The Intelligence of Judging Products Based on Looks

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It is commonly believed that judging based on outside appearance is unintelligent – whether in regards to people or objects. From the familiar saying that one ought not to “judge a book by its cover” to research showing consumers do not believe a product’s looks play a significant role in their purchase decisions (Townsend Sood working paper), the strength of this inherent belief is evident. And yet, in three studies we find that respondents who perform better on intelligence-related tasks – the CRT and a vocabulary test – are more likely to select products that are more aesthetically pleasing than less intelligent respondents.

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SESSION OVERVIEW

Typically in consumer behavior and decision-making research we examine the general trend of responses–what the majority is doing or choosing. However, it is also informative to look at the differences between individuals. The papers presented in this session examine intelligence, as measured by the Cognitive Reflection Test (CRT; Frederick, 2005), its correlates, and how this individual difference impacts various behaviors. The CRT primarily measures respondents’ propensity to resist reporting the first response that comes to mind. However, its correlation with intelligence measurements allows it to substitute for such a tool as well. The works presented here utilize the CRT in both of these capacities to provide new insights both about correlates of this tendency to resist (or not) the first heuristic response, as well as the relationship between intelligence and preferences for risk, time, and aesthetically pleasing products.

In the first presentation Spunt and Lieberman examine the CRT in its primary role to discriminate “gut” first responses from slower more methodological responses. They propose that the propensity to go with one’s initial response is the result of overconfidence. In three behavioral studies they find that reducing confidence in first responses, either through indirect inductions of self-doubt or by directly invalidating initial responses, can make individuals behave in what seems to be a more intelligent manner. Moreover, the results of a fourth fMRI brain imaging study corroborates this notion. Thus, this work is able to explain something further about the CRT and, subsequently, about response behavior.

The other two projects build upon this work and use the CRT as an intelligence indicator—by itself in the work by Frederick Fong, and Tsytsylin and along with vocabulary questions (Mill Hill Vocabulary Scale) in the work by Townsend, Ariely, and Sood. Both these works examine the differences in preferences between less and more intelligent individuals. Frederick, Fong, and Tsytsylin not only examine preferences, but also lay-theories about these preferences—how people expect more intelligent and less intelligent people to differ. They find that providing the less intelligent with information on the preferences of the more intelligent impacted actual choice behavior in only some domains e.g. risk preferences and not in others e.g. time preferences. Thus, as with the first work presented, Frederic, Fong, and Tsytsylin suggest one way in which to engender more intelligent choice behavior, though only in some realms. And, indeed, as the authors point out, a relation between intelligence and preference, by itself, does not necessarily identify the correct choice in all cases.

Townsend, Ariely, and Sood also examine the relationship between lay-theories about intelligent choice versus actual choice. Testing the old adage that one ought not to “judge a book by its cover,” the authors examine respondents’ propensity to choose good looking products—even when the choice of good looks means giving up higher functionality or a well-known brand. Contrary to popular wisdom, they find that highly aesthetic choices are more popular among the highly intelligent than the less intelligent suggesting something consequential about product design.

By looking at individual differences on the CRT, these three studies provide insights on both personal preferences as well as general trends. Specifically this research offers learnings on the propensity to respond heuristically, the role of overconfidence, and the relationship between lay-theories about intelligence and actual behavior. Moreover, these studies both suggest and find limits on interventions to encourage intelligent choice.

Therefore, the proposed session would be of interest to a broad swath of consumer researchers and anyone interested in promoting normative choice behavior. This session would be of special interest to those interested in individual differences, risk or time preferences, aesthetics and brand preferences, and/or fMRI research. We hope that a session on these essential topics will incite debate and ideas for further research.

EXTENDED ABSTRACTS

“Getting Past that First, Compelling Response: Three Behavioral Studies and an fMRI Investigation of Performance and Overconfidence on the Cognitive Reflection Test”
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This research offers theoretical and empirical perspectives on the constructs of cognitive reflection and overconfidence as measured using the Cognitive Reflection Test (CRT; Frederick, 2005). The various forms of the CRT feature quantitative reasoning word problems, each of which tends to induce a single incorrect response which is typically reported with high confidence. The following item is illustrative: “A bat and a ball cost $1.10 in total. If the bat cost $1.00 more than the ball, how much does the ball cost?” In scores of studies, over 90% of individuals who answered this item incorrectly did so by reporting the same response—10 cents. Frederick (2005) thus defined cognitive reflection as the tendency to resist reporting the first response that comes to mind when making a judgment or decision. Moreover, this tendency was explained using a two system model (Stanovich & West, 2000), which states that judgments and decisions often induce a first response that is the product of a fast and automatic computation system (System 1), but that these responses can be overridden by a relatively slower control system (System 2), which can implement the rule-based sequential operations that permit judges and decision makers to carefully consider alternatives. It was assumed, then, that individuals who are low on cognitive reflection rely too heavily on System 1, while individuals who are high on cognitive reflection tend to spontaneously activate System 2 before committing to a response. Additionally, the tendency to cognitively reflect on the CRT is associated with measures of intelligence as well as normative preferences in the face of risk and delay.

The first three studies expand on this two system account by additionally taking an attribution substitution approach to performance and overconfidence on the CRT (Kahneman & Frederick, 2002). The framing of each problem (e.g., the bat and ball problem above) suggests an easy, heuristic operation (e.g., subtracting) on the given quantities (e.g., $1.10 and $1.00) that becomes substituted for the relatively more effort- and time-costly target operations (e.g., the algebraic relationship among the bat, ball, $1.10, and $1.10). The resulting answer is then subjectively experienced as correct because it is the correct output, but to the wrong operation. Thus, attribute substitution explains not only errors on the CRT, but also overconfidence in those errors (referred to elsewhere as intuitive confidence; Simmons & Nelson, 2006).
The two system, attribute substitution account generates the simple hypothesis that reducing confidence in or invalidating the heuristic operation should boost performance and reduce overconfidence in errors on the CRT. In three studies, we show that both of these are true. Compared to a control condition where participants complete the CRT with no special instructions, participants for whom the heuristic response (e.g., 10 cents) was indirectly invalidated performed better and exhibited realistic levels of confidence in their errors. In a third condition, participants who were explicitly cautioned against reporting the first response showed a similar improvement in performance, but those who continue to commit heuristic errors continued to exhibit overconfidence. These effects of invalidation were specific to the heuristic responses and did not occur when alternative, nonheuristic responses were directly invalidated (e.g., 20 cents). In another study, we show that describing the CRT as a confirmation of gender differences in mathematical ability (which in women is known to induce a state known as 'stereotype threat'; cf. Shapiro & Neuberg, 2007), improves performance for women but actually impairs performance for men. Given that stereotype threat is thought to induce self-doubt in women and confidence in men, this suggests that contextual variables that modulate confidence can incidentally modulate the likelihood that a given individual will seek out alternatives to their first response when making a judgment or decision. Altogether, these studies suggest that reducing confidence in first responses, either through indirect inductions of self-doubt or by directly invalidating responses known beforehand to be prepotent, can make individuals behave in what seems to be a more intelligent, self-conscious manner.

In addition to these behavioral studies, we investigated the neural correlates of performance on the CRT using functional magnetic resonance imaging (fMRI). Given that the networks for deliberative quantitative reasoning have already been mapped in the brain, comparing brain activity during the computation of correct and heuristic responses enables a novel test of the two system characterization of judgment and decision making. For this study, we developed a 48-item adapted version of the CRT that participants completed while being scanned. Preliminary results show that solving the CRT items correctly compared to heuristically solves them was associated with regions of the lateral prefrontal cortices believed to be involved in deliberate logical and mathematical computation. Analyses are currently underway to determine brain regions selectively associated with the computation of heuristic responses.

Taken together, these findings shed light on the psychology of naively going with one's first response versus carefully considering alternatives when making a judgment or decision. Additionally, they suggest that in addition to its utility as a brief individual differences measure of the tendency to resist reporting first responses, the CRT items present useful tools for studying the two system account of the process of attribute substitution.

References

“Should Einstein Manage your Money? Lay Theories and Normative Force of the Relation Between Cognitive Ability and Preferences”

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Attitudes towards time and risk affect everything from how early a person leaves to catch a 10:00 flight, to the perceived urgency of regulating carbon emissions to combat global climate change. Much evidence now suggests that smarter people both discount future rewards less and have greater risk tolerance (see, e.g., Frederick, 2005). Such results could be interpreted as support for philosophical or theoretical arguments against excessive discounting or risk aversion (Rawls, 1971; Rabin & Thaler, 2001). Some do, in fact, draw this conclusion (Stanovich & West, 2000; Frederick, 2005), while others resist this inference (Stemberg, 2000).

In this research, we study whether people are aware of the relations between cognitive ability, such preferences, and the significance they attach to these facts. Koriat and Nisan (1977) examined both of these issues with young children. Kindergarten students drew pictures for the experimenters, and were rewarded with a choice between one candy immediately and two candies the next day. While 54% chose the larger delayed reward, 86% predicted that a “smart kid” would choose the later larger reward. Surprisingly, children who were first asked what a smart kid would do did not increase their patience—although 79% predicted that the smart kid chose the delayed larger reward, only 36% did so themselves. Thus, Nisan and Koriat demonstrated that children as young as five years old anticipate the relationship between intelligence and time preferences, but gave no weight to this fact even when their attention was directed towards it.

We used a similar design with adult respondents. Respondents were told (truthfully) that previous studies had found a relation between cognitive ability and some types of preferences. Respondents then attempted to predict the direction and strength of these relations by estimating the proportion of low-scoring and high-scoring responders who preferred the various options.

Most subjects, for example, correctly predicted that smarter people would be more inclined to choose The New Yorker magazine over People magazine, and a larger later reward ($3800 next month) over a smaller sooner reward ($3400 this month). However, for items involving choices between a sure thing (e.g., $100) and a risky option (a coin flip for $300), respondents either failed to predict the observed difference, or generally predicted the opposite effect. For instance, although high scoring respondents were much more likely to prefer the gamble (63% vs. 21%), only 29% of respondents asked to predict the difference managed to correctly predict even the direction of this effect.
When respondents were told of the true relation between cognitive ability and various preferences, the impact depended on domain. In the domain of time preference discovering (or being reminded of) the correlation between intellect and time preferences (since most predicted it correctly) did not influence respondents’ time preferences, replicating Nisan and Koriat’s findings with children. By contrast, for decisions involving risk, while most respondents did not anticipate the greater risk tolerance among high scorers, learning about the true correlation did influence respondents’ choices, increasing the proportion of respondents choosing the gamble from 15% to 26%. In other words, the news that “Johnny chose the gamble” may have provided justification (if not the compulsion) to choose it themselves.

The relevance of a correlation between some ability and some preference clearly depends on the type of ability and the type of preference in question. It is obvious that one should imitate Gary Kasparov if deciding which chess piece to move, but equally obvious that Einstein’s preference for apples over oranges has no special significance to which you should prefer. Thus, a relation between cognitive ability and preference, by itself, surely does not identify the correct choice in all cases. But such information does, apparently, have significance, in at least some domains.

References

“The Intelligence of Judging Products Based on Looks”
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There is a common belief that making decisions based on the way something looks is not an intelligent way to think. There is the familiar adage that one ought not to “judge a book by its cover” and this bias against evaluation based on appearance is likely considered, either consciously or unconsciously, by people in a variety of situations—from meeting new people to selecting a new household appliance. Moreover, recent work indicates that respondents consistently under-value the importance of product aesthetics in choice and also look to other, more functional, attributes to justify the choice of more attractive products (Townsend Sood working paper A). Indeed, there seems to be some common understanding that performance and functionality ought to play a greater role in evaluation than looks. And yet, in a series of studies we find that more intelligent individuals are more likely to choose better looking options—even when selecting good looks means selecting poorer functionality or a worse brand. Along with functionality, we examine the trade-off made with brand as this is another attribute that, even more so than design, may be considered an indicator of overall quality. Moreover, in the realm of fashion-related products it functions similarly to design as a source of value and as a signal to others. And yet, the preference for good design over a well-known brand persists, despite intelligent individuals having greater overall brand knowledge. That intelligent people are more likely to allow design to drive their choices, suggests there is some value in good design that ought to be further recognized.

The Cognitive Reflect Task (CRT) was introduced to measure one specific type of cognitive ability—the propensity to question one’s initial response and correct it if there is a better one (Frederick 2005). Yet, it is positively correlated (with medium correlation) with self-reports on various intelligence and performance measures including the Scholastic Aptitude Test (SAT, .44) and the Wonderlic Personnel Test (WPT, .43). Thus, we used the three question CRT, as well as ten questions from the Mill Hill vocabulary test, as an indicator of overall intelligence. Using the CRT as part of our intelligence test, in fact, worked against our hypothesis that more intelligent people would choose based on design. Previous research (Townsend Sood working paper B) provides evidence for a more system 1-based processing of design relative to the more system 2-like processing of functional attributes, finding that cognitive load increases the choice share of the more aesthetic option. Based on this finding, one would expect those who are more prone to cognitive reflection and who are less likely to give the initial or more system 1-based response are also less likely to base a decision on design and more likely to take into account the functional attributes which are, presumably, processed with more reflective system 2 thinking. Therefore, our findings that intelligence, as partially measured by CRT, and preference for good design are correlated is particularly intriguing.

In Study 1 we found that when faced with a hypothetical choice between two options where one performs better on a functional attribute and the other is better looking, those who score better on the CRT as well as our overall intelligence indicator (combination of CRT and Mill Hill vocabulary score) were more likely to select the better looking, though functionally inferior option, than less intelligent respondents. One possible explanation for these results is that, despite asking respondents to assume the products were the same on all other attributes, because we provided information on only one functional feature along with design, perhaps the selection of good looks was driven by a notion that good looks implies better performance in other domains.

In Study 2 we examined design versus brand. Moreover, we examined fashion-related goods (e.g. clothing, accessories) where functionalities are less relevant. Thus in Study 2 respondents chose between two options where one was good looking and from an unknown brand while the other was less good looking and from a well-known brand—e.g. attractive Sun Song-branded dress versus unattractive Donna Karan-branded dress. Again, we found that more intelligent respondents were more likely to select the better designed options, despite the unknown brand name.

In our third study we examined this same issue using a different probing mechanism and asked respondents to give a price at which they would be equally likely to purchase two options. Respondents were shown a branded fashion item with a price and asked at what price they would be as likely to purchase a counterfeit version. Thus, in this study we were examining more specifically the value of an authentic brand-name to consumers. Consistent with our previous results, intelligent respondents valued the authentic brand-name less, pricing the counterfeit version higher, on average, than less intelligent respondents and, again, indicating that the overall look of the product is more important to highly intelligent individuals than those less intelligent.

The research presented here reveals that, at least in consumer products, valuing looks is associated with higher intelligence. These results are counterintuitive with respect to both our lay-
What is the Intelligent Choice? Performance on the CRT and Preferences

theories about not “judging a book by its cover” as well as research
on CRT, system 1 versus System 2 processing, and design. But also,
these findings build on other work on both CRT and intelligence–
some of which is also presented in this session.

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