International Journal of Humanities
and Social Sciences (IJHSS)
ISSN(P): 2319-393X; ISSN(E): 2319-3948
Vol. 3, Issue 3, May 2014, 105-114

International Academy of Science,
Engineering and Technology
Connecting Researchers; Nurturing Innovations

EFFECT OF INTERVAL BETWEEN TWO ESTIMATION TECHNIQUES ON THE SIMILARITIES AND DIFFERENCES AMONG ANGER AND FEAR

MUKESH KUMAR PANTH[1], I. D. AWASTHI[2] & MANSI GUPTA[3]

[1]Assistant Professor, Department of Psychology, Nehru P.G College, Lalitpur, Uttar Pradesh, India

[2]Sr. Assistant Professor, Department of Psychology, Dr. H.S Gour Central University, Sagar, Madhya Pradesh, India

[3]Health Education Officer, Department of Health and Family Welfare, Lalitpur, Uttar Pradesh, India

ABSTRACT

The present study was designed to center around emotion measurement issues by line number estimations techniques and the relationship of anger and fear 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 not found on appraisal dimension and line, number estimations. Emotions were inversely proportional to all variables. Fear emotion condition is effective for the subject responses, there were six differences found on any dimensions. The present study also found the one type of interaction effects. Interaction effect of interval x emotion was significant in three 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, Anger, Fear and Magnitude Estimation

INTRODUCTION

Emotion is a complex psycho physiological experience of an individual's state of mind as interacting with biochemical (internal) and environmental (external) influences. In humans, emotion fundamentally involves "physiological arousal, expressive behaviors, and conscious experience." Emotion is associated with mood, temperament, personality – disposition, and motivation. Motivations direct and energize behavior, while emotions provide the affective component to motivation – positive or negative.

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.

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 anger. In the face of a negative event, blaming others produces anger, believing that the situation is responsible produces sadness and self - blame produces anger (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.

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 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 2×2 = 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: Anger and fear will not be differentiated on all eight 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.

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	5.401	43.100	5.010	44.917	4.204	39.875	1.392	10.183	5.496	48.958	4.430	38.392	5.342	47.258	5.278	46.825
	SD	3.931	31.631	3.604	36.548	3.001	44.384	2.495	17.620	3.676	34.222	3.664	41.070	4.314	46.110	4.419	45.015
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
E2	M	5.546	50.200	5.370	48.817	5.715	46.042	2.250	19.775	6.772	56.142	5.747	59.258	5.025	43.433	7.253	66.575
	SD	4.938	46.644	4.598	41.874	5.712	45.042	2.951	38.123	5.216	47.906	7.287	149.129	3.918	41.322	7.172	63.916
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Total	**M**	**5.473**	**46.650**	**5.190**	**46.867**	**4.960**	**42.958**	**1.821**	**14.979**	**6.134**	**52.550**	**5.088**	**48.825**	**5.183**	**45.346**	**6.265**	**56.700**
	SD	4.454	39.926	4.126	39.268	4.616	44.727	2.761	30.022	4.548	41.698	5.793	109.646	4.115	43.732	6.026	56.044
	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

INTERVAL		D1L	D1N	D2L	D2N	D3L	D3N	D4L	D4N	D5L	D5N	D6L	D6N	D7L	D7N	D8L	D8N
I1	M	5.913	48.317	5.415	47.883	5.359	43.392	1.783	12.667	6.843	57.442	5.663	44.933	5.267	45.867	7.011	60.425
	SD	5.358	46.566	4.902	44.267	5.557	50.660	2.760	20.421	5.040	44.834	7.549	54.163	4.361	46.068	7.443	64.836
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
I2	M	5.033	44.983	4.965	45.850	4.560	42.525	1.858	17.292	5.424	47.658	4.514	52.717	5.100	44.825	5.519	52.975
	SD	3.279	32.057	3.171	33.693	3.403	38.092	2.772	37.181	3.889	37.866	3.120	145.539	3.871	41.451	4.051	45.569
	N	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
Total	**M**	**5.473**	**46.650**	**5.190**	**46.867**	**4.960**	**42.958**	**1.821**	**14.979**	**6.134**	**52.550**	**5.088**	**48.825**	**5.183**	**45.346**	**6.265**	**56.700**
	SD	4.454	39.926	4.126	39.268	4.616	44.727	2.761	30.022	4.548	41.698	5.793	109.646	4.115	43.732	6.026	56.044
	N	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240

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.

SECTION – II

Multivariate Analysis of Variance (MANOVA)

A Multivariate Analysis of Variance was conducted to explore the impact of two negative emotions with one condition (interval) 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)

	Interval	Emotion	Interval x Emotion
Pillai's Trace	-	.003*	-
Wilks' Lambda	-	.003*	-
Hotelling's Trace	-	.003*	-
Roy's Largest Root	-	.003*	-

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 significant effect of emotion, but in the interval, and Interval x Emotion there are no significant differences.

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

	Interval	Emotion	Interval x Emotion
D1L	-	-	-
D1N	-	-	-
D2L	-	-	-
D2N	-	-	-
D3L	-	.011*	-
D3N	-	-	-
D4L	-	.016*	-
D4N	-	.013*	-
D5L	.015*	.028	-
D5N	-	-	-
D6L	-	-	-
D6N	-	-	-
D7L	-	-	.005*
D7N	-	-	.006*
D8L	-	.011	-
D8N	-	.006	-

Table 4 Shows the between subject effect, the main effect of the interval with different dimensions, it's significant on D5L (MS = 120.842, F = 6.051 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. 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 six significant differences in D3L (MS =136.957, F = 6.575 and $p < .05$), D4L (MS =44.204, F = 5.942 and $p < .05$), D4N (MS =5520.004, F = 6.328 and $p < .05$), D5L (MS =97.665, F = 4.890 and $p < .05$), D8L (MS =234.037, F = 6.649 and $p < .05$), and D8N (MS =23403.705, F = 7.630 and $p < .05$) dimensions. The result shows the differences in between emotions on the six dimensions.

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 are two significant difference in D7L (MS = 132.017, F = 7.972 and $p < .05$) and D7N (MS = 14554.838, F = 7.779 and $p < .05$).

SECTION-III

Pairwise Comparison

This part of result contains the post- hoc Bonferroni pairwise comparison summary table for the dependent variables. There are two parts in pairwise result first is interval pairwise 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.

There is only one significant difference on D5L (MD = 1.419, SE = .577, $p < .05$). 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?

Table 5: Significant Differences in Interval Pair Wise Comparison

	I 1	I2
D1L	-	-
D1N	-	-
D2L	-	-
D2N	-	-
D3L	-	-
D3N	-	-
D4L	-	-
D4N	-	-
D5L	.015*	-
D5N	-	-
D6L	-	-
D6N	-	-
D7L	-	-
D7N	-	-
D8L	-	-
D8N	-	-

These findings are in opposition of our hypothesis concerning the no interval and Interval conditions. Hypothesis stated that the interval between the two response measures on eight dimensions will produce significant differences between the two measures because;

A. 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.

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

There is only one significant difference in no interval condition (1 in all) in comparison to the interval condition. The significant difference found in D5L it's shows that interval condition does not affect the subject responses.

Emotion Pair Wise Comparison

In emotion pair wise comparison there are six significant differences in E2 (fear) on six 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	-	.011*
D3N	-	-
D4L	-	.016*
D4N	-	.013*
D5L	-	.028*
D5N	-	-
D6L	-	-
D6N	-	-
D7L	-	-
D7N	-	-
D8L	-	.011*
D8N	-	.006*

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

The findings are opposite of our hypothesis because fear produce six differences on D3L, D4L, D4N, D5L, D8L, and D8N. Both emotions are different in nature because of that they show differences on difference dimensions. There were no research work have done on the anger and fear measurement by magnitude estimation method.

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.

In the present study effect of interval was not found on appraisal dimension in line, number estimations. Negative emotion was inversely proportional to all variables. And the emotion condition is effective for the subject responses, there were differences found on six dimensions.

The present study also found the two type of interaction effects, was significant for two variables, such as interaction effect of interval x emotion significant for D7L and D7N.

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 one difference comparison to interval condition. And in Emotion pair wise comparison, there are significant differences found on six dimensions.

REFERENCES

1. Barrett, L. F. (2006). Are emotions natural kinds? *Perspectives on Psychological Science, 1*, 28 – 58.
2. Bonanno, G. A., & Keltner, D. (2004). The coherence of emotion systems: Comparing "on - line" measures of appraisal and facial expressions, and self - report. *Cognition and Emotion, 18*, 431 – 444.
3. Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67*, 319 – 333.
4. Clore, G. L & Ortony, A. (2008). Appraisal theories: How cognition shapes affect into emotion. In M. Lewis,
5. J. M. Haviland – Jones & L. F. Barrett (Eds.), *Handbook of emotions* (pp. 628 – 644). New York: Guilford Press.
6. Davidson, R. J. (2004). What does the prefrontal cortex "do" in affect: Perspectives on frontal EEG asymmetry research. *Biological Psychology, 67* (1 – 2), 219 – 233.
7. Davidson, R. J., Pizzagalli, D., Nitschke, J. B & Kalin, N. H. (2003). Parsing the subcomponents of emotion and disorders: Perspectives from affective neuroscience. In R. J. Davidson, K. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective science* (pp. 8 – 24). New York: Oxford University Press.
8. Ellsworth, P. (1991). Some implications of cognitive appraisal theories of emotion. In K. T. Strongman (Ed.), *International review of studies on emotion* (pp. 143 – 161). Chichester, England: Wiley.

9. Ellsworth, P. C & Smith, C. A. (1988). From appraisal to emotion: Differences among unpleasant feelings. *Motivation and Emotion, 12*, 271 – 302.

10. Harmon - Jones, E., Sigelman, J. D., Bohlig, A & Harmon - Jones, C. (2003). Anger, coping, and frontal cortical activity: The effect of coping potential on anger - induced left frontal activity. *Cognition and Emotion, 17*, 1 - 24.

11. Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist, 52*, 1280 – 1300.

12. Lazarus, R. S. (1991). *Emotion and adaptation*. New York: Oxford University Press.

13. LeDoux, J. (1996). *The emotional brain*. New York: Simon & Schuster.

14. Mischel, W & Shoda, Y. (1995). A cognitive - affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structures. *Psychological Review, 102*, 246 – 268.

15. Morris, M. W & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology, 67*, 949 – 971.

16. Ochsner, K. N. (2008). The social – emotional processing stream: Five core constructs and their translational potential for schizophrenia and beyond. *Biological Psychiatry, 64* (1), 48 – 61.

17. Parkinson, B & Manstead, A. S. R. (1992). Appraisal as a cause of emotion. In M. S. Clark (Ed.), *Emotion*. Newbury Park, CA: Sage.

18. Roseman, I. J. (1991). Appraisal determinants of discrete emotions. *Cognition and Emotion, 5*, 161 – 200.

19. Roseman, I. J., Spindel, M. S., & Jose, P. E. (1990). Appraisals of emotion - eliciting events: Testing a theory of discrete emotions. *Journal of Personality and Social Psychology, 59*, 899 – 915.

20. Roseman, I. J., Wiest, C & Swartz, T. (1994). Phenomenology, behaviors, and goals differentiate discrete emotions. *Journal of Personality and Social Psychology, 67*, 206 – 221.

21. Rosenberg, E. L. (1998). Levels of analysis and the organization of affect. *Review of General Psychology, 2*, 247 – 270.

22. Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review, 110*, 145 – 172.

23. Scherer, K. R. (1997). The role of culture in emotion antecedent appraisal. *Journal of Personality and Social Psychology, 73*, 902 – 922.

24. Scherer, K. R & Wallbott, H. B. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology, 66*, 310 – 328.

25. Smith, C & Ellsworth, P. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology, 48*, 813 – 838.

26. Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548 – 573.

27. Winkielman, P., Knutson, B., Paulus, M. P & Trujillo, J. T. (2007). Affective influence on decisions: Moving towards the core mechanisms. *Review of General Psychology, 11*, 179 – 192.

28. Winkielman, P., Zajonc, R & Schwartz, N. (1997). Subliminal affective priming resists attributional intervention. *Cognition and Emotion, 11*, 433 – 465.

29. Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*, 151 – 175.