4-2019

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by

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Undergraduate honors thesis under the direction of

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Submitted to the LSU Roger Hadfield Ogden Honors College in partial fulfillment of the Upper Division Honors Program.

April 2019

Louisiana State University

& Agricultural and Mechanical College

Baton Rouge, Louisiana

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Abstract

As decision makers, we use cues (information from our environment) to inform our everyday judgement and decisions. However, time constraints, a common limitation to decision making, can alter the way we use these cues. This study evaluated the effects of time constraints on academic selection decisions using a prediction task developed to assess utilization of relevant and irrelevant cues. Participants were asked to predict the college GPA of 90 high school applicants based on their ACT score accompanied by a picture of the applicant. Participants were assigned to a time constraint condition where they viewed the applicant's profile in under a second, or they were assigned to a control condition where they viewed the profile with no time constraints. Results indicated that the presence or absence of time constraints did not affect accuracy of GPA predictions, or utilization of the irrelevant and relevant cues. Although there were no significant differences in cue utilization between conditions, there was still utilization of both the irrelevant and relevant cues. Usage of the irrelevant cue can have a negative effect on how people make academic selection decisions.

Keywords*: decision making; time pressure; cue utilization; Lens Model; attractiveness*

The Effect of Time Pressure on Cue Utilization in Academic Selection Decisions

Making decisions is an essential part of life. We use information from our environment (cues) to inform our daily decisions. College admissions officers, for example, have to decide who will be accepted into a university based on factors like academic background, extracurricular activities, and letters of recommendation. These factors serve as cues that will influence the final admission decision. Often, decision makers have limited time to consider each cue from the environment. Additionally, time constraints may lead us to misread or underutilize important cues when we make decisions. This can result in less than optimal decision making.

In real world settings, multiple cues are used when making decisions. Inadvertently, people may use irrelevant cues or place a greater weight on them when making decisions (Evans, Clibbens, & Harris, 2005). Reliance on irrelevant cues is not preferable when valid cues are present and can predict a particular outcome more accurately (Kausel, Culbertson, & Madrid, 2016). In the academic admissions context, using irrelevant cues (e.g., physical attractiveness, unstructured interviews) to inform decisions can be harmful to the selection process. Academic selection decisions include college admission decisions, as well as scholarship and grant selections. Using irrelevant cues to inform these decisions can result in picking a candidate whose qualities are less related to success or performance in a particular domain. It is important that valid cues are used in place of irrelevant cues in these decisions to optimize the candidate's fit for the position, as well as to ensure that candidates are evaluated fairly and objectively.

This study evaluated the effects of time pressure on cue utilization with respect to academic selection decisions. Factors such as GPA, ACT and/or SAT score, and letters of recommendation can be insightful cues of college competency. Similarly, these cues are important in making predictions about college performance. Ideally, valid cues such as GPA and

ACT score should be considered when making academic selection decisions. Valid cues are cues that are relevant predictors of certain outcomes. In academic settings, high school GPA and ACT score are strong predictors of college achievement (Kuncel & Hezlett, 2007). However, as fallible decision makers, we can be influenced by irrelevant cues. Irrelevant cues are not valid predictors of outcomes (Kausel, Culbertson, & Madrid, 2016). In this study, cue utilization was examined under time pressure to determine how cues, both irrelevant and relevant, are used in college GPA predictions.

Lens Model

One way research has examined how people use cues in decision making contexts is through research using Brunswick's Lens Model (Brunswick, 1943). The Lens Model is a framework to understand how decision makers use external cues to make decisions. The Lens Model can be broken down into 3 components: cues from the environment, judgment, and the outcome. A decision maker can achieve accuracy when their judgment matches the criterion from the environment (outcome) (Brunswick, 1943; Kausel, Culbertson, & Madrid, 2016). For example, a doctor may consider multiple cues such as patient's temperature, swelling of the throat, and throat pain when making an infection diagnosis. The cues may be differentially related to the objective reality. In reality, the patient's temperature may be highly related to infection; whereas swelling and throat pain are less so. The relationship between the cues and the objective reality (actual infection) is called *cue validity*. The decision maker (doctor) will make the diagnosis based on his or her observation of the cues. The degree to which each cue is weighted by the doctor is called *cue utilization (*or perception*).* This relationship is demonstrated in Figure 1. The lens model, therefore, can be used to understand relationships between cues in

the environment, how people utilize the cues, and how to use the cues correctly for certain judgments.

Decision makers do not always consider valid cues when making judgments. Past research using the Lens Model has expanded on this finding and found that using valid cues leads to greater accuracy when making decisions. Kausel, Culbertson, and Madrid (2016) presented participants with either interview ratings and standardized test scores or standardized test scores alone to predict future job performance. Standardized test scores (measured as general mental ability and conscientiousness) in this study are valid predictors of job performance, whereas unstructured interview ratings are not valid predictors. They found that participants that saw unstructured interview ratings (a non-valid predictor of job performance) were less accurate than the individuals that used test scores alone. This corroborates the finding that accuracy in decision making is best achieved through the utilization of relevant cues.

Judgments Under Time Pressure

Cue utilization is also affected by time pressure. Research has revealed that the presence of irrelevant cues can decrease the use of relevant cues under time pressure (Evans, Clibbens, & Harris, 2005). Evans and colleagues presented participants with 4 cues with either one or two cues being irrelevant. Each trial presented participants with a particular occupation, four personality characteristics, and a marker of fit for the occupation. Participants were shown a personality characteristic and then asked to use a marker to indicate whether that characteristic made a person a good fit or poor fit for the job. The relevant and irrelevant cues in this study were the personality characteristics. Relevant characteristics are predictive of performance in a certain occupation, whereas irrelevant characteristics are not predictive of performance. In the study, an example of a relevant characteristic for an air pilot was being a team worker, while an

irrelevant characteristic was being content. The researchers found that because irrelevant cues compete for attention with more relevant cues, irrelevant cues can have a stronger influence on decisions. The irrelevant characteristics caused less accurate judgments of fitness in the second experiment. Time pressure can also cause people to use fewer cues when making decisions. Rothenstein (1986) used a time pressured multi-cue learning simulation and found that cognitive control deteriorated under time pressure, thus resulting in less utilization of all cues. Hilbig, Erdfelder, Pohl (2012) found that judgments made under time pressure require less cognitive effort because of the utilization of heuristics. Research has also revealed that under time pressure, people serve their best interest. In a timed dice roll, Shalvi, Eldar, & Meyer (2012) found that people were more likely to lie about their dice roll outcomes for monetary gain. Time pressure can also lead people to over evaluate negative aspects of decisions (Svenson & Edland, 1987). Using apartment comparisons, they found that people's preferences for certain apartment features significantly changed with time pressure due to the overestimation of negative cues. In sum, past research suggests that when people are under time constraints, they do not utilize cues correctly.

Attractiveness

Attractiveness is a salient cue that influences how we make decisions. Research on attractiveness has demonstrated that across multiple domains, there is a bias for attractive people despite their lack of qualifications (Johnson, Podratz, Dipboye, & Gibbons, 2010; Lee, Pitesa, Pillutia, & Thau, 2015). Shahini, Dipboye, & Gehrlein (1993) found that attractive college applicants received higher admission interview ratings than unattractive applicants. Similarly, attractive candidates are considered more suitable for managerial positions. When given high school rank, college rank, GPA, major, and a picture of a candidate for a managerial position,

participants showed a significant suitability preference for attractive candidates over unattractive candidates (Dipboye, Fromkin, & Wiback, 1975). Physical attractiveness was weighted most heavily when selecting for jobs that involve interpersonal interaction (Quereshi & Kay, 1986). In their study, the authors examined suitability ratings for the following occupations: tax manager of a large corporation, post master, and vice principal of a high school. The appearance of candidates was found to be significant across all occupations. Despite these findings, some research suggests that attractiveness can be helpful in certain contexts, but detrimental in others. Johnson, Podratz, Dipboye, & Gibbons (2010) found that being attractive resulted in higher suitability ratings for men in traditionally feminine and traditionally masculine jobs. However, being attractive only resulted in higher suitability ratings for women in traditionally feminine jobs. Finally, Lee, Pitesa, Pillutia, & Thau (2015) concluded that the effect of attractiveness is multi-determined. When people are competing with a candidate for a position, they rate attractive candidates less suitable for the position. Therefore, being attractive can result in hiring discrimination in certain situations. Ultimately, in most selection decisions attractiveness tends to be an influential factor. Physical attractiveness, however, is not a valid predictor of job or academic performance, and selection decisions based on physical appearance may result in litigations due to the violations of Title VI, which prohibits employment discrimination on the basis of race, color, or national origin.

Present Study

The current study used a GPA prediction task to evaluate the effects of time pressure on cue utilization. Time pressure was manipulated to examine how irrelevant and relevant cues are utilized. Consistent with past research, I expected that under time pressure, fewer cues are utilized and irrelevant cues have a bigger influence on decisions than relevant cues (Evans,

Clibbens, & Harris, 2005; Rothenstein, 1986). The Lens Model was used to judge the accuracy of each participants' prediction. Lens model research concludes that valid cues lead to greater accuracy in decisions (Kausel, Culbertson, & Madrid, 2016). In sum, I hypothesized that:

Hypothesis 1: The picture of the applicant will be the most utilized cue in the time pressure condition.

Hypothesis 2: ACT score will be the most utilized cue in the control condition.

Hypothesis 3: Participants in the control condition will have the most accurate judgments.

Method

Participants

Participants were 124 undergraduate students (105 women) enrolled in Louisiana State University. The mean age for this sample was 19.35 years (SD= 1.54). The self-reported ethnicity of the sample was 69% Caucasian, 16% African American, 5% Hispanic, 6% Asian, 1% American Indian, 1% Native Hawaiian, and 3% unspecified. All students were recruited using the university SONA system, and were given extra credit in their psychology courses for their participation. All participants signed written consent forms.

Pilot Study

The purpose of the pilot study was to assess reaction time estimates. Data was obtained from 7 undergraduate volunteers. Each participant viewed the profile of the applicants and were then asked to provide the applicant's predicted college GPA. In order to determine how long the time pressure condition should view applicants' profiles, each participant's average reaction time was examined. The results suggested that the average reaction time was 1.5 seconds (SD= .62).

Therefore, it was determined that the time pressure condition should view the applicant profile for 1 second.

Design and Procedure

This experiment is a between subject designs with two levels. The variables manipulated were time pressure (time pressure vs no time pressure). Participants were asked to predict an applicant's college GPA based off of two cues, one relevant and the other irrelevant. Each trial included the high school GPA of each applicant (relevant cue) and a picture of the applicant (irrelevant cue). Attractiveness varied in the pictures based off of ratings of 1-5 made from the Chicago database of faces. Participants were then prompted to provide GPA predictions based off of the cues provided. Figure 2 shows an example of an applicant profile. Participants in the time constraint condition were instructed to make their prediction in 1 second. The control condition did not have time constraints.

Manipulation Check

The control condition (M= 1.78, SD=.32) spent more time viewing to stimulus relative to the time constraint condition (M= 1.39, SD=.27), $t(124)= 14.95$, $p < 0.001$. Most participants completed their predictions in under 1.5 seconds.

There was a total of 90 trials for each participant. The instructions for the time constraint condition read: "In this experiment, you will be asked to predict college applicants' potential college GPA based on their high school ACT score. College GPA is positively correlated to ACT scores. When each applicant's profile appears with their information, please enter a prediction for their GPA on the screen that follows. Please review each profile carefully. There will be a set of practice trials before the actual experiment." The instructions for the time constraint condition read: "In this experiment, you will be asked to predict college applicants' potential college GPA

based on their high school ACT score. College GPA is positively correlated to ACT scores. When each applicant's profile appears with their information, please enter a prediction for their GPA on the screen that follows. Do not take longer than one second to view the profile. There will be a set of practice trials before the actual experiment." After completing 90 trials, participants completed an electronic questionnaire evaluating participants' experience and numeracy, an individual's ability to correctly process mathematical information (Cokely et al., 2012).

Materials

The prediction task was developed using Open Sesame (http://osdoc.cogsci.nl/), which is a free and open-source software for creating psychological experiments.

ACT scores and their subsequent college GPAs were obtained from deidentified archival data gathered from LSU students. The Chicago Database of faces was used to provide the pictures for the task. The Chicago Database is a normed database of faces that categorizes images of people into various ratings based on attractiveness, facial expression, trustworthiness, etc. It consists of 597 pictures of males and females of varying ethnicities (Ma, Correll, & Wittenbrink, 2015). This study used 155 pictures of people whose attractiveness ratings varied from 1-5. Race and gender of the pictures used in the study were controlled so that these factors mimicked the general population.

For exploratory purposes, I measured individual differences in subjective numeracy using a subjective numeracy scale (Appendix A, Fagerlin et al., 2007). Subjective numeracy measures beliefs about one's numeracy skills and their preferences for working with numbers.

Results

Brunswick's lens model was used to examine how participants utilized each cue presented in the trials, and to assess the accuracy of each participant's prediction. Judgement accuracy, or Correspondence, is a measure of the accuracy of each participant's GPA prediction compared to the correct, corresponding GPA. Judgement accuracy was calculated by regressing the correct college GPA onto the participant's predicted GPA. This was done for every participant across all 90 trials.

Cue Utilization

Cue utilization, the influence that each cue has on the prediction, was calculated by correlating participants' GPA predictions onto the irrelevant (attractiveness of the applicant) and relevant (ACT score) cues across all the trials. Figures 3 and 4 illustrate distribution of cue utilization for ACT score and attractiveness respectively. Figure 3 indicates that most participants used ACT score heavily to inform their GPA prediction ($M = .69$, $SD = .26$). Figure 4 indicates that participants used the attractiveness of the applicant to inform their prediction, even though the utilization is minimal ($M = .13$, $SD = .10$), which is significantly different from zero, $z = 7.30$, $p < 00001$.

Means and standard deviations for each test can be found in Table 3. The first hypothesis predicted that the irrelevant cue would be the most utilized cue in the time constraint condition. An independent samples t-test did not support this finding. There was no significant difference in irrelevant cue utilization between the control condition and the time constraint condition, $t(124)= .89$, $p=.38$. The second hypothesis predicted that the relevant cue would be the most utilized cue in the control condition. However, the control condition did not use the relevant cue significantly more than the time constraint condition, $t(124) = -0.18$, $p=.86$. Finally, participants

in the control condition did not differ in correspondence from the time constraint condition, t(124) = -1.11 , p=.27. Therefore, none of the hypotheses were supported.

Participant's average response time, the amount of time it took participants to enter a GPA prediction, was correlated with each lens model parameter tested in the hypotheses above. There were no significant correlations between response time and utilization of the relevant and irrelevant cue. Similarly, the correlation between response time and correspondence was not significant. The correlations and test values can be found in Table 4.

Exploratory Analyses

Gender and Numeracy. Gender was explored to assess how it factored into correspondence and cue utilization. Men (M=.63, SD=.33) and women (M=.70, SD=.24) did not significantly differ in their utilization of the ACT scores, t(124)= -0.66 , p=.38. Likewise, men (M=.11, SD=.09) and women (M=.13, SD=.10) did not differ in their utilization of the attractiveness, t(124)= -0.90 , p= .51 Lastly, men (M=.19, SD=.17) and women (M=.20 , SD=.11) did not differ on correspondence, t(124)= -0.52, p=.61.

Numeracy skills were also explored to assess how they factored into cue utilization and correspondence. A regression analysis revealed that numeracy significantly predicted correspondence (β = .26, p =.004) f(1,119)= 8.48, p= .004. However, numeracy did not significantly predict utilization of ACT score (β = .14, p = .11), f(1,119) = 2.53, p=.11.

Discussion

The first two hypotheses predicted that participants in the time constraint condition would use the irrelevant cue to inform their predictions, while participants in the control condition would use relevant cue. Neither of these effects were found, as participants used ACT score the most to inform their predictions. The strong utilization of ACT score could be due to

the influence of the instructions on participants. All participants were instructed that college GPA is positively correlated to ACT score. Reporting that relationship in the instructions may have caused participants to use the relevant cue more. Interestingly, both conditions used the picture of the applicant to a minimal extent. Figure 3 demonstrates that the sample did not use ACT score perfectly to make GPA predictions, and the utilizations that are weaker than 1.0 indicate that the picture was also being used to inform predictions. Attractiveness of the candidates in the pictures was the cause for this utilization. The positive cue utilization values for attractiveness of the applicant indicates that participants were rating more attractive applicants as having a higher predicted GPA (Figure 4). Additionally, information that people read from a face can provide information about the target and change the interpretation of relevant information (Hassin & Trope, 2000). The influence of attractiveness of the candidate caused participants to use ACT score less in some instances. The third hypothesis predicted that participants in the control condition would have higher correspondence scores, but these results were not found. This hypothesis was formed on the assumption that the control condition would use ACT score more, thus producing the most accurate predictions. Both conditions used ACT score more heavily which explains why the conditions did not differ in correspondence. Additionally, numeracy significantly predicted correspondence. This finding suggests that having subjective numeracy skills caused participant's GPA predictions to be more accurate. Participant's accuracy can be explained by the fact that possessing numeracy skills assists people in making better predictions about everyday decisions and risks (Cokely et al., 2012).

Although this study found no significant effects of time pressure, it is noteworthy that participants utilized the irrelevant cue (attractiveness of the applicant) to a small extent. However, participants used ACT score to inform their predictions more than they used the

picture of the applicant. Strong utilization of the relevant cue, the cue that predicted academic performance, corroborates the finding that valid cues lead to more accurate predictions (Kausel, Culbertson, & Madrid, 2016). Utilization of the irrelevant cue caused participants to use the relevant cue less in some instances. This is consistent with past findings that state the presence of irrelevant cues lessen the use of relevant cues (Evans, Clibbens, & Harris, 2005).

Limitations

There were no significant gender differences between cue utilization or correspondence. Women made up 85% of this sample so sex differences weren't present because of this overrepresentation. Another limitation is the generalizability of the prediction task itself. It could be argued that people will never use a task to predict GPA or have such a short period of time to make selection decisions. While a prediction task is not likely to be used in a selection process, it is a methodologically sound way of measuring impressions formed by a brief viewing of an application. It only takes a tenth of a second for people to form impressions based on a picture of a face, and these subjective impressions are directly related to admissions decisions and affect evaluations of candidates (Willis & Todorov, 2006; Graves & Powell, 1988). Additionally, the time constraints used in this study may not mirror real life decisions, but it still likely that people will have to make important selection decisions in a short period of time. Regardless of time constraints, utilization of a picture of an applicant, an irrelevant cue, may still cause issues related to selection decisions.

Implications

This study found that participants do use irrelevant cues minimally, even when given instructions that explicitly state how to use cues. This could implicate that when presented with a picture of an applicant and other relevant cues, people may still be influenced by the

attractiveness of the pictured candidate. Attractiveness has only been found to be a useful asset for job selections that involve interpersonal interactions and is not a valid indicator of competency in academic settings (Quereshi & Kay, 1986). Therefore, it is important that people that make academic selection decisions always remain mindful of the subconscious influence that attractiveness can have on their judgements. The consequences of being influenced by attractiveness could result in not evaluating an applicant's accomplishments fairly or choosing a person that is not qualified for the position.

Future research could examine the effects of more realistic time constraints on a generalizable population since it is not likely that college students will be making academic selection decisions. Also, the extent of effect of attractiveness on candidates could be assessed using an irrelevant cue that can be used in field settings. While pictures of an applicant may have a minimal impression on people's judgements, pictures typically do not accompany applications. Using a video of an interview or an actual face to face interview may serve as a generalizable, irrelevant cue.

Conclusion

Academic selection decisions are made on a daily basis to admit people into college programs and to grant scholarships. The personnel that makes these decisions are knowledgeable of which attributes of a candidate are considered important and which attributes should be ignored. Despite knowing what to ignore, this study found that even when people are instructed to use a valid cue, they may still be susceptible to the influence of attractiveness of candidates. Admission officers need to remain aware of the subconscious influence of attractiveness on judgements so that they can evaluate candidates without bias.

References

Brunswik, E. (1943). Organismic achievement and environmental probability. *Psychological Review*, 50, 255–272.

Cokely, E. T., Galesic, M., Schulz, E., Ghazal, S., & Garcia-Retamero, R. (2012). Measuring risk literacy: The Berlin Numeracy Test. *Judgment and Decision Making.*

De Dreu, C. W. (2003). Time pressure and closing of the mind in negotiation. *Organizational Behavior And Human Decision Processes*, 91(2), 280-295. doi:10.1016/S0749-5978(03)00022-0.

Derous, E., Buijsrogge, A., Roulin, N., & Duyck, W. (2016). Why your stigma isn't hired: A dual-process framework of interview bias. *Human Resource Management Review*, 26(2), 90-111. doi:10.1016/j.hrmr.2015.09.006

Dipboye, R. L., Fromkin, H. L., & Wiback, K. (1975). Relative importance of applicant sex, attractiveness, and scholastic standing in evaluation of job applicant resumes. *Journal Of Applied Psychology*, 60(1), 39-43. doi:10.1037/h0076352

Evans, J. T., Clibbens, J., & Harris, A. (2005). Prior belief and polarity in multicue learning. *The Quarterly Journal Of Experimental Psychology A: Human Experimental Psychology*, 58A(4), 651-665. doi:10.1080/02724980443000133

Fagerlin, A., Zikmund-Fisher, B. J., Ubel, P. A., Jankovic, A., Derry, H. A., & Smith, D. M. (2007). Measuring Numeracy without a Math Test: Development of the Subjective Numeracy Scale. *Medical Decision Making*, 27(5), 672–680. https://doi.org/10.1177/0272989X07304449

Graves, L. M., & Powell, G. N. (1988). An investigation of sex discrimination in recruiters' evaluations of actual applicants. *Journal of Applied Psychology*, 73(1), 20–29. https://doi-org.libezp.lib.lsu.edu/10.1037/0021-9010.73.1.20

Hassin, R., & Trope, Y. (2000). Facing faces: Studies on the cognitive aspects of physiognomy. *Journal of Personality and Social Psychology*, 78(5), 837–852. https://doi-org.libezp.lib.lsu.edu/10.1037/0022-3514.78.5.837

Hilbig, B. E., Erdfelder, E., & Pohl, R. F. (2012). A matter of time: Antecedents of one-reason decision making based on recognition. *Acta Psychologica*, 141(1), 9-16. doi:10.1016/j.actpsy.2012.05.006

Johnson, S. K., Podratz, K. E., Dipboye, R. L., & Gibbons, E. (2010). Physical Attractiveness Biases in Ratings of Employment Suitability: Tracking Down the "Beauty is Beastly" Effect. *Journal Of Social Psychology*, 150(3), 301-318

Kausel, E. E., Culbertson, S. S., & Madrid, H. P. (2016). Overconfidence in personnel selection: When and why unstructured interview information can hurt hiring decisions. *Organizational Behavior and Human Decision Processes*, 13727-44. doi:10.1016/j.obhdp.2016.07.00

Karelaia, Natalia & Hogarth, Robin. (2008). "Determinants of linear judgment: A meta-analysis of lens model studies": Correction. *Psychological bulletin*. 134. 741. 10.1037/a0013550.

Kuncel, N. R., & Hezlett, S. A. (2007). Standardized Tests Predict Graduate Students' Success. *Science*, 315(5815), 1080–1081. https://doi.org/10.1126/science.1136618.

Lee, S., Pitesa, M., Pillutla, M., & Thau, S. (2015). When beauty helps and when it hurts: An organizational context model of attractiveness discrimination in selection

decisions. *Organizational Behavior and Human Decision Processes*, 12815-28. doi:10.1016/j.obhdp.2015.02.003

Quereshi, M. Y., & Kay, J. P. (1986). Physical attractiveness, age, and sex as determinants of reactions to resumes. *Social Behavior and Personality*, 14(1), 103-112. doi:10.2224/sbp.1986.14.1.103

Rothstein, H. G. (1986). The effects of time pressure on judgment in multiple cue probability learning. *Organizational Behavior and Human Decision Processes*, 37(1), 83-92. doi:10.1016/0749-5978(86)90045-2

Shahani, C., Dipboye, R. L., & Gehrlein, T. M. (1993). Attractiveness bias in the interview: Exploring the boundaries of an effect. *Basic and Applied Social Psychology*, 14(3), 317-328. doi:10.1207/s15324834basp1403_

Shalvi, S., Eldar, O., & Bereby-Meyer, Y. (2012). Honesty requires time (and lack of justifications). *Psychological Science*, 23(10), 1264-1270. doi:10.1177/0956797612443835

Svenson, O., & Edland, A. (1989). Change of preferences under time pressure: Choices and judgements. *Scandinavian Journal of Psychology* (pp. 225-236).

Willis, J., Todorov, A. (2006). First impressions: Making up your mind after a 100-ms exposure to a face. *Psychological Science*, 17(7): 592-598. doi: 10.1111/j.1467-9280.2006.01750.x

Table 1
Regression results for numeracy and utilization of ACT score

Predictor	*b*	*b* [95% CI]	*beta*	*beta* [95% CI]
(Intercept)	0.52**	[0.30, 0.73]		
Numeracy	0.04	[-0.01, 0.09]	0.14	[-0.04, 0.32]

Note. b represents unstandardized regression weights. *beta* indicates the standardized regression weights. * indicates $p < .05$. ** indicates $p < .01$.

Table 2
Regression results for numeracy and correspondence

Predictor	*b*	*b* [95% CI]	*beta*	*beta* [95% CI]
(Intercept)	0.06	[-0.03, 0.16]		
Numeracy	0.03**	[0.01, 0.06]	0.26	[0.08, 0.43]

Note. b represents unstandardized regression weights. *beta* indicates the standardized regression weights. * indicates $p < .05$. ** indicates $p < .01$.

Table 3.
Means and standard deviations for the hypotheses

	Time Pressure	Control	t-test
Cue Utilization (ACT)	0.69 (0.26)	0.68 (0.26)	t(124) = -.18
Cue Utilization (Attractiveness)	0.12 (0.11)	0.14 (0.09)	t(124) = .89
Correspondence	0.22 (0.11)	0.19(0.13)	t(124) = .27

Note. Group means are listed first. Standard deviations are in parentheses

Table 4.
Beta weights for response time and lens model parameters

	Beta Weight	t-test
Cue Utilization (ACT)	0.09	t(124)= 0.92
Cue Utilization (Attractiveness)	0.01	t(124)= 0.07
Correspondence	-0.06	t(124)= -0.6

Figures

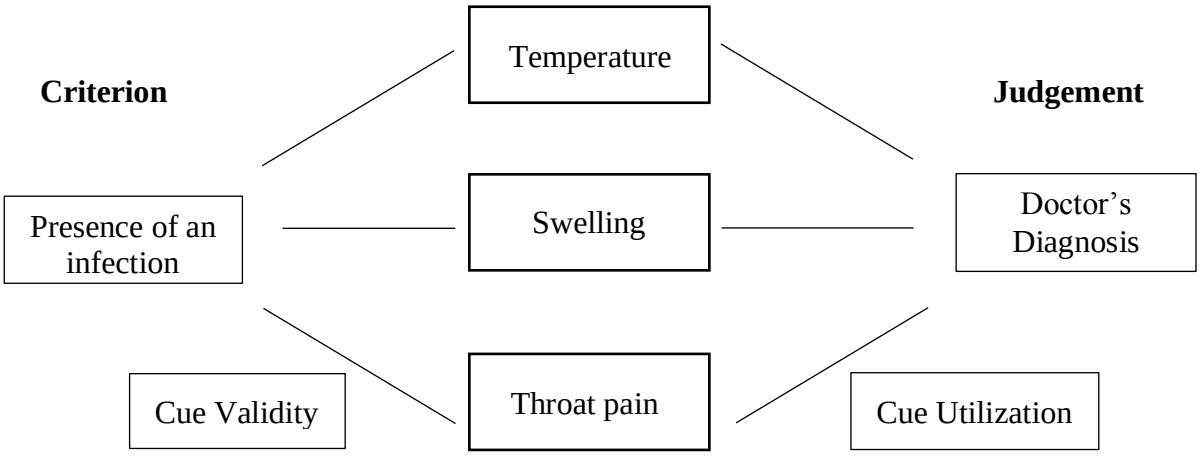


Figure 1. A Len's model illustration of the relationship between judgments, cues, and the criterion.

Figure 2. An example of a trial in the prediction task.

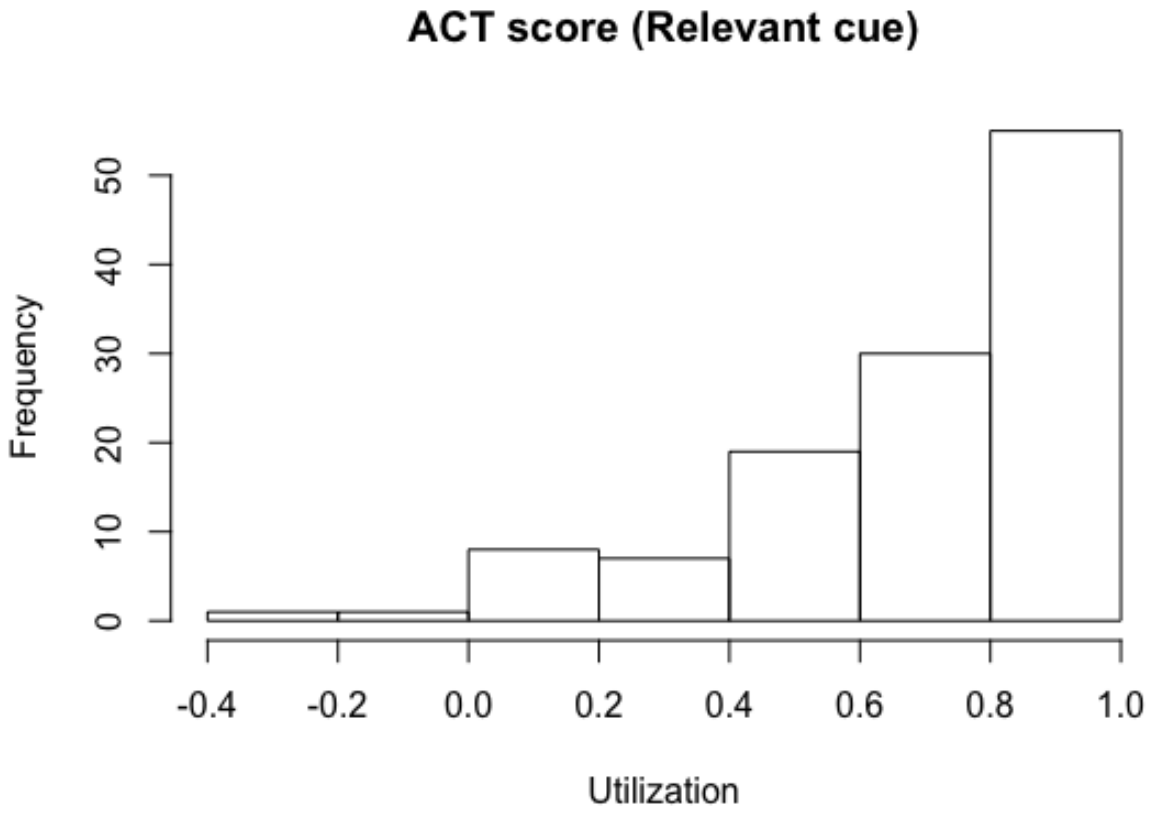


Figure 3. This histogram demonstrates that participants used ACT score heavily to inform their prediction.

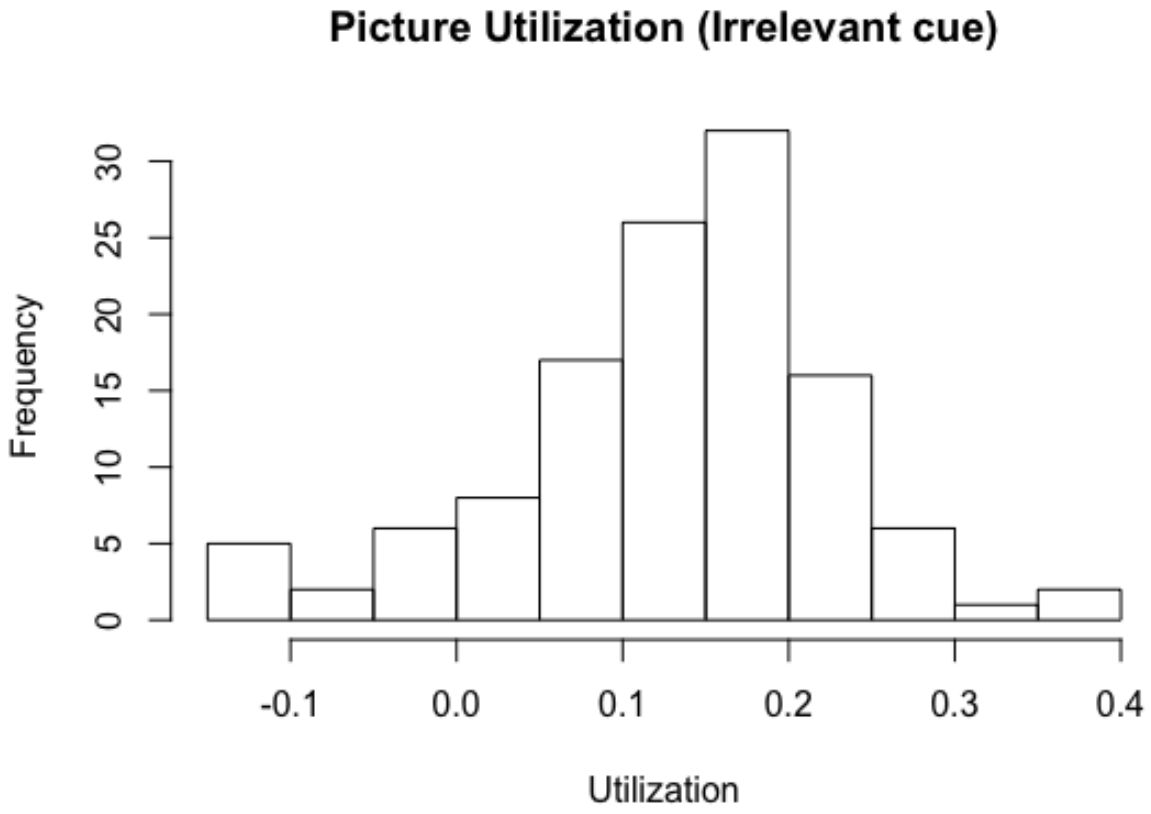
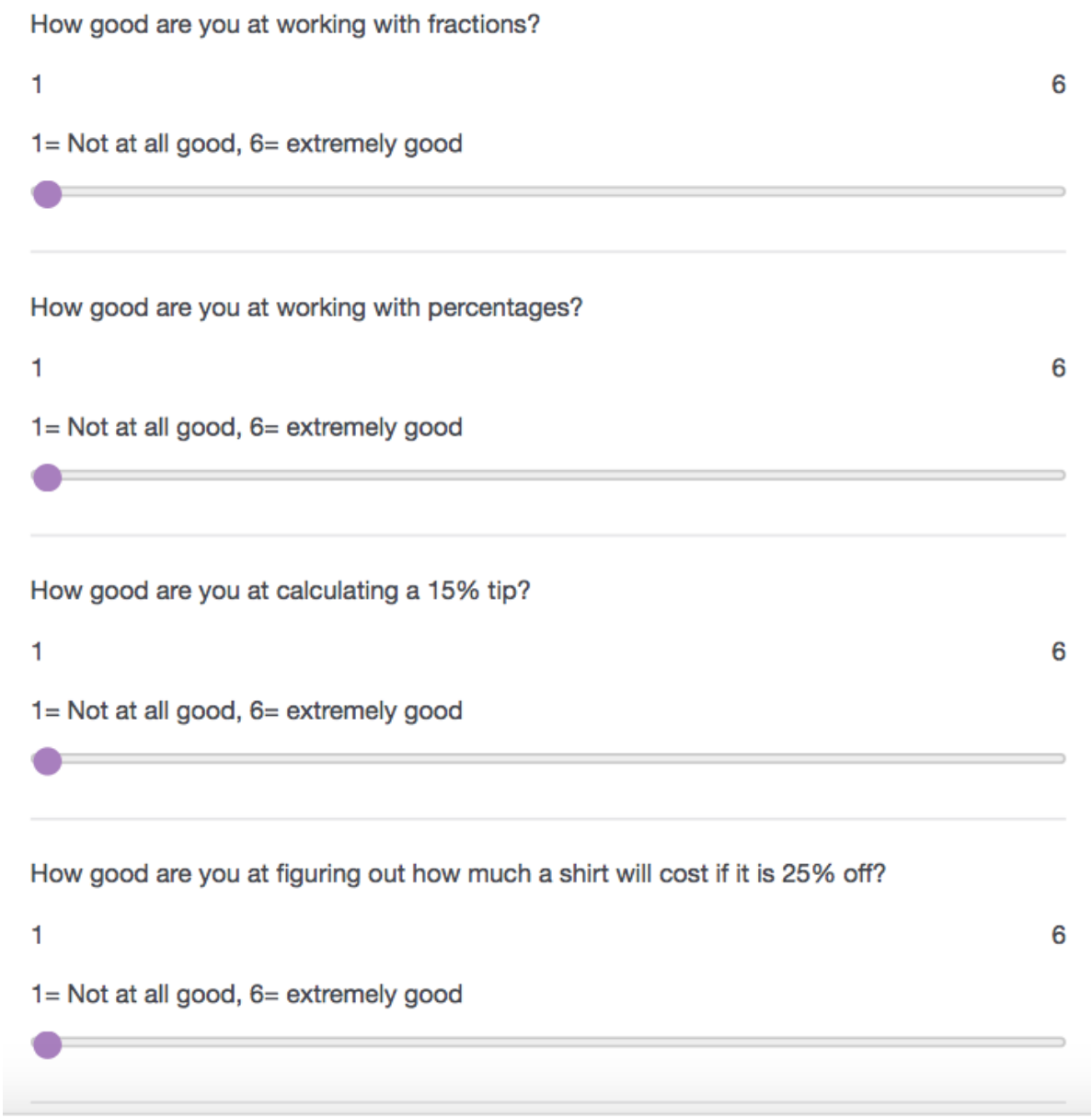


Figure 4. This histogram demonstrates that participants used the picture of the applicant to inform their GPA prediction.

Appendix

Numeracy items assessed in the electronic questionnaire.



When reading the newspaper, how helpful do you find tables and graphs that are part of the story?

1 6

1= Not at all helpful, 6= extremely helpful

When people tell you the chance of something happening, do you prefer that they use words ("It rarely happens") or numbers ("There's a 1% chance)?

1 6

1= Always prefer words, 6= Always prefer numbers

When you hear a weather forecast, do you prefer predictions using percentages (e.g., "There will be 20% chance of rain today") or predictions using only words (e.g., "There is a small chance of rain today")?

1 6

1= Always prefer percentages, 6= Always prefer words

How often do you find numerical information to be useful?

1 6

1= Never, 6= Very Often