14$, $p = .035$, $d = .45$, and more

experienced ($M_{intuitive}$ = 3.02 of 5, SD = 1.58; $M_{process}$ = 2.55, SD = 1.25), Welch $t(81.87) = 1.57$, $p = .121$, $d = .33$).

Discussion

Study 4 results show that the double standard individuals hold regarding the ideal judgment strategy for self versus others continues to apply to judgments of fellow professionals. These results align with our previous studies where participants were more likely to recommend others follow a structured process, while not heeding this advice themselves. Study 4 also sheds light on the inferences individuals make about decision-makers, depending on their chosen judgment strategy. While resisting intuitive judgment and following process leaves observers with an impression of thoughtfulness, one can also be seen as less confident and less experienced.

General Discussion

In four studies, we document that individuals endorse a double standard with regard to the optimal judgment strategy when it comes to their own behavior versus that of others. People are more likely to choose to follow their own intuitive judgment than to recommend this strategy to other people. This often leads to inferior outcomes for one's own decisions because in many situations a structured process leads to better outcomes than an intuitive, self-guided approach. Participants in Study 1 would have made more money at Blackjack had they followed a strategy table based on the laws of probability, and participants in Studies 3 and 4 would have arrived at more accurate estimates had they more frequently averaged the opinions of others rather than followed their own intuition. Participants who made a recommendation or chose for others tended to achieve more accurate results, because they were more likely to select a structured process.

The self-other difference was robust across a number of different settings. The structured process varied from using a table in Study 1, to following a step-by-step procedure in Study 2, to averaging opinions in Studies 3 and 4. Whereas the process was most likely more effortful than intuition in Study 2 and minimally effortful in Study 1, there was no effort required to execute process in Studies 3 and 4. Also, in Study 1 the decision for others was binding and participants were paid based on the performance of others. In Studies 2 and 3 participants merely offered their recommendations. Across all these settings, participants more often selected intuition for themselves than for others. Finally, although Study 4 did not involve a choice for others, participants in this study rated others who chose process as opposed to intuition as more competent and having good judgment. They also rated those who chose intuition as more confident, decisive, and experienced. These results suggest that people may be even more likely to rely on intuition in professional settings where confidence, decisiveness, and experience are perceived as being valued by clients, even if this means forgoing job performance to some degree. Research in medical decision making supports the idea that professionals adjust their approach to decision-making to manage the impressions of their clients. Doctors who use decision aids are less respected by patients and colleagues, and it has been argued that this is a reason why doctors favor independent judgment over decision aids (Arkes, Shaffer, & Medow, 2007; Wolf, 2014).

At the outset of this research we believed that confidence would be a primary driver of the decision between intuition and process. People tend to believe they are above average at easy or practiced tasks (Alicke & Govorun, 2005; Burson, Larrick, & Klayman, 2006), and using one's intuition is, undoubtedly, an activity with which people

feel very familiar. It should follow, therefore, that people are more confident in their own intuition and that this would lead to a self-other difference in the selected strategy. These predictions were borne out in Study 2, but the effects were surprisingly small. Instead, an entirely different explanation emerged as the more important one. Participants weighed confidence and enjoyment about equally when deciding for themselves, but they only considered confidence when making a recommendation for others. Because intuition was perceived as more enjoyable (for both self and others), people tended to choose intuition for themselves substantially more than they did for others.

With the benefit of hindsight, we can say now that these results comport with known self-other differences in attribute weighting. In an advisor role, people tend to make recommendations based on the most prominent single attribute (e.g., salary when selecting a job), whereas when choosing for themselves they tend to weight attributes more equally (Kray & Gonzalez, 1999). The most supported explanation for this difference is that when advising others, people aim to select the option that will accurately reflect the preferences of the most people (Kray, 2000). If that indeed explains the self-other difference in this paper, it suggests that many of our participants made a prediction error. In Study 2, for instance, the majority chose intuition for themselves and recommended process to others. In this instance, the strategy of relying on the prominent attribute, presumably accuracy, appears to have failed them.

It is important to recognize that our results do not necessarily imply that people will tend to universally favor process over intuition for others. In many domains, people have more faith in an expert's intuitive judgment than they do in an algorithm or decision aid (Larrick & Feiler, 2016). Our results suggest a corollary to this faith in intuition:

Holding perceptions of expertise constant, people are more likely to favor process for others than for themselves. This happens, at least in part, because people only factor enjoyment into decisions for themselves. This suggests that, in principle, it should be possible to reverse the effect. For this to happen, the situation would require a high regard for intuition paired with process perceived to be enjoyable yet also inferior. Although such a situation may exist, we believe that it is much rarer than the opposite type of situation that we have studied.

Improving Decisions

The double standard for one's own and others' regarding the ideal judgment strategy has important consequences for organizational actors thinking about how decsions *should* be made. Organizational decision-makers may find themselves following their intuitive judgments, without recognizing the accuracy costs of doing so, while simultaneously judging their peers negatively for taking the same approach. Additionally, our final study in the professional context alludes to the fact individuals make important inferences about their peers based on how they approach decisions. This aligns with life in organizations, where self-presentation and cognitive syle may be treated as a cue to skill and experience (Jones & Pittman, 1982; Rosenfeld, Giacalone, & Riordan, 1995; Tedeschi & Melburg, 1984).

Decision theorists have advocated that in settings involving risk and uncertainty, employees should be evaluated on process, not outcomes (Russo & Schoemaker, 2002). This assumes, of course, that managers know what a good process looks like. Organizations are not likely to reap the benefits of an optimal process if people treat the

use of intuition as a cue to experience and decisiveness as they did in Study 4, or as a cue to competence as in research on medical decision making (Arkes et al., 2007). How, then, can organizations encourage managers and other employees to follow a structured process in judgment and decision making? Our studies suggest that a simple nudge can help. Rather than leap into a decision, individuals can first make a recommendation on how others should approach the same problem. This shift in perspective tends to tilt attention toward the single attribute perceived as most important - decision accuracy. If people believe that a structured process translates to better decisions for others, this nudge will lead them to more often use a structured process when making their own decisions as well.

Based on our results, there may be other debiasing strategies as well to move people away from relying on their intuition. For example, future research can consider if framing or structuring the process as more enjoyable would move decision-makers towards selecting this kind of process. Similarly, allowing decision-makers autonomy in selecting or crafting their own structured process could potentially increase the likelihood of decision-makers choosing a structured process.

Conclusion

Decision-makers are often faced with the dilemma of approaching a task by following their own intuitive judgment or relying on a structured process. These judgment strategies pose a trade-off between enjoyment derived from using a more autonomous, intuitive strategy versus the accuracy derived from following a more methodical strategy. Our central finding is that people resolve this trade-off differently depending on who will be making the decision. Enjoyment matters much less when

selecting a strategy for others, which leads people to favor process for others more often than for themselves. Our data provides evidence for a simple and effective intervention to move individuals from relying on their intuitive judgment - an application of the "golden rule" to decision-making. In making a recommendation to others first on whether to use a structured process, decision makers are more likely to heed their own advice and, for once, can say "Do as I do."

References

Alicke, M. D., & Govorun, O. (2005). The better-than-average effect. *The self in social judgment, 1*, 85-106.

Allison, P. D. (2012). *Logistic regression using SAS: Theory and application*. SAS Institute.

Arkes, H. R., Shaffer, V. A., & Medow, M. A. (2007). Patients derogate physicians who use a computer-assisted diagnostic aid. *Medical Decision Making*, *27*(2), 189-202.

Beisswanger, A. H., Stone, E. R., Hupp, J. M., & Allgaier, L. (2003). Risk taking in relationships: Differences in deciding for oneself versus for a friend. *Basic and Applied Social Psychology*, *25*(2), 121-135.

Bonaccio, S., & Dalal, R. S. (2006). Advice taking and decision-making: An integrative literature review, and implications for the organizational sciences. *Organizational Behavior and Human Decision Processes*, *101*(2), 127-151.

Burson, K. A., Larrick, R. P., & Klayman, J. (2006). Skilled or unskilled, but still unaware of it: how perceptions of difficulty drive miscalibration in relative comparisons. *Journal of personality and social psychology*, *90*(1), 60.

Chaiken, S., & Trope, Y. (Eds.). (1999). *Dual-process theories in social psychology*. Guilford Press.

Dawes, R. M. (1979). The robust beauty of improper linear models in decision making. *American psychologist*, *34*(7), 571.

Deci, E., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.

De Neys, W. (2014). Conflict detection, dual processes, and logical intuitions: Some clarifications. *Thinking & Reasoning*, *20*(2), 169-187.

Dietvorst, B. J., Simmons, J. P., & Massey, C. (2015). Algorithm aversion: People erroneously avoid algorithms after seeing them err. *Journal of Experimental Psychology: General*, *144*(1), 114.

Dietvorst, B. J., Simmons, J. P., & Massey, C. (2016). Overcoming algorithm aversion: People will use imperfect algorithms if they can (even slightly) modify them. *Management Science*.

Einhorn, H. J. (1986). Accepting error to make less error. *Journal of personality assessment*, *50*(3), 387-395.

Epstein, S. (1994). Integration of the cognitive and the psychodynamic unconscious. *American psychologist*, *49*(8), 709.

Evans, J. S. B. (2007). *Hypothetical thinking: Dual processes in reasoning and judgement* (Vol. 3). Psychology Press.

Evans, J. S. B. (2008). Dual-processing accounts of reasoning, judgment, and social cognition. *Annu. Rev. Psychol.*, *59*, 255-278.

Faro, D., & Rottenstreich, Y. (2006). Affect, empathy, and regressive mispredictions of others' preferences under risk. *Management Science*, *52*(4), 529-541.

Fernandez-Duque, D., & Wifall, T. (2007). Actor/observer asymmetry in risky decision making. *Judgment and Decision Making*, *2*(1), 1.

Funder, D. C. (1987). Errors and mistakes: Evaluating the accuracy of social judgment. *Psychological bulletin*, *101*(1), 75.

Goffman, E. (1959). The Presentation of Self in. *Butler, Bodies that Matter*.

Handley, S. J., & Trippas, D. (2015). Dual processes and the interplay between knowledge and structure: A new parallel processing model. In *Psychology of learning and motivation*(Vol. 62, pp. 33-58). Academic Press.

Highhouse, S. (2008). Stubborn reliance on intuition and subjectivity in employee selection. *Industrial and Organizational Psychology*, *1*(3), 333-342.

Jacobson, J., Dobbs-Marsh, J., Liberman, V., & Minson, J. A. (2011). Predicting Civil Jury Verdicts: How Attorneys Use (and Misuse) a Second Opinion. *Journal of Empirical Legal Studies*, *8*(s1), 99-119.

James, W. (1950). *The principles of psychology: in 2 volumes*. Dover Publ., Incorporated.

Jonas, E., Schulz-Hardt, S., & Frey, D. (2005). Giving advice or making decisions in someone else's place: The influence of impression, defense, and accuracy motivation on the search for new information. *Personality and Social Psychology Bulletin*, *31*(7), 977-990.

Jones, E. E. (1990). *Interpersonal perception*. New York, NY, US: WH Freeman/Times Books/Henry Holt & Co.

Jones, E. E., & Pittman, T. S. (1982). Toward a general theory of strategic self-presentation. *Psychological perspectives on the self*, *1*(1), 231-262.

Kahneman, D. (2003). A perspective on judgment and choice: mapping bounded rationality. *American psychologist*, *58*(9), 697.

Kahneman, D., & Frederick, S. (2002). Representativeness revisited: Attribute substitution in intuitive judgment. *Heuristics and biases: The psychology of intuitive judgment*, *49*, 81.

Kahneman, D., Slovic, P., & Tversky, A. (1982). Judgments under uncertainty. *Heuristics and Biases, Cambridge*.

Keeney, R. L., & Raiffa, H. (1976). Decision analysis with multiple conflicting objectives. *Wiley& Sons, New York*.

Keren, G., & Schul, Y. (2009). Two is not always better than one: A critical evaluation of two-system theories. *Perspectives on psychological science*, *4*(6), 533-550.

Klayman, J., Soll, J. B., Gonzalez-Vallejo, C., & Barlas, S. (1999). Overconfidence: It depends on how, what, and whom you ask. *Organizational behavior and human decision processes*, *79*(3), 216-247.

Kray, L. J. (2000). Contingent weighting in self-other decision making. *Organizational Behavior and Human Decision Processes*, *83*(1), 82-106.

Kray, L., & Gonzalez, R. (1999). Differential weighting in choice versus advice: I'll do this, you do that. *Journal of Behavioral Decision Making*, *12*(3), 207.

Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry*, *10*(2), 83-109.

Larrick, R. P., Burson, K. A., & Soll, J. B. (2007). Social comparison and confidence: When thinking you're better than average predicts overconfidence (and when it does not). *Organizational Behavior and Human Decision Processes*, *102*(1), 76-94.

Larrick, R. P., & Soll, J. B. (2006). Intuitions about combining opinions: Misappreciation of the averaging principle. *Management science*, *52*(1), 111-127.

Leary, M. R. (1995). *Self-presentation: Impression management and interpersonal behavior*. Brown & Benchmark Publishers.

Loewenstein, G. (1996). Out of control: Visceral influences on behavior. *Organizational behavior and human decision processes*, *65*(3), 272-292.

Mannes, A. E., Larrick, R. P., & Soll, J. B. (2012). The social psychology of the wisdom of crowds.

McCauley, C., Kogan, N., & Teger, A. I. (1971). Order effects in answering risk dilemmas for self and others. *Journal of Personality and Social Psychology*, *20*(3), 423.

Moore, D. A., Carter, A. B., & Yang, H. H. (2015). Wide of the mark: Evidence on the underlying causes of overprecision in judgment. *Organizational Behavior and Human Decision Processes*, *131*, 110-120.

Moore, D. A., & Dev, A. S. (2018). Individual differences in overconfidence. In V. Zeigler-Hill and T. K. Shackelford (Eds.), *Encyclopedia of Personality and Individual Differences*. New York: Springer.

Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological review*, *115*(2), 502.

Nisbett, R. E., & Ross, L. (1980). Human inference: Strategies and shortcomings of social judgment.

Osman, M. (2004). An evaluation of dual-process theories of reasoning. *Psychonomic bulletin & review*, *11*(6), 988-1010.

Pennycook, G., Fugelsang, J. A., & Koehler, D. J. (2015). What makes us think? A three-stage dual-process model of analytic engagement. *Cognitive Psychology*, *80*, 34-72.

Polman, E. (2010). Information distortion in self-other decision making. *Journal of Experimental Social Psychology*, *46*(2), 432-435.

Polman, E. (2012). Self–other decision making and loss aversion. *Organizational Behavior and Human Decision Processes*, *119*(2), 141-150.

Pronin, E., Gilovich, T., & Ross, L. (2004). Objectivity in the eye of the beholder: divergent perceptions of bias in self versus others. *Psychological review*, *111*(3), 781.

Pronin, E., Lin, D. Y., & Ross, L. (2002). The bias blind spot: Perceptions of bias in self versus others. *Personality and Social Psychology Bulletin*, *28*(3), 369-381.

Rosenfeld, P., Giacalone, R. A., & Riordan, C. A. (1995). *Impression management in organizations: Theory, measurement, practice*. Van Nostrand Reinhold.

Russo, J. E., & Schoemaker, P. J. (2002). *Winning decisions: Getting it right the first time*. Crown Business.

Scopelliti, I., Morewedge, C. K., McCormick, E., Min, H. L., Lebrecht, S., & Kassam, K. S. (2015). Bias blind spot: Structure, measurement, and consequences. *Management Science*, *61*(10), 2468-2486.

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological bulletin*, *119*(1), 3.

Soll, J. B., & Mannes, A. E. (2011). Judgmental aggregation strategies depend on whether the self is involved. *International Journal of Forecasting*, *27*(1), 81-102.

Stanovich, K. E. (1999). *Who is rational?: Studies of individual differences in reasoning*. Psychology Press.

Stanovich, K. E. (2004). Metarepresentation and the great cognitive divide: A commentary on Henriques"“Psychology Defined”. *Journal of clinical psychology*, *60*(12), 1263-1266.

Stanovich, K. E., & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate?. *Behavioral and brain sciences*, *23*(5), 645-665.

Stone, E. R., Yates, A. J., & Caruthers, A. S. (2002). Risk taking in decision making for others versus the self. *Journal of Applied Social Psychology*, *32*(9), 1797-1824.

Tedeschi, J. T., & Melburg, V. (1984). Impression management and influence in the organization. *Research in the sociology of organizations*, *3*(31-58).

Teger, A. I., & Kogan, N. (1975). Decision-making for Others under Reciprocal and Non-reciprocal Conditions. *British Journal of Clinical Psychology*, *14*(3), 215-222.

Walco, D. K., & Risen, J. L. (2017). The empirical case for acquiescing to intuition. *Psychological science*, *28*(12), 1807-1820.

Wallach, M. A., Kogan, N., & Bem, D. J. (1964). Diffusion of responsibility and level of risk taking in groups. *The Journal of Abnormal and Social Psychology*, *68*(3), 263.

Welch, B. L. (1938). The significance of the difference between two means when the population variances are unequal. *Biometrika*, *29*(3/4), 350-362.

Wray, L. D., & Stone, E. R. (2005). The role of self-esteem and anxiety in decision making for self versus others in relationships. *Journal of Behavioral Decision Making*, *18*(2), 125-144.

Yaniv, I. (2004). The benefit of additional opinions. *Current directions in psychological science*, *13*(2), 75-78.

Yaniv, I., & Kleinberger, E. (2000). Advice taking in decision making: Egocentric discounting and reputation formation. *Organizational behavior and human decision processes*, *83*(2), 260-281.

Figures & Tables

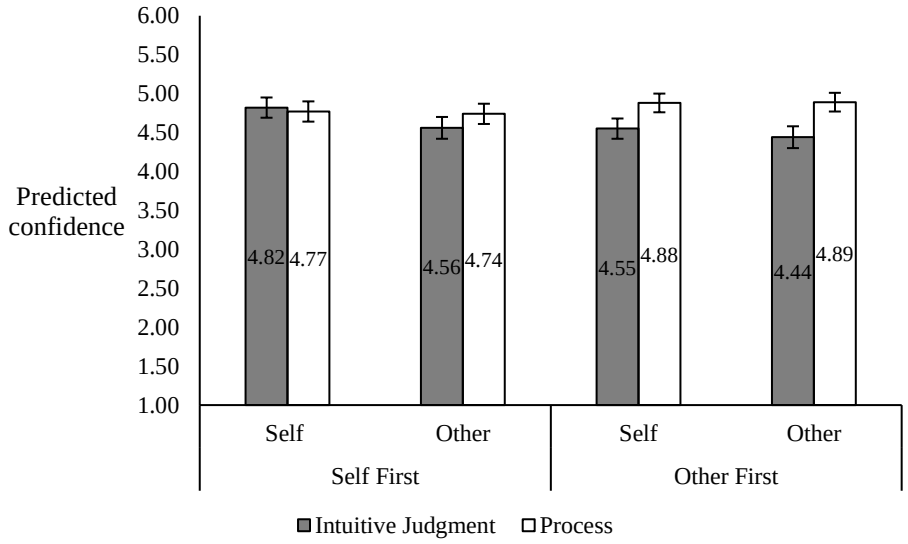

Figure 1. Predicted confidence as a function of Target, Method, and Order (Study 2)

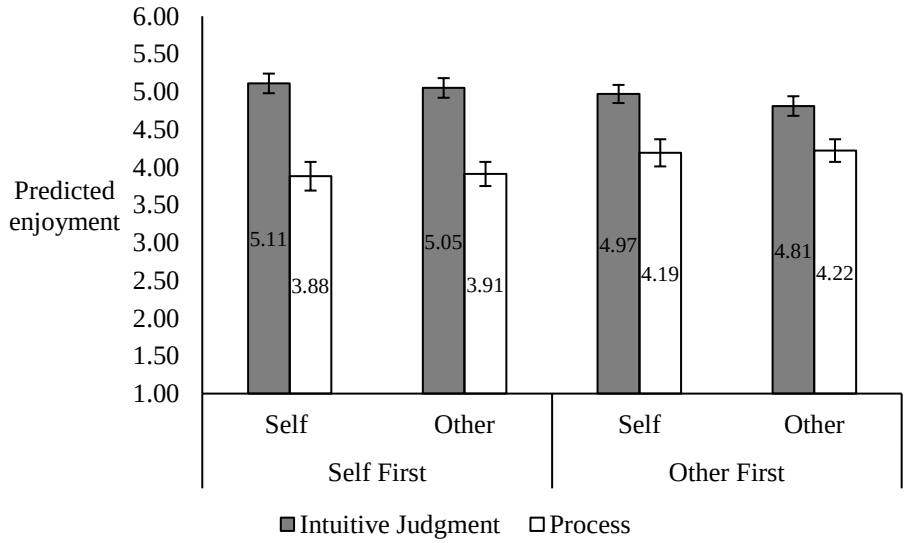

Figure 2. Predicted enjoyment as a function of Target, Method, and Order (Study 2)

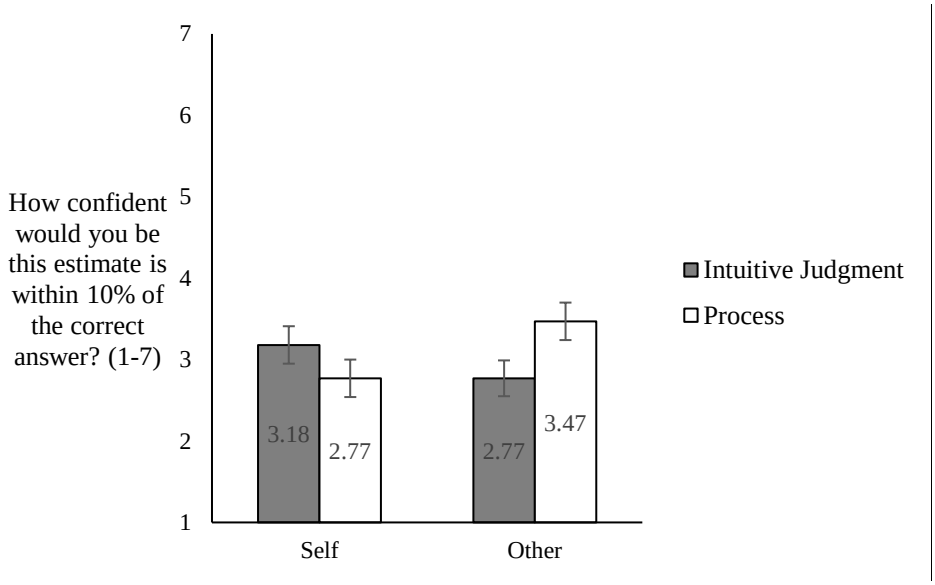

Figure 3. Confidence in judgment accuracy, as a function of target and judgment strategy (Study 4)

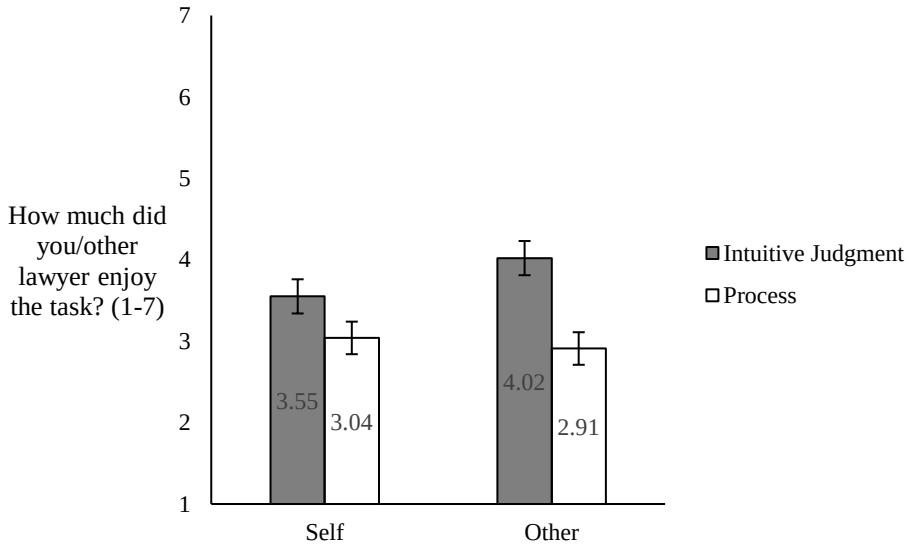

Figure 4. Enjoyment, as a function of target and judgment strategy (Study 4)

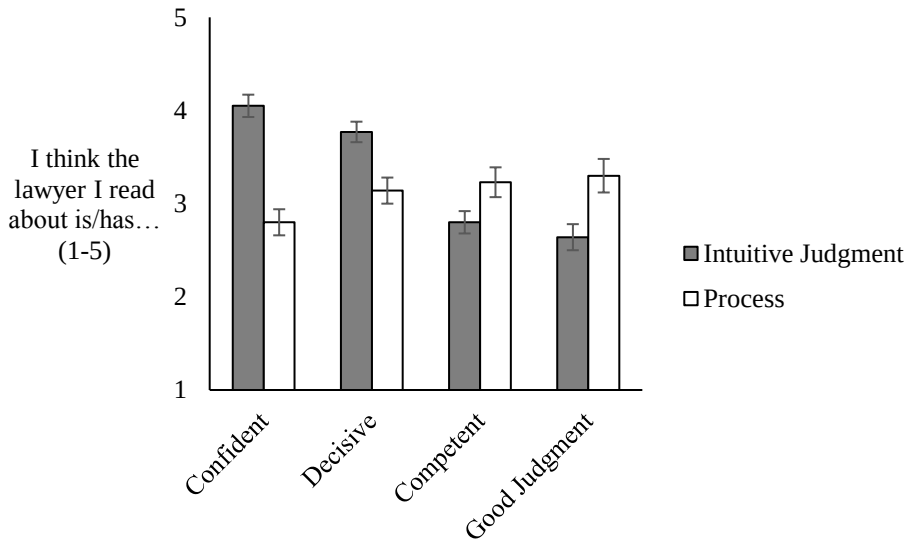

Figure 5. Perceptions of peer lawyers as a function of judgment strategy (Study 4)

	F	Sig	Partial Eta Squared
Target	1.96	0.163	0.01
*Target*Order*	0.58	0.449	0.00
Method	6.00	0.015	0.03
*Method*Order*	3.14	0.078	0.02
*Target*Method*	3.44	0.065	0.02
*Target*Method*Order*	0.30	0.586	0.00

Table 1. ANOVA for predicted confidence (Study 2)

	F	Sig	Partial Eta Squared
Target	0.45	0.502	0.00
*Target*Order*	0.18	0.676	0.00
Method	70.27	0.000	0.26
*Method*Order*	5.20	0.024	0.03
*Target*Method*	1.92	0.168	0.01
*Target*Method*Order*	0.23	0.634	0.00

Table 2: ANOVA for predicted enjoyment (Study 2)

Condition	1	2	3	4
Target	Self	Self	Other	Other
Order	Self First	Other First	Self First	Other First
Intercept	-.775**	.256	.402ǂ	.532*
Confidence-intuition	-.431	-.384*	-.624*	-.417*
Confidence-process	.311	.552**	.118	.395*
Enjoyment-intuition	-.311	.050	-.027	.069
Enjoyment-process	.650**	.076	.075	.110

**p < .01, *p < .05, ǂp <.1

Table 3: Logit model of the preference for process (Study 2)

Appendices

Appendix A: Data protocol (Studies 1-4)

See data and stimuli at: //osf.io/pf26x/?view_only=16f9a2befd914046b5db835fb3ca278c

In online studies, we targeted a sample of 100 participants for our pre-test study in Study 3 and 200 participants per condition in our main studies. Study 1 was a between-subjects design where participants' incentives were tied to their own outcome or their partner's outcome. Given these two conditions, we aimed for a total of 400 participants. Study 2 was a within-subjects design where participants made choices for the self and recommendations for another person. We aimed for 200 participants. In this study, we counter-balanced the order of these two choices and given our results suggesting a potential intervention, we decided in our future studies we would add presentation order of choice as a separate condition. Study 3 was a within-subjects design where we had two target stimuli (two photos) and two presentation orders of choice (self first or other first). Given these four conditions, we aimed for 800 participants, although we ultimately collapsed the data across the two photos. Finally, in our field study of lawyers (Study 4) where we asked for decisions and peer evaluations, we sought to collect as much data as we could in a two-week period. We aimed for 200 participants. We analyzed our data only after data collection was completed. No observations were excluded unless otherwise indicated. Attrition rates were low (never above 1.9%) and we included attriters' data up to the point at which they exited. We report all manipulations and measures.

Appendix B: Hand & strategy table (Study 1)

		DEALER'S UP-CARD									
		2	3	4	5	6	7	8	9	10	A
Player's Hand	5-11	H	H	H	H	H	H	H	H	H	H
	12	H	H	S	S	S	H	H	H	H	H
	13	S	S	S	S	S	H	H	H	H	H
	14	S	S	S	S	S	H	H	H	H	H
	15	S	S	S	S	S	H	H	H	H	H
	16	S	S	S	S	S	H	H	H	H	H
	17-21	S	S	S	S	S	S	S	S	S	S
	A2	H	H	H	H	H	H	H	H	H	H
	A3	H	H	H	H	H	H	H	H	H	H
	A4	H	H	H	H	H	H	H	H	H	H
	A5	H	H	H	H	H	H	H	H	H	H
	A6	H	H	H	H	H	H	H	H	H	H
	A7	S	S	S	S	S	S	S	H	H	H
	A8	S	S	S	S	S	S	S	S	S	S
	A9	S	S	S	S	S	S	S	S	S	S

Appendix C: 7-step analytical process (Study 2)

Estimate the following 7 factors on a 1-7 scale, with 1 being "not at all" to 7 being "extremely well".

- **Step 1 Immediate Attention**: Estimate how well the entrepreneur grabbed the attention of the investors at the beginning of the presentation.
- **Step 2 Feel the Pain**: Estimate how well the entrepreneur conveyed the pain point his/her product was addressing and what need his/her company was fulfilling.
- **Step 3 A Better Way**: Estimate the extent to which the entrepreneur conveyed a clear value proposition.
- **Step 4 Creative Explanation**: Estimate how organized, creative, and articulate the entrepreneur was in explaining how his/her product functioned.
- **Step 5 Positive Energy**: Estimate the extent to which the entrepreneur remained positive throughout the entire presentation.
- **Step 6 Numbers Game:** Estimate the extent to which the entrepreneur was familiar with the relevant financial information.
- **Step 7 Next Steps**: Estimate how well the entrepreneur wrapped up the pitch with a call to action.

Calculate the total points from Steps 1-7 to assess the likelihood the entrepreneur received funding: 35-49=High; 28-35=Moderately High; 21-28=Moderately Low; and 7-21=Low.

Appendix D: Example of age estimates and explanations (Study 3)

Age Estimate	Explanation
30	This person does not have gray hair or wrinkles yet and seems fit. His teeth are still white and he has a bright smile. He is dressed in a uniform, so it is impossible to use that as evidence.
38	Although this man is bald or has a shaved head he does not have gray hair in his beard. He is heavy in weight and it probably took him some time to gain that much. Even if he is wearing a bullet proof vest, his pants show his hips to be large. He is a guad or police officer by his uniform and typically people in this work do not stay active much past 40.
40	His facial features, height, and other physical details are common for a middle aged person probably around 40. He's not very young but at the same time not very old. The amount of balding makes it distinct that this is not a person in their 20s-30s. Also it would not be uncommon to see someone of that age in his type of profession (police).
40	He appears fairly young to me, he seems like a child at heart like you can see the youth in his eyes but you can see where he has started aging in his face and facial hair. He is bald so no indication through hair.
42	It's hard to accurately gauge his age based on wrinkles or anything like that but the glasses might be bifocals, they look like thicker lenses. But again, it's hard to even say based on glasses since everyone's vision is different.
45	He doesn't appear too old, judging by his smooth face, however, he is a bit overweight, and sometimes that gives the impression that a person is younger than they are. There is something about his eyes and smile that make me think he is that age.
50	This man looks mature, worldly wise, probably because of his job, and he's obviously not young or old, so must be something in between. African American skin tends to age really well, so I think he is in his prime!

Appendix E: Personal injury case descriptions (Study 4)

Case 1 (Reyes): This is a personal injury case that was brought in Fresno County. The plaintiff, a 5-year-old male kindergarten student, fell from the playground structure of his school and landed on his head. Safety codes called for soft-packed sand under playgrounds, but the sand the boy landed on was hard-packed. The defendant is the school, also a church that owns the playground. The boy sustained a left temporal parietal skull fracture, which led to a left middle meningeal artery bleed ultimately causing an epidural hematoma (bleeding between the outer layer of the brain and the skull). The boy underwent emergency surgery, and the surgeon performed a craniotomy with an evacuation of the epidural hematoma. The boy was hospitalized for three days, and returned to school two weeks after the accident. A pediatric neurologist who evaluated

him believes he has suffered a traumatic brain injury, causing some behavioral change. He scored lower than average on a standardized test administered after the accident, and has a risk (although not a certainty) of future cognitive problems. After repeating kindergarten, he is performing at grade level in the first grade. The only economic damages are medical expenses, which are $33,250.20.

Case 2 (Rocha): This is a wrongful death case that was brought in Los Angeles County. A 38-year-old, father of six, was working on engine troubles on the side of the road when his car was rear ended by a drunk driver. He was killed instantly. The decedent was living in the United States illegally and working as a gardener. The plaintiffs are his mother, his brother, one adult child in his mid-20s, and five minor children, ages 3 to 15. The decedent was unmarried at the time of his death. The defendants are the driver, the fumigation company that the driver works for, and the rental car company where he rented his car. The plaintiffs are not asking for economic damages; they are only seeking non-economic damages for loss of care, comfort, and society.