Stoic and Emotional Perspectives in Decision-Making

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ABSTRACT

This article describes an exploratory study that applies a technique for measuring emotional reactions and an analytic model that reveals the influence those emotions have on a decision. The model allows the level of emotional influence to be varied so that a Stoic perspective can be modeled and then modified by increasing levels of emotional influence. The results reveal how individual preferences change as emotions play a greater role in a decision. The research offers new insight on the influence of emotions in decision-making and suggests a pedagogical exercise that promotes classroom discussion of this important issue.

The role of emotions in decision-making has been explored by others and has revealed that both immediate emotions, those present at the time of the decision, and expected emotions, those expected to result from the decision, effect which course of action will be taken (Lowenstein). In a large study of purchase intent (n=23,160) Morris and others discovered that emotions play a dominant role in consumer decisions regarding selection of restaurants, apparel, automobiles, telephone services, banking and oil companies. Their work suggests that as much as two-thirds of the decision-making process is driven by affect (Morris).

It could be argued that some decisions such as the selection of personal products such as apparel may legitimately include satisfaction of emotional desires; it is fair to ask, however, if other decisions should be made as cognitive efforts with largely-unchecked emotional influences. Should emotions influence decision-making in a business environment? Is a better course of action chosen when selected unemotionally or do emotions contribute to making a better decision? These questions can only be addressed if we separate a decision into its cognitive and emotional components and see the influence emotions have on a strictly cognitive decision.

BACKGROUND

Stoic philosophy provides the conceptual foundation and specific guidance for this study. Stoic views of how "the passions" influence judgment are well documented and the words of Zeno, Chrysippus, Aristotle, Epictetus and Seneca can be taken as advice- long neglected- as to how emotions should influence decision-making. According to Russo (2000), "When the ancient Stoa speak of the passions; they (1) connect them with judgment and beliefs, (2) imply that these judgments are by their very nature incorrect, (3) acknowledge

that assent given to these faulty judgments creates an excessive impulse in the soul that goes contrary to reason, and hence, (4) believe that all passions are an impediment to virtue". What the stoics advocated was a rational-cognitive approach to decision-making. What we practice in business today is decision-making laden with unacknowledged emotional influences. The nature and extent of this influence needs to be known. Fortunately, if better decision-making is possible by limiting the emotional influences on our judgment, we have ample instructions from Stoics for guidance.

There are important variations on the Stoic philosophy. Zeno of Citium (334 B.C.), often cited as founder of the Stoa, placed virtue above all else to such an extent that external goods, such as wealth, health, and friendship were simply unimportant. Aristotle valued these externals as "good' including noble birth, numerous friends, good children and health, beauty, and strength. Seneca adopted a "middle stoic" view considered more practical by many and directed attention to how one judges such things. He held that the passions should be kept at bay to avoid misjudgment. "Reason herself, to whom the reigns of power have been entrusted, remains mistress only as long as she is kept apart from the passions: if once she mingles with them and is contaminated she becomes unable to hold back those whom she might have cleared from the path" (Seneca).

Here, then, is advice on decision-making from the Stoics; they insist that emotions be avoided. Epictetus warns us: "Vivid impressions invite one to imagine foreseeable pleasures and that occludes the rational faculties" and that "proper testing of impressions will enable a person, in time, to judge correctly the worth of each object". The potential merits of Stoic philosophy have not been lost. Halowchak (2007) advocates that the stoic approach to knowing the world is as timely today as anytime in the past and advocates that it be adopted as a model in higher education. Toward that end he provides a set of "Epistemological Curatives" summarized largely from the works of Epictetus to guide decision-making.

MEASURING EMOTIONS

Emogram is an interactive computer program which has been developed to measure emotional responses. The measures it provides have been validated in various doctoral research dissertations (Mudge, McGinnis), it has been used in other doctoral studies to measure the efficacy of EMDR treatments (Capps), and counselor responses to domestic violence issues (Edralin). Emogram is an approved method for counseling by the counseling division of the Central Police of the Netherlands.

Developed primarily for clinical applications, Emogram uses a series of thirty-three facial-expression photographs which are consistent with the Facial Action Code (Ekman) and uses a set of basic emotions supported in the literature (Darwin, Izard, Plutchik, Shalif). The subject is asked to review the series of photographs and to respond by indicating the level of personal concordance with each image. The program then computes a score for each of eleven emotions along with certain indexes created by combining emotion scores in various ways.

Interpretations of the meaning for the emotions are context specific. For this reason Emogram can apply different knowledge bases to the emotion scores depending on the object of study. The interpretation of Fear, for example, is different when applied to the recall of a traumatic event, a workplace scenario, a product or a decision. Emogram can be used to test the emotions associated with anticipated events (Priesmeyer). It can, therefore, be used to identify the emotions associated with a given choice in a decision. When applied to decision-making, the meaning of each emotion can be described as shown in Table 1.

An Emotional Quality measure that reflects an individual's overall emotional state can be obtained by combining all these emotions mathematically. One will note that only the first three emotions in Table 1 are generally pleasant while the remaining eight are unpleasant. An Emotional Quality score (EQ) is created by computing the difference between an average of the first three emotions and an average of the remaining eight. The difference is then rescaled to a +100 to -100 scale. Scores above zero on the Emotional Quality scale indicate positive emotional states in which the first three emotions dominate while scores below zero indicate an overall negative emotional state that is unpleasant to the individual.

Because the immediate emotions of individuals differ considerably, emotional responses are determined by measuring the difference between a baseline assessment of the emotions and an assessment after exposure to the stimulus under study. It is the change in the emotions that occurs from the pre-test to the post-test that is of interest. The changes in the Emotional Quality scores for test subjects provide the metrics for testing various hypotheses about the influence of emotions on otherwise strictly-cognitive product evaluations.

	Emotional implications for Decision-Making
Happiness	The choice is congruent with decision-maker's desires
Interest	Decision maker seeks additional information
Surprise	The choice is associated with something unexpected
Disgust	The choice is offensive and is to be avoided
Contempt	The choice is associated with blame of specific persons,
	places, or activities
Anger	The choice is associated with a desire to change or
	eliminate specific persons, places, or activities
Fear	The choice presents a specific, identifiable threat
Anxiety	The choice relates to multiple, non-specific threats that
	suggest ominous conditions or events
Shame	The choice relates to a belief of personal failures or
	shortcomings
Distress	The choice relates to vulnerability and a need for help
Sadness	The choice relates to an irretrievable loss and helplessness

Table 1Emotional Implications for Decision-Making

RESEARCH DESIGN

The following research design was approved by our Institutional Review Board and followed to collect the data. The sample for the study is ten students drawn from the undergraduate program at our institution. While small, this sample size is appropriate as the

study is mixed-method and the intent of this study is to explore the influence of emotions on decision-making rather than draw any conclusions regarding a larger population.

Subjects were asked to evaluate a product both cognitively and emotionally. The product used in this study is a diamond. The cognitive assessment involved measuring the diamond's objective qualities of cut, clarity, color and carat using a scale, loop, and color chart. The emotional assessment was made by administering a baseline Emogram test, introducing one of two different treatments, then administering a second Emogram so that changes in emotion scores could be computed. Treatment A consisted of giving the subject information regarding blood diamonds and then stating that the diamond they are examining is known to be a blood diamond. Treatment B consisted of giving the subject information regarding blood diamond. Results were shared with each subject after testing and notes were taken from each interview to provide qualitative results.

Hypotheses

Four hypotheses were proposed and tested in this study; they are provided below in their alternate form.

- Ha_{1:} The Emotional Quality (EQ) score for Treatment A will decline from a baseline score. (Ho=0/Ha<0).
- Ha_{2:} The Emotional Quality score for Treatment B will increase from a baseline score (Ho=0/Ha>0).
- Ha₃ The Absolute Value Change (AVC) in the Emotional Quality score for Treatment A will be greater than the AVC for Treatment B $(AC_{EQA}>AC_{EQB}).$
- Ha_{4:} The influence of emotions on the cognitive assessments will differ by subject for both Treatment A and Treatment B $(EQ_n <> Eq_{n+1} <> EQ_{n+2} <> EQ_{\dots}).$

Hypothesis 1 proposes that the subjects' Emotional Quality scores will decline upon learning that the diamond under examination is a blood diamond. Hypothesis 2 proposes that the certificate offering assurance that the diamond was mined under approved methods would cause the Emotional Quality scores to increase relative to their pretest values. Hypotheses 3 anticipates that the absolute value changes resulting from Treatment A (the blood diamond) will be greater than those resulting from Treatment B (the certification). Finally, Hypothesis 4 predicts significant differences between subjects in both groups.

Payoff Matrix Analysis

The cognitive assessment values and the Emotional Quality scores are combined using a standardized payoff matrix. The matrix is a common payoff matrix with one additional step to make data of different scales comparable (see Table 2). The first row of data in the Data Matrix is the weight of each criterion. The example shows 12.5 percent weight each for Color, Cut, Clarity and Carat. Fifty percent weight is given to the Emotional Quality score; that affords half the weight to objective criteria and half the weight to emotions. The scores for each subject are given on the rows labeled A, B, C, and D.

The standardized matrix is derived by computing the absolute value total of each column in the Data Matrix and then computing each individual score as a percent of the column total. This results in all data being comparable despite not being of the same scale (or sign) in the original Data Matrix.

Data Matrix					
Criteria →	Cut	Carat	Clarity	Color	ΔEmotions
Weights→	12.5	12.5	12.5	12.5	50.0
А	5	1.35	4	5	-57.60
В	5	1.39	5	5	-29.80
С	5	1.30	9	5	30.25
D	5	1.25	7	4	-0.40
E	5	1.35	5	4	-32.59
∑ABS(x)=	25	6.64	30	23	150.64
Standardized I	Matrix				
Α	0.20	0.20	0.13	0.22	-0.38
В	0.20	0.21	0.17	0.22	-0.20
С	0.20	0.20	0.30	0.22	0.20
D	0.20	0.19	0.23	0.17	0.00
E	0.20	0.20	0.17	0.17	-0.22
Contribution M	latrix				
Α	2.50	2.54	1.67	2.72	-19.12
В	2.50	2.62	2.08	2.72	-9.89
С	2.50	2.45	3.75	2.72	10.04
D	2.50	2.35	2.92	2.17	-0.13
E	2.50	2.54	2.08	2.17	-10.82

Table 2
Payoff Matrix with Cognitive and Emotions Criteria

The Preference Scores for each individual are then computed by multiplying the standardized scores by their corresponding criteria weights then totaling the rows in the Contribution Matrix. The result is a set of Scores that indicate the relative merit given by each subject when considering both the cognitive criteria and the emotional responses. A primary advantage of this method is that it provides the ability to change the relative weight of the criteria. By applying all the weight (i.e., 100%) to the objective criteria one can compute scores representing assessment with no emotional influence. By gradually increasing the weight of the emotions criteria while reducing that of the objective criteria one can produce assessment scores at various levels of emotional influence. The resulting Preference Curves reveal how an individual's decision-making is altered by emotional influences.

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RESULTS

Results are presented below for the Emogram tests of basic emotions scores, the hypotheses tests and the Preference Curve analysis. Qualitative results are also presented based on the interviews with each subject.

Basic Emotions Scores

The changes in emotions for individuals in the blood diamond group are shown in Figure 1. Note the strong decrease in Happiness and the increases in Shame, Distress, Anxiety and Sadness.

Figure 1 Change in Emotion Scores for Subjects with Decreased Emotional Quality in Response to Blood Diamonds



Table 3 provides the changes in emotion scores for each subject in each of the two groups. When the group means of the blood diamond group are compared to the emotional responses of those in the "Certified Diamond" group three significant differences appear. The measures for Anger (p-value= 0.03), Distress (p-value= 0.04) and Sadness (p-value= 0.01) are all significant with the direction being greater for the blood diamond group.

 Table 3

 Test of Significance between Emotional Responses in Blood Diamond and Certified Diamond Groups

"Blood Diamond" Group	HAPPINESS I	NTEREST	SURPRISE C	ONTEMPT	DISGUST	SHAME	FEAR	ANGER I	DISTRESS	ANXIETY	SADNESS	E-QUALITY
Changes in Scores												
Α	-2.7	-0.5	0.5	0.5	1.1	2.8	1.7	1.3	3.0	2.6	3.0	-57.6
В	-1.2	-1.7	0.0	0.2	0.0	-0.1	-0.2	0.5	0.4	2.0	1.5	-29.8
с	0.8	0.7	3.0	0.5	0.0	-0.9	0.5	0.0	-0.2	-0.2	0.2	30.3
D	0.5	0.5	0.2	-0.7	0.2	2.4	-0.1	0.2	0.8	-0.5	0.9	-0.4
Ε.	-2.8	1.2	0.9	2.7	0.5	1.6	0.5	0.7	2.1	0.3	3.0	-32.6
Mean	-1.1	0.0	0.9	0.6	0.4	1.2	0.5	0.5	1.2	0.8	1.7	-18.0
"Certified Diamond" Group												
Changes in Scores												
F	0.3	-1.5	0.0	0.0	-0.5	-0.7	0.0	0.0	-2.2	-0.9	-1.5	6.6
G	0.5	-0.8	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.5	0.0	-6.0
н	0.5	-0.7	0.7	-0.7	0.2	-1.0	0.0	0.2	0.0	-0.5	-0.5	8.9
1	-0.5	-0.5	0.0	0.0	0.0	0.8	0.2	-0.2	-0.2	-0.5	0.0	-6.4
	1.5	-0.9	-0.5	0.0	0.0	0.7	-0.2	0.0	0.7	0.6	0.6	-5.3
Mean	0.4	-0.9	0.0	-0.1	0.0	0.1	0.0	0.0	-0.4	-0.2	-0.3	-0.5
Difference (CD-BD Groups)	1.5	-0.9	-0.9	-0.8	-0.4	-1.0	-0.5	-0.5	-1.5	-1.0	-2.0	17.6
p-values	0.06	0.07	0.09	0.12	0.06	0.12	0.11	0.03*	0.04*	0.1	0.01**	0.16

Hypotheses Testing

Two of the four proposed hypotheses were supported with significant results (see Table 4). Hypothesis 1 which anticipated a decrease in Emotional Quality scores from the baseline Emogram test to the post-test within the Blood diamond group was not significant (p=.168). This is largely due to the increase in emotional quality of two subjects ("C" and "D", see qualitative results for a discussion of these two subjects). Similarly, individual differences in response to the certified diamond resulted in Hypotheses 2 not being supported (p=.46). Though subjects were provided a certification document and assured that the diamond was certified, the topic of blood diamonds and the thought that some diamonds are blood diamonds resulted in lower post-test scores within the certified diamond group. This result suggests that the certificate may actually serve to remind individuals of the blood diamond issue and reduce the overall desirability of a diamond product. Hypothesis 3 proposed that the absolute values of the Emotional Quality scores for the blood diamond group would be greater than those of the certified group reflecting the belief that the blood diamond would have a greater emotional impact than the certificate. A t-test of the absolute values of the changes in the Emotional Quality scores between the two groups was significant supporting this belief (p=.038).

Table 4
Baseline Scores, Post-Test Scores and Absolute Values
Of Changes to Compute Hypotheses Tests

	Blood Di	amond	Certified	Diamond	Absolute Values∆		
Subjects	Baseline	Post-test	Baseline	Post-test	BD	Certified	
1	30.29	-27.31	31.27	37.84	57.60	6.57	
2	38.72	8.92	33.47	27.45	29.80	6.02	
3	32.20	62.45	38.86	47.74	30.25	8.88	
4	40.49	40.09	34.60	28.18	0.40	6.42	
5	22.00	-10.59	21.02	15.68	32.59	15.51	
Mean	32.74	14.71	31.84	31.38	30.13	8.68	
p-value	$_{\text{Ha-1}}$	0.168	Ha-2→	0.464	Ha-3→	0.038*	

Finally, hypothesis 4 proposed that the emotional reactions for individual subjects in each group would differ. This hypothesis was tested by comparing the variances of all subject's Preference Scores with no emotional weight to the variance of Preference Scores with 100 percent emotional weight. An F-test provided a significant p-value of .000 supporting this hypothesis.

Preference Curves

Table 5 provides results for the Preference Curve analysis. Each row provides the scores for each subject using different weights for the emotions criterion. Examining the values in each row reveals how an individual's assessment of the product changes with increasing influence of the emotions criteria. The first column in Table 5 represents an entirely stoic perspective toward the product with all weight given to the objective cut, color, clarity, and carat criteria and no weight given to the emotional responses solicited by the blood diamond issue. Note the decline in mean scores for each group as weight is added to the emotional criteria.

"Blood Diamond" Group	Weights→	0%	10%	25%	50%	100%
	Α	18.9	13.1	4.6	-9.7	-38.2
	В	19.8	15.9	9.9	0.0	-19.8
	С	22.8	22.6	22.1	21.5	20.1
	D	19.9	17.9	14.8	9.8	-0.3
	E	18.6	14.6	8.5	-1.5	-21.6
	Mean	20.0	16.8	12.0	4.0	-12.0
"Certified Diamond" Group	D					
	F	24.2	23.7	23.1	22.0	19.8
	G	18.8	15.1	9.6	0.3	-18.1
	н	23.6	23.9	24.4	25.2	26.7
	I	16.0	12.5	7.2	-1.6	-19.3
	J	17.4	14.0	9.0	0.6	-16.1
	Mean	20.0	17.9	14.6	9.3	-1.4

Table 5 Preference Scores for all Subjects by Group with Increasing Weight of the Emotions Criteria

Graphical depictions of the preference curves for the blood diamond group and the Certified Diamond Group are provided in Figures 2 and 3. Note the consistency of the Preference Scores when no weight is given to emotions and the differences in preference as higher levels of emotional influence are introduced. A vertical line is provided at 67 percent emotional weight mentioned earlier to signify the level of importance typically allocated to emotional aspects of a decision. One can also note where each preference curve crosses the zero value on the vertical axis as that position reveals the level of emotional involvement that causes the product to transition from preferred (with a positive preference score) to not preferred (with a negative preference score).



Figure 2 **Changes in Preference Scores for Blood Diamonds with**

Proportion of Emotions Weight to Cognitive Weights



Qualitative Results

During the testing procedure notes were taken by an observer who recorded each subject's reactions and comments. Those notes provide an insight into the subjects' differing emotional responses. They reveal that most of the subjects who were told the diamond was a blood diamond demonstrated clear expressions of distress. Some subjects put the diamond down and three out of five individuals voluntarily disclosed feelings of sadness and anger towards the diamond. Their comments included;

"I heard of this issue and reading the passage fueled the feelings." "It makes me sad for the children." "It's shocking that this is happening." "It makes me ashamed that people would do this."

All the individuals had a genuine interest in knowing if they had been able to grade the diamond appropriately based on the objective criteria of cut, carat, clarity and color. They became more cautious when asked to read the passage about blood diamonds and to consider owning the diamond. When presented with the Emogram results and asked to share their thoughts they readily adopted the role of owning the diamond. Subjects used the pronouns I, my, me, and mine several times when describing how they would feel owning the diamond.

Two subjects showed little reaction to the diamond being designated as a blood diamond. The first subject ("C") exuded an admiration for the diamond at the first stage of the experiment. After reading the blood diamond passage and reviewing the results of the emotion testing, she shared no feelings of sadness or shame. There was constant excitement as the debriefing took place. The words of the subject were, "It would make me happy wearing the diamond." This subject answered "No" when asked if the blood diamond reading

made any impact on feelings of owning the diamond. Note the nearly flat emotional response for "C" in Figure 2.

Another subject with little reaction to the blood diamond had a political view on the situation. He confirmed he had read about blood diamonds before the experiment and that he believed the blood diamond situation was caused by governmental actions. He stated that he was from Nicaragua and mentioned that while there was some shame for him to consider owning the diamond, he was willing to it. He stated "You just don't ask where it came from." See the emotional response for subject ("D") in Figure 2.

DISCUSSION

Two of the hypotheses tested in this study provide some basic insight into how people respond to emotionally-laden choices; (1) individuals respond more profoundly to negative issues than they do to positive ones and, (2) the emotional responses of individuals differ significantly. Equally interesting is the fact that the other two hypotheses tested were not significant. These anticipated the direction of emotional response to negative and positive issues. They were not significant because of the degree of individual differences. Together, these results reinforce what one might expect, that there are significant differences in the way individuals respond emotionally even when the nature of the issues would appear to make such responses predictable.

In this study we were able to show how a cognitive, Stoic perspective is altered by emotions. The Stoa deemed this emotional influence contrary to reason and an impediment to virtue admitting that emotions altered one's perspective but only clouded one's reason. However, one can ask whether a decision should be based solely on reason. Clearly, emotional responses provide some type of information, proof of that is provided by the fact that preferences change when one includes emotional influences to greater or lesser degrees. One can argue that it is better to include more information rather than less when making a decision; perhaps the question is not whether emotions should play a part in decision-making but rather how the information in emotions should be included. For example, a sense of Fear when considering a course of action should, perhaps, evoke a deliberate exploration into the nature and veracity of the threat that prompted the Fear response. In a similar way, each of the other basic emotions can provide a unique insight into a decision as described in Table 1.

The Preference Curves in Figure 2 and 3 suggest it may be possible to classify individuals into categories based upon their emotional responses. For example, anhedonia is a condition in which an individual is unable to experience emotions. The condition is listed in the Diagnostic and Statistical Manual of Mental Disorders as an indicator of Major Depression (DSM IV). Individuals can be tested and then classified as having anhedonia. Subject "C" in Figure 2 may be an example of this type of nonresponse to emotion-provoking issues. Though unlikely to suffer from this disorder, the fact that he had essentially no emotional response to the blood diamond issue allows us to classify his response as "Anhedonic".

Similarly, Figure 3 suggests subjects "F" and "H" were reassured by the Kimberly Process certificate while Subjects "G", "I", and "J" associated the certificate with blood diamond

issues and had negative emotional responses to the certificate. The first two subjects might be classified as "Trusting" while the other subjects could be called "Dubious". Classifying individuals based on their emotional responses may be an idea worth exploring. We use demographic and psychographic categories to define consumer markets; perhaps individuals can be classified into different "emographic" categories.

This study also provides some insight into team decision making. Imagine the subjects in Figure 3 as individuals on a team charged with the responsibility of making a decision regarding the purchase of "Certified" diamonds. One can readily see their disagreements will depend on the degree to which they include their individual emotional responses in their decision making. At a purely rational level (the far left positions in Figure 3) they all have scores near 20 on the preference scale. As emotional considerations are increased the team members soon diverge into two groups, one which retains high preferences scores and another quite cohesive group that opposes the diamonds for emotional reasons. The disagreement among team members hinges entirely on emotional issues. Group one will make a rational argument to purchase the diamonds. Those in group two will associate the decision to purchase them with personal failure, vulnerability, and loss (see Table 1). Coming to an agreement will require these emotional responses be examined and included in the decision making process. Perhaps it is precisely these debates about emotional responses that allow us to make decisions that are acceptable to ourselves and to those who will judge us.

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