EFFECT OF INTERVAL BETWEEN TWO ESTIMATION TECHNIQUES ON THE SIMILARITIES AND DIFFERENCES AMONG GUILT AND SHAME

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ABSTRACT

The present study was designed to center around emotion measurement issues by line number estimations techniques and the relationship of guilt and shame emotions with appraisal dimension. Study made an attempt to identify the interval (0 interval and 24 hours interval) and emotion effect on line, number estimations. Data were collected from the U.G. students; subject has to respond on their past emotional experiences on the basis of appraisal dimension, by line and number estimation techniques. In-depth interview with respondents' generated descriptive data. The data were analyzed with the help of multivariate analysis of variance (MANOVA). In the present study effect of interval was found on appraisal dimension and line, number estimations. Emotions were inversely proportional to all variables. Differences are found in interval, higher differences are found in no interval condition. And the emotion condition is not effective for the subject responses, there were no differences found on any dimensions. The present study also found the one type of interaction effects, was not significant. Interaction effect of interval x emotion was not significant in any dimension. The findings of study have important implications for the measurement of emotions that how emotion measure in a better way by the magnitude scale. The research also shows the relationship of emotions with the appraisal dimensions.

KEYWORDS: Appraisal Dimensions, Guilt, Shame and Magnitude Estimation

INTRODUCTION

An emotion is a term for a mental and physiological state associated with a wide variety of feelings, thoughts, and behavior. Emotions are subjective experiences, or experienced from an individual point of view. Emotion is often associated with mood, temperament, personality, and disposition. Conceptions of human nature derive from beliefs about human emotion.

Emotions are rooted in appraisals. At the most general level, *emotion appraisals* involve evaluative judgments of whether an event is good or bad and whether people's current actions and environment correspond to their personal goals and expectations (Carver & White, 1994; Davidson, 2004; Higgins, 1997; Russell, 2003).

The study of emotion - eliciting appraisals, or the "meaning making" processes that give rise to different emotions (Clore & Ortony, 2008; Roseman, 1991, 1984; Roseman, Spindel, & Jose, 1990; Roseman, Wiest, & Swartz, 1994; Scherer, 1997; Scherer & Wallbott, 1994; Smith & Ellsworth, 1985), was the intellectual offspring of two literatures: (1) research on stress and health, particularly Lazarus's (1991) reframing of specific stresses as emotion appraisals, and

(2) the study of attribution, achievement motivation, and emotion (Weiner, 1985) and its documentation that successes and failures could lead to different emotions depending on how outcomes are interpreted.

Discrete approaches to emotion appraisals focus on the coherent themes, or *core-relational themes* in Lazarus's words (1991) that give rise to the experience of emotions and that differentiate emotions from one another. *Discrete approaches to appraisal* help to illuminate sources of individual variation in emotion — for example, why an angry person appraises ongoing events in ways that lead to a life rife with frustration and hostility (Rosenberg, 1998). Discrete emotion - eliciting appraisals can be captured in spontaneous discourse and relate to emotion - specific experiences and facial expressions (Bonanno & Keltner, 2004). Yet discrete approaches to appraisal fail to yield simple explanations of the similarities among emotions (e.g., between anger and fear) and do not readily explain rapid transitions between emotional states (Ellsworth, 1991).

By *dimensional approaches to appraisal* presuppose that core dimensions of appraisal, when combined, give rise to specific emotions (e.g., Ellsworth & Smith, 1988; Smith & Ellsworth, 1985). In their review of numerous studies of the semantic content of emotions, Smith and Ellsworth (1985) derived eight dimensions that capture the appraisal processes that lead to various emotions (see also Scherer, 1997). These appraisal dimensions can be thought of as the basic units of meaning that people ascribe to events.

Guided by dimensional approaches, studies of emotion - related recall (Ellsworth & Smith, 1988; Smith & Ellsworth, 1985) have documented that each emotion is defined by a fairly distinct pattern of appraisal (for critiques of this methodology, see Parkinson & Manstead, 1992). For example, interest is associated with appraisals of increased pleasantness, the desire to attend, the sense that situational factors are producing events, a perceived need to expend effort, moderate certainty about future outcomes, and little sense of obstacles or the illegitimacy of events.

Moreover, certain appraisal dimensions are central to the differentiation of clusters of emotions (Smith & Ellsworth, 1985). For example, agency, a combination of control and responsibility, differentiates anger, sadness, and guilt. In the face of a negative event, blaming others produces anger, believing that the situation is responsible produces sadness, and self - blame produces guilt (see also Weiner, 1985).

Dimensional accounts of emotion appraisal have generated several lines of inquiry. These accounts identify mechanisms by which emotions influence different cognitive processes and pinpoint likely emotional processes associated with different central nervous system regions (Davidson, Pizzagalli, Nitschke, & Kalin, 2003; Ochsner, 2008). For example, the experience of anger involving high levels of agency has been associated with activation in the left - frontal regions of the cortex, an area of the brain thought to facilitate approach–related behavior (Harmon-Jones, Sigelman, Bohlig, & Harmon-Jones, 2003). Dimensional accounts also illuminate likely areas of cultural variation in emotion-related appraisals. For example, based on how cultures vary in their conceptions of human agency (Morris & Peng, 1994), similar events are likely to trigger different emotions in members of different cultures, probably because of differences in appraisal.

Discrete and dimensional approaches both assume that emotion-eliciting appraisals begin with simple appraisals and proceed to complex meaning - making attributions. Along these lines, a critical question that has emerged concerns *automaticity:* which emotion-eliciting appraisals are automatic — that is, fast, beyond deliberative control, and preconscious, that is, immediate; and which are more deliberative, controlled processes. Inspired by Zajonc's theorizing

(1980), researchers now widely assume that an automatic, preconscious appraisal produces an evaluation of whether a stimulus is good or bad (LeDoux, 1996; Mischel & Shoda, 1995; Russell, 2003; Winkielman, Zajonc, & Schwarz, 1997). This system gives rise to automatic affective reactions that motivate rapid approach or avoidance responses and core feelings of positivity or negativity (Barrett, 2006; Russell, 2003).

The literature on emotion appraisals is rich in theoretical development, but several areas of inquiry await empirical attention. Given critiques of self - report measures as assessments of online appraisals (Parkinson & Manstead, 1992), methods are needed to study the contents of appraisal processes as they occur. In addition, new questions have arisen concerning the semantic content of primary appraisals: Are primary appraisals attuned to the valence of a stimulus, its novelty, its salience, or its intensity? Are Attention, Certainty, Control, Pleasantness, Perceived obstacle, Legitimacy, and Anticipated effort dimensions, involved in automatic, primary appraisals? How can we measure the emotions? Is there any relation between emotions on different dimensions? Can discrete emotions be generated through automatic appraisals? To what extent do primary appraisals give rise to conscious experiences (Clore & Ortony, 2008; Winkielman, Knutson, Paulus, & Trujillo, 2007)? Answers to these questions will shed light on how emotions arise.

METHODS

Type of Research and Design

It is an exploratory experimental study using 2X2 MANOVA design. There are two IV's and two DV's.

Participants

The sample consisted of 120 undergraduate college students, of The Lalitpur city (M.P.) randomly assigned in four treatment conditions, 30 students were randomly assigned to each treatment condition. The sample is divided into four groups on the basis of conditional time duration. Thirty students are taken for no interval condition, and same number are for interval (approximately 24 hours) condition.

Procedure

For recording subject's responses they were given NEMT Test paper (Negative Emotions Measurement Test) it has two response pages for each emotion, each page for one emotion and eight appraisal dimensions. For two emotion subject are given two response pages. On each page subject has two estimates of an emotion on a particular dimension by using line estimation and number estimation. The reference line is 5 cm and reference number is 50 are given in page. Subjects were asked to estimate the magnitude of each dimension by drawing the line whose length is equal to the magnitude. In the same way subject has to give number which is assumed to be equal to the magnitude on a dimension.

Instructions

To make the subject acquainted with the task an exemplar of actual stimulus-response cards used in actual study, stimulus is presented to him/her. In Emotion word sheet, as you can see it is an appraisal dimension word. This word tells something about when you engage in any activity or experience. In other words, this is one characteristic of your experience. The meaning of the word will be clear to us when we read the meaning given after it."

In Test paper, the reference line and reference number is given; you have to response according to those. In line if

you feel this emotion on this dimension double than draw a 10 cm. line, if four time more than 20 cm. line or feel half of reference line than 2.5 cm line and so on. In number 50 is reference as line in number also you have to response according to reference number if you feel double than write 100, if feel four time more than write 200, if feel half then 25 and so on. There for, responses will be $2 \times 2 = 04$ numbers of estimates on 8 dimensions with 2 type of responses line and number.

Data Collection

For collecting the data, four groups selected randomly each group have 30 subjects. A verbal consent was taken from the respondents after informing them the purpose of the study. They were assured that the information they provide will be kept confidential and used only for research purposes. Each subject was briefly interviewed to find out whether they met the criteria for inclusion in the sample. Thus a sample of 120 respondents aged between 18 to 22 years was selected. They were then handed over emotion and dimension written response pages to respond. They were helped if they had any difficulty regarding understanding or responding to the response pages items. Respondents were requested to respond honestly and to answer all the items. After they had completed all items they were thanked and the complete questionnaires were collected.

Hypothesis

H.1: In comparison to the interval condition there will be more similarity between Line and Number estimates in no interval condition.

Question-A: Does the interval between the two estimations produce differences between the Line and Number estimations?

H.2: Guilt and shame will not be differentiated on four dimensions – attention, certainty, control, pleasantness, perceived obstacle, responsibility, legitimacy, and anticipated effort.

RESULTS AND DISCUSSIONS
SECTION -I
Descriptive Statistics

Table 1 shows the means and SDs of emotions on each dimension, table 1 has means and SDs based on subjects' estimations of different emotions on different dimensions using line and number. This table presents the context in which the differences between emotions will be analyzed statistically in section – II. This research needs MANOVA which is relatively complex processing of these primary characteristics of the data, the researcher has tried to state some hypotheses regarding the effect of Interval, Emotions, and their combined effects on dimensional estimations of emotions. The problem of hypothesis formation became almost impossible due to non-availability of researches related with the interval between of line and number estimation.

Table 1: Mean and SD of Emotions on Line and Number Dimensions

E		D1L	D1N	D2L	D2N	D3L	D3N	D4L	D4N	D5L	D5N	D6L	D6N	D7L	D7N	D8L	D8N
E1	M	5.598	49.367	5.198	43.625	5.258	51.342	2.483	19.042	6.018	55.917	5.213	47.817	5.492	48.658	6.494	58.217
	SD	4.574	45.824	4.522	40.122	5.294	72.071	4.622	42.659	4.935	57.702	4.436	51.241	4.861	47.884	5.115	62.647
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
E2	M	6.359	54.658	5.499	43.067	5.625	47.758	1.617	16.750	5.947	51.117	5.364	48.775	6.042	57.117	6.973	66.350
	SD	6.380	62.310	4.868	41.520	4.651	46.012	2.784	46.202	3.938	39.802	3.755	53.083	4.505	64.169	5.376	62.661
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Total	M	5.979	52.013	5.348	43.346	5.441	49.550	2.050	17.896	5.982	53.517	5.288	48.296	5.767	52.888	6.733	62.283
	SD	5.553	54.642	4.690	40.742	4.976	60.362	3.832	44.387	4.455	49.521	4.102	52.063	4.685	56.656	5.242	62.656
	N	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240

Table 2: Mean and SD of Interval on Line and Number Dimensions

I		D1L	D1N	D2L	D2N	D3L	D3N	D4L	D4N	D5L	D5N	D6L	D6N	D7L	D7N	D8L	D8N
I1	M	7.103	59.567	6.110	46.525	5.829	51.425	2.167	15.192	6.885	61.633	5.908	54.133	6.233	53.708	7.695	69.258
	SD	7.278	70.943	5.852	48.063	5.941	72.335	4.689	36.757	5.260	60.734	4.944	63.556	5.359	65.053	6.136	75.849
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
I2	M	4.855	44.458	4.587	40.167	5.053	47.675	1.933	20.600	5.079	45.400	4.668	42.458	5.300	52.067	5.772	55.308
	SD	2.532	29.130	2.962	31.677	3.758	45.589	2.734	50.904	3.248	33.224	2.927	36.548	3.862	47.048	3.958	45.091
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Total	**M**	**5.979**	**52.013**	**5.348**	**43.346**	**5.441**	**49.550**	**2.050**	**17.896**	**5.982**	**53.517**	**5.288**	**48.296**	**5.767**	**52.888**	**6.733**	**62.283**
	SD	**5.553**	**54.642**	**4.690**	**40.742**	**4.976**	**60.362**	**3.832**	**44.387**	**4.455**	**49.521**	**4.102**	**52.063**	**4.685**	**56.656**	**5.242**	**62.656**
	N	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**	**240**

SECTION - II

Multivariate Analysis of Variance (MANOVA)

A Multivariate Analysis of Variance was conducted to explore the impact of two negative emotions with two conditions (interval and gender) on the evaluation of the eight appraisal dimensions. The evaluation of the appraisal dimensions was measured by two dependent variables-line and number.

Table 3: MANOVA (Interval x Emotion/ N=120)

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.769	45.996(a)	16.000	221.000	.000
	Wilks' Lambda	.231	45.996(a)	16.000	221.000	.000
	Hotelling's Trace	3.330	45.996(a)	16.000	221.000	.000
	Roy's Largest Root	3.330	45.996(a)	16.000	221.000	.000
Emotion	Pillai's Trace	.064	.952(a)	16.000	221.000	.511
	Wilks' Lambda	.936	.952(a)	16.000	221.000	.511
	Hotelling's Trace	.069	.952(a)	16.000	221.000	.511
	Roy's Largest Root	.069	.952(a)	16.000	221.000	.511
Interval	Pillai's Trace	.103	1.580(a)	16.000	221.000	.076
	Wilks' Lambda	.897	1.580(a)	16.000	221.000	.076
	Hotelling's Trace	.114	1.580(a)	16.000	221.000	.076
	Roy's Largest Root	.114	1.580(a)	16.000	221.000	.076
Emotion * Interval	Pillai's Trace	.067	.993(a)	16.000	221.000	.466
	Wilks' Lambda	.933	.993(a)	16.000	221.000	.466
	Hotelling's Trace	.072	.993(a)	16.000	221.000	.466
	Roy's Largest Root	.072	.993(a)	16.000	221.000	.466

Table 3 Shows the main and interaction effect of interval, and emotion. All the test statistics- Pillai's Trace, Wilks' Lambda, Hotelling's Trace, Roy's Largest Root shows no significant effect of emotion, interval, and Interval x Emotion.

Between Subject Effects

This part of result contains the summary table for the dependent variables. There are two parts in between subject result first is main effect and second is interaction effect of IVs. The main effect and interaction effects are given blow.

MAIN EFFECT

Interval

Table 4 Shows the between subject effect, the main effect of the interval with different dimensions. In D1L (MS=303.075, F=10.173 and p <.05), in D1N (MS = 13695.704, F = 4.629 and p <.05), in D2L (MS = 139.233, F = 6.433 and p <.05), in D5L (MS = 195.662, F = 10.307 and p <.05), in D5N (MS = 15811.267, F = 6.680 and p <.05), in D6L (MS = 92.256, F = 5.554 and p <.05), and in D8L MS = 221.953, F = 8.278 and p <.05).

In these tables, it can be observed that the difference between no interval and interval condition are positive for Line estimation. And the difference between no interval and interval condition are also positive for Number estimation.

Overall trends in both tables is that under interval condition (with 24 hours gap), the mean scores dent to be lower than no interval condition. Interval the factor which can be considered as aspect of estimation process.

Table 4: Significant Differences of between Subject Effect Interval x Emotion/N=120

	Interval	Emotion	Interval x Emotion
D1L	.002*	-	-
D1N	.032*	-	-
D2L	.012*	-	-
D2N	-	-	-
D3L	-	.-	-
D3N	-	-	-
D4L	-	-	-
D4N	-	-	-
D5L	.002*	-	-
D5N	.010*	-	.038*
D6L	.019*	-	-
D6N	-	-	-
D7L	-	-	-
D7N	-	-	-
D8L	.004	-	-
D8N	-	-	-

There are two modes of estimations Line and Number. Each subject has to use these modes. Resultantly the question of interval between of the two modes is natural. This factor is the aspect which is affected upon the estimation process. However, it should also be taken as truism that dimensions are related to the aspect of emotions. Any deviation of mean score may be attributed by the cognitive factors qualified with the emotion dimension relationship.

Emotion

Table 4 shows the Emotion main effect. There are no significant differences in any dimension.

Interaction Effect

There is one types of interactions found in the study. The question the researcher must ask whether the statistically significant interactions are psychologically significant too. The problem is to verify the isomorphic relations between the statistical significant and psychological significance. Let this relationship be examined. This examination would be based on the trends within data generated by IVs, separately. The factor-wise trends are given below;

- **Interval Factor:** Includes negative trend, this is when there is no interval between two estimation techniques (Line and Number). The score are higher than the condition when there is interval between the two.

Interval x Emotion

Table 4 shows the interaction of interval x emotion. There is only one significant difference in D5N (MS = 10349.067, F = 4.373 and p <.05).

SECTION - III

Pair Wise Comparison

This part of result contains the post- hoc Bonferroni pair wise comparison summary table for the dependent variables. There are two parts in pair wise result first is interval pair wise comparison, second is emotion pair wise comparison of IVs on DVs. The pair wise comparisons are given below.

Interval Pair Wise Comparison

Table 5 shows the post-hoc comparison using the Bonferroni revealed significant differences between no interval and interval condition.

Table 5: Significant Differences in Interval Pair Wise Comparison

	I 1	I2
D1L	.002*	-
D1N	.032*	-
D2L	.012*	-
D2N	-	-
D3L	-	-
D3N	-	-
D4L	-	-
D4N	-	-
D5L	.002*	-
D5N	.010*	-
D6L	.019*	-
D6N	-	-
D7L	-	-
D7N	-	-
D8L	.004	-
D8N	-	-

*Significant at.05 level

There are seven significant differences on D1L (MD = 2.247, SE =.705, $p < .05$), D1N (MD = 15.108, SE = 7.022, $p < .05$), D2L (MD = 1.523, SE =.601, $p < .05$),, D5L (MD = 1.806, SE =.562, $P < .05$), D5N (MD = 16.233, SE = 6.281, $p < .05$), D6L (MD = 1.240, SE =.526, $p < .05$), and D8L (MD = 1.923, SE =.669, $p < .05$). This result shows the effect of no interval is higher than interval condition. The question and hypothesis addressed the interval effect on line and number production. The hypotheses and question were the following.

H.1: In comparison to the interval condition there will be more similarity between Line and Number estimates in no interval condition.

Question-A. Does the interval between the two estimations produce differences between the Line and Number estimations?

These findings are in opposition of our hypothesis concerning the Interval conditions. Hypothesis stated that the interval between the two response measures on eight dimensions will produce significant differences between the two measures because;

- Interval provides an opportunity for intervening variables, such as respondent's mental state, depth of processing of before-interval estimation and affecting the after-interval estimation, etc.

- Emotional state of the respondent's mental state might change from before interval and after interval conditions;

There are more significant differences in no interval condition (7 in all) in comparison to the interval condition. Out of 7 significant differences 5 differences are between line estimations and 2 are between number estimations.

Emotion Pair Wise Comparison

Table 6 shows there are no significant differences between emotions in any dimension. In the following section, the developed hypothesis will be tested. The hypothesis was the following.

Table 6: Significant Differences in Emotion Pair Wise Comparison

	E 1	E2
D1L	-	-
D1N	-	-
D2L	-	-
D2N	-	-
D3L	-	-
D3N	-	-
D4L	-	-
D4N	-	-
D5L	-	-
D5N	-	-
D6L	-	-
D6N	-	-
D7L	-	-
D7N	-	-
D8L	-	-
D8N	-	-

*Significant at.05 level

H.2 Guilt and shame will not be differentiate on all eight dimensions – attention, certainty, control, pleasantness, perceived obstacle, responsibility, legitimacy, and anticipated effort.

The findings are supported our hypothesis because guilt and shame produce almost similar emotional reactions that's why on the all eight dimensions they don't show any significant differences. There were no research work have done on the guilt and shame measurement by magnitude estimation method.

SECTION - IV
CONCLUSIONS

The present study was designed to center around negative emotion measurement issues by line number estimations techniques and the relationship of emotion with appraisal dimension. Study made an attempt to identify the interval (0 interval and 24 hours interval) and emotion effect on line, number estimations.

Data were collected from the U.G. students; subject has to respond on their past negative emotional experiences on the basis of appraisal dimension, by line and number estimation techniques. In-depth interview with respondents' generated descriptive data. The data were analyzed with the help of statistical tools.

In the present study effect of interval was found on appraisal dimension and line, number estimations. Negative emotion was inversely proportional to all variables. Differences are found in interval, higher differences are found in no interval condition. And the emotion condition are not effective for the subject responses, there were no differences found on any dimensions.

The present study also found the one type of interaction effects, was significant only for one variables, such as interaction effect of interval x emotion significant for D5N.

The study also examined the post-hoc Bonferroni pair wise comparison among IVs. There are two types of pair wise comparison; in it the significant result shows their inter-relation and differences in between IVs and DVs. In interval pair wise comparison no interval shows the higher differences comparison to interval condition. And in Emotion pair wise comparison, there are no significant differences found in any dimension.

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