

TIME ESTIMATION IN SOME GROUP SITUATIONS¹

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Summary.—The subjective estimations of long durations of time were studied for two different types of experience, an analytically oriented (Bionian) group situation and a task group. In each group were 15 subjects. Significant differences emerge in estimations of duration of time for the two situations. Whereas for the task group there are no substantial errors in the subjective estimation of time, the analytically oriented group shows notable oscillations with respect to different cognitive and emotional situations which, from time to time, characterize the group situation.

In the present research we set out to study the estimation of long durations of time in various group situations. The many studies which have been carried out in the past five years on the perception of time essentially take into consideration perceptions of relatively brief durations in milliseconds to minutes. For the perception of duration we mean the perception of the interval which elapses between two stimuli. For a complete review see Zelkind and Sprug (1974), Eisler (1976), and Guay and Hall (1977).

In earlier research little attention was given to the estimation of longer durations. This narrowing of the field was necessary for the sake of methodological clarity and for singling out simple structural elements which would have been impossible to extract from studies of long durations of time as these are influenced by many interfering variables. The study of such durations presents several difficulties. Fraisse (1967) affirms that "when duration exceeds the time field of perception, we can carry out only a global evaluation which we know to be difficult and uncertain."

Fraisse (1967) has affirmed also that "the experienced time is always an experience of changes." We maintain that such "changes" pass through the activation of cognitive and emotional factors. Consequently an estimate of time duration must take into account such activation. This is naturally more evident in the estimation of longer durations of time in which memory, subject to processes of recall and forgetting, plays a role of primary importance.

Different modalities of experience of time closely linked to modifications of states of consciousness (Arieti, 1947; Melges & Fougèrouse, 1966; Hartocollis, 1975; Fachinelli, 1979) have been described in psychopathology. These studies examined the perceptual distortion of experienced time expressed only in qualitative terms and placed little emphasis on duration.

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In psychoanalysis, Freud speaks about the "atemporality" of the processes of the unconscious (1915) and underlines the role which the primary and secondary processes play in determining the experience of time. This theme has been taken up by other psychoanalysts (Bonaparte, 1939; Namnum, 1972; Masler, 1973; Kavka, 1975; Dupont, 1974; Abraham, 1976).

Bion (1961, pp. 158-172) hypothesized a relation between the experience of time and group situations. Further, he hypothesized that the group situation would substantially modify the connotative aspects of the perceptual and emotional experiences of individuals in the group. In fact, Bion hypothesized that there are mental, intellectual and emotional conditions which would characterize the group as a whole. The name "basic assumption" (1961, pp. 63-78) has been given to this condition; three fundamental forms have been specified: dependence, fight-flight, and pairing groups.

Let us note also that Bion's term, basic assumption, incorporates more classes of behavior than can be defined singly even in conventional psychiatric terms (depressive state, anxious reaction, etc.), psychological (aggressive behavior, etc.), and psychoanalytical terms. Bion (1962, p. 6; 1965, p. 1) pointed out the problem in communicating psychoanalytic experience and attempted to outline clinical experience to synthesize a system of symbolic annotations, summarized in a grid with two entries (Table 1). This grid was meant to describe intellectual activity. Bion held that cognitive processes can be placed along an axis which indicates their progressive differentiation passing from immature and confused forms of thought with fragments of representations to extremely differentiated forms, such as "concepts" and mathematical-type "abstractions." Oneiric thought would have an intermediate placement. These processes are indicated on the ordinate of the grid. Bion held also that this process within

TABLE 1
THE BIONIAN GRID

	1 Defining hypothesis	2 Unsaturated elements	3 Notation	4 Attention	5 Inquiry	6 Action	... n
A beta elements	A1	A2	A3	A4	A5	A6	
B alpha elements	B1	B2	B3	B4	B5	B6	Bn
C dream thought, dreams, myths	C1	C2	C3	C4	C5	C6	Cn
D pre-conception	D1	D2	D3	D4	D5	D6	Dn
E conception	E1	E2	E3	E4	E5	E6	En
F concept	F1	F2	F3	F4	F5	F6	Fn
G scientific deductive system		G2					
H algebraic calculus							

the subject can be communicated and that in this communication forms range from the undifferentiated to the most differentiated. In other words, the subject can develop an oneiric process or a concept and express it in the communication of the form that can be "notation," "attention," "inquiry" (axis of the abscissa).

Also, the whole analytic group develops transformational processes which can be defined according to this grid. It seems to us that these annotations can be employed also in the "reading" of group situations, even if this has not been done.

Let us remember also that the group situation in an analytical orientation described in terms of basic assumption is differentiated in a substantial way from the "task" group (Bion, 1961, pp. 156-158) by a different mental attitude; that is why in the latter situation attention is not centered on the group but on a well-defined task, via use of rational, scientific language. According to Bion's scheme, the task group can be defined by F3, F4, F5 (concept respectively in notation, attention and inquiry), and G (scientific deductive system), whereas the analytic group can assume all of the possible forms indicated by the grid during a session.

Thus, our hypothesis is that: (1) the estimate of time linked to group experience is substantially different depending on whether it deals with a basic-assumption group or a task group; (2) inside the basic assumption group the estimate depends both on the different forms of the basic assumption which appear during the group activity and, above all, on the transformational processes described according to the conceptual analytic Bionian schemes. It must be remembered that it is not possible to form a control group in the traditional way since each group situation has its own specifications.

METHOD

Subjects

Two groups of subjects were examined. (a) Group A were 15 students, 3 males and 12 females between 18 and 40 yr. of age. All were undergraduate students in psychology taking part in a theoretical seminar on problems of fatigue and stress. (b) Group B were 15 undergraduate students in psychology, 5 males and 10 females between 22 and 40 yr. of age. They were participating in a Bionian-type analytical encounter group.

Measurement

The measurement of the estimation of time during different phases of the group encounters was carried out in the following way. A horizontal line was drawn on a sheet of millimeter-lined paper (every square corresponded to 5 min.; a total of 24 squares represented 120 min. to indicate the total duration of the group meeting). This corresponded to two uninterrupted hours. The

subject was asked to indicate on the horizontal line a subjective estimate of the duration of the single phases into which the group meeting was subdivided (see procedure). Then, the difference in minutes between the subjective estimate and actual duration was calculated for each phase.

Procedure

The students from the two groups met weekly in a room used for group encounters at the Institute of Psychology, University of Rome. They were seated in a circle. During the meeting the trainer, who was the same person for both groups, recorded the actual duration of the phases with a chronometer, without the students' knowledge. The psychodynamic sequences which constituted the phases were comparable to Bion's (1965, pp. 35-52) transformation processes. At the end of each meeting the phases identified by the trainer were discussed by the group. An attempt was made to define each phase by summarizing some elementary characteristics. The subjects were invited to mark on the "time line" the subjective lengths of the various phases. Then, a comparison was made between the actual durations of the phases and the subjective estimations.

The phases which were identified by the trainer on the basis of the development of group dynamics could not be rigidly programmed ahead of time either thematically or in terms of duration. The topics to be dealt with were already singled out in the task group, even though their actual duration could not be predicted, given the group dynamics. This explains why there were differences in the number of phases between the analytic group and the task group; they were differences linked to structural characteristics of the situations. Also, the maturation times of an analytic-oriented group are not identical to those of a task group. However, in the choice of sessions for the measurement of the perception of time we followed a developmental criterion rather than a chronological criterion.

In Group A the survey was carried out after the fifth and ninth meetings, respectively. The progression of the fifth meeting was characterized more or less by three discussions. In the first 45 min. presentation of data on work organization researched in various texts was made by a group of four students. A second period of 30 min. concerned generally the role of the psychologist in the work environment. The third discussion of 45 min. duration was devoted to the organization and functioning of the autonomic nervous system. During the ninth meeting the main discussions were the following: a 60-min. presentation of technopathologies, a 50-min. report on the relationship between diencephalon-hypophysis-adrenal axis and stress, and a 10-min. organizational discussion; see Table 3.

In Group B the survey was carried out after the seventh and twelfth meet-

ings. In the preceding meetings (up until the fifth) the group had already had experience with basic assumptions and the predominant themes made them aware of the varied modes of speech and thought in the group. During the sixth meeting the group began to "resist" the highly intellectualized content.

Following is a brief synthesis of the phases of the two experimental encounters. For explanation of symbolic annotation see Tables 1 and 2. The initial 20 min. was taken up with experimental encounters, which were characterized by the basic assumption of dependence with predominant feelings of abandonment. The topic concerned a sad event. The phase was recorded as "vacant seats" as several members of the group were absent. Using a Bionian description, the period could be characterized as mostly D2, "preconception" and thought, rich in unsaturated elements (Bion, 1965, pp. 106-112). The second duration of 50 min. was characterized by strong emotional oscillations. The topics dealt with were death, the plague, and happiness. The discussion was recalled as "the carnival: rites and ceremonies," an attempt at emotional re-elaboration of the depressive anguish of the initial phase. This phase could be characterized by a predominance of C3-C5, dream thought, myths on the ordinate and notation, inquiry on the abscissa. The third 30-min. phase was dominated by distress from dependence, activated by projective identification, with attack attempts and persecution fantasies. The theme was "the transgression administered by power" and the "group acted by. . ." It was recalled as "the power." This phase could be characterized by A6 ("beta elements" in "action," considered as a mental representation of an activity). In a fourth period of 20 min. there was a recovery of "groupness." The themes were those of the individual-collective relationship with regard to violence, guilt, expiation, and indifference, understood as defense mechanisms. The title of "anesthesia" was given to this phase. It can be characterized as E3-E4-E5, "conception" on abscissae and "notation," "attention" and "inquiry" on ordinate; see Tables 1 and 2.

The twelfth meeting was held approximately 30 days after the ninth one. The sequence was the following: (1) For a duration of 40 min. the group was concerned with the basic assumption, dependence, waiting for a long time for the trainer to begin. The latter suggested the "Sphinx" (Bion, 1961, p. 162) as an image of the group encounter. The phase was designated by "the strangler" and could be characterized as a transition from D2 to E2. (2) For 20 min. the arrival of a late member provoked an aggressive fight-flight movement in the group. The phase has been called "the fascinating Gina," after the female student who arrived unexpectedly. The action which occurred during the process of elaboration prevailed and could be defined as E6. (3) For the next 20 min. the leadership of one member who brought about the well-known phenomenon of "schism" (Bion, 1961, p. 122) and the formation of two sub-

groups was observed. The period was recalled as "the sect." The action-component inside a defining hypothesis could be classified as E1 and E6. In a final duration of 40 min. the group experienced a moment of great depersonalization stimulated by the omnipotent attacks of one member who tried to fragment the group (Bion, 1965, p. 129). The destructiveness of envy was followed by a universal sense of guilt and an attempt was made to re-form the group. It was recalled as "breaking everything." It corresponded with a phase which Bion has defined as -K (Bion, 1962, p. 162; 1965, p. 76). With reference to the grid we can define this phase as A2 and A6.

RESULTS

For each subject, for each stage of the two meetings, we calculated an error score obtained from the difference, expressed in minutes, between subjective duration and actual duration of time. We also calculated the ratio, actual duration/subjective duration. The mean values and standard deviations for both the analytic group and the task group are indicated in Tables 2 and 3.

As can be seen, for the analytic group the scores of the various phases differentiate in a statistically significant way both in the first and in the second meetings ($F_{3/14} = 7.77$, $p < 0.05$, first meeting; $F_{3/14} = 4.96$, $p < 0.05$,

TABLE 2
ERRORS IN TIME ESTIMATION, MEANS, STANDARD DEVIATIONS, AND RATIOS (R) OF
FOUR PHASES FOR MEETINGS 1 AND 2 OF AN ANALYTIC GROUP

Group B, 7° Meeting				Group B, 12° Meeting			
Phases	Bionian Group			Phases	Bionian Group		
	Description	Grid	Data		Description	Grid	Data
1	20 min., "Vacant seats"			1	40 min., "The strangler"		
	dependence	D2	M -2.33		dependence	D2,	M -3.00
	basic		SD 5.93		dependence	E2	SD 8.15
	assumption		R 1.08		interpretation		R 0.92
	abandonment		SD 0.45			SD 0.20	
2	50 min., "Carnival time"			2	20 min., "Fascinating Gina"		
	emotional	C3,	M -12.00		fight-	E6	M 0.00
	oscillation	C5	SD 14.30		flight		SD 10.00
	depressive		R 0.76				R 1.00
	anguish		SD 0.28			SD 0.5	
3	30 min., "The power"			3	20 min., "The sect"		
	attack	A6	M 2.68		leadership	E1,	M 10.68
	persecution		SD 12.37		schism	E6	SD 11.62
	fantasies		R 1.08				R 1.53
			SD 0.41			SD 0.58	
4	20 min., "Anaesthesia"			4	40 min., "Breaking everything"		
	container	E3,	M 11.66		omnipotent	A2,	M -7.68
	group	E4,	SD 13.04		attack	A6	SD 15.60
	guilt	E5	R 1.58		envy		R 0.80
	feelings		SD 0.65		guilt		SD 0.28

$F = 7.77$, $p < 0.05$

$F = 4.96$, $p < 0.05$

TABLE 3
MEANS, STANDARD DEVIATIONS, AND RATIOS (*R*) FOR ERRORS IN TIME ESTIMATION
IN THREE PHASES WITHIN MEETINGS 1 AND 2 OF A TASK GROUP

Group A, 5° Meeting				Group A, 9° Meeting			
Phases	Description	Data		Phases	Description	Data	
1	45 min. work organization	<i>M</i>	-3.33	1	60 min. techno-pathologies	<i>M</i>	-1.67
		<i>SD</i>	8.38			<i>SD</i>	8.38
		<i>R</i>	0.92			<i>R</i>	0.96
		<i>SD</i>	0.18			<i>SD</i>	0.14
2	30 min. psychologist's work role	<i>M</i>	7.00	2	50 min. stress	<i>M</i>	0.33
		<i>SD</i>	13.73			<i>SD</i>	7.67
		<i>R</i>	1.23			<i>R</i>	1.00
		<i>SD</i>	0.45			<i>SD</i>	0.15
3	45 min. Autonomic nervous system	<i>M</i>	3.67	3	10 min. brief discussion	<i>M</i>	1.33
		<i>SD</i>	11.25			<i>SD</i>	3.39
		<i>R</i>	0.91			<i>R</i>	1.13
		<i>SD</i>	0.25			<i>SD</i>	0.39
<i>F</i> = 2.86, <i>p</i> > 0.05				<i>F</i> = 0.48, <i>p</i> > 0.05			

second meeting). There is a significant underestimation of time in phase 2 from the first meeting (defined as C3-C5) and in the fourth phase of the second meeting (Bionian definition A2-A6). A marked overestimation appears, instead, in phase 4 during the first meeting (Bionian definition E3, E4, E5) and in the third phase of the second meeting (Bionian definition E1, E6). For the task group, on the other hand, there are no statistically significant differences ($F_{2/14} = 2.86, p > 0.05$, first meeting; $F_{2/14} = 0.48, p > 0.05$, second meeting). In this group, evaluation errors are very low, with the exception of phase 2 of the first meeting (psychologist's work role) in which a marked overestimation is observed. Considerably lower scores appear in the second session than in the first.

Furthermore, with reference to all of the meetings together, independent of the individual phases, we calculated a maximum range score for each subject. It refers to the range in minutes between the maximum positive error (overevaluation) and the maximum negative error (underevaluation). The analytic group has the following maximum range scores: $M = 35, SD, 14.83$ (first meeting); and $M = 30, SD, 15$ (second meeting). The difference between the two meeting scores is not statistically significant: *t* test for dependent means = 0.95 ($df = 28, p > 0.05$). The task group's maximum mean range scores were 22.33 ($SD, 16.43$, first meeting) and 12.00 ($SD, 11.13$, second meeting); the difference is not statistically significant. The *t* ratio for dependent means was 0.95 ($df = 28, p > 0.05$). The comparison of the maximum range scores of the analytic group and the deviation scores in the task group shows statistically significant differences. *t* tests for independent means gave 2.32 ($df = 28, p < 0.05$, first meeting) and 3.73 ($df = 28, p < 0.05$, second meeting).

Using an analysis of variance with a repeated factor (Edwards, 1960) to compare the maximum range score for the four meetings of the two groups gave statistically significant differences for meetings ($F = 11.68, p < 0.05$) and for groups ($F = 18.21, p < 0.05$).

DISCUSSION

On the basis of our results we can say that attention centered on the group and its transformations consistently modified the perception of durations of time. The first interesting fact to be observed is that in the analytic group there are marked statistically significant differences in the perceptions of durations of the single phases and that such differences are few and not statistically significant for the task group. This is probably because the phases of this group are very homogeneous. The only exception is seen in phase 2 of the first meeting in which it is probable that the overestimation is linked also to the fact that the theme discussed, i.e., the psychologist's work role, was an emotional one for students in psychology. Also, the range of perceptual errors (maximum deviation score) is much greater for the analytic group than the task group. Such a difference is statistically significant. Naturally, this assumption is limited by the fact that, for technical reasons having to do with group dynamics, the numbers of phases are not identical in the two groups; see Method section.

If we observe the single phases of the analytic group, we become aware that the maximum error of duration in the sense of a reduction appears in the second phase of the first meeting and in the fourth phase of the second meeting. The second phase of the first meeting is characterized by the presence of emotional oscillations and by a predominance of group mental attitudes which Bion names C3 and C5. In other words, the strong emotional oscillations are transformed and communicated in the form of mythical poetic thought, with translation in "attention" and "notation." The fourth phase of the second meeting is characterized instead by the level of psychotic regression: beta elements predominate with numerous unsaturated elements of the A2 type which tend to be transformed into A6 actions. With this term we mean a mental representation of an action or activity.

On the contrary, overevaluation is found in one phase (fourth of the first meeting) in which tendencies toward aggregation appear with the ability to conceptualize. This conceptualization shows elements of "annotation," "attention," and "inquiry." The overevaluation appears also in the third phase of the second meeting in which we noted a profound mobility in the tendencies toward aggregation and disaggregation of the group, with prevalence, in this case, of conceptualization on the defining hypothesis and actions. The difficult and fluid nature of the data lead us to the following hypothesis. In the group situation there is a "contraction" of the estimation of the perception of dura-

tion of time whenever attention is turned toward emotion and emotional and attentive "unsaturated" states. In language which is not strictly psychoanalytical we could say that the above situation occurs each time a high level of arousal is not resolved by conceptual thought or gives rise to mental states or representations which we could term "primary processes." Instead, overevaluation appears each time the group expresses, even representationally, its ability to conceptualize processes which we could call "secondary." As well as being present in several phases of the analytic group, they are also present in most phases of the task group. It is also possible that differences in evaluation of time are linked to mental representations of the different phases re-evoked by the trainer as well as to group experience.

Further investigation should follow this initial study

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