when the SP used high punishment and possessed a high level of resources, the perceived potential costs of behavioral defiance increased. In the latter case, it cost Ss nothing to defy the threatener verbally, and they stood a chance of deterring him by so doing. But to actually defy him might cause him to become angry and to use his threats more often and with higher credibility, particularly since he had the capability units for so doing.

The fact that high punishment magnitude produced more frequent use of the not-reveal-intentions message (M3) as a cover for compliant responses than did low punishment magnitude replicated the findings of several other threat studies (Horai & Tedeschi, 1969; Lindskold, Bonoma, & Tedeschi, 1969). It should be remembered that Ss were required to choose a reply message and could not refuse to communicate. An explanation of this behavior as "face-saving" (Brown, 1965) has been previously noted by Tedeschi and his colleagues. The S must comply because of the high costs of defiance, but he doesn't need to comply verbally, nor does he need to lie about his intentions to defy, so he simply refuses to reveal his intentions when he is forced to comply.

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NOTES

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2. The rationale for the criterion and the details of the procedure are fully explained by Horai & Tedeschi (1969).

Preparatory state effects in intersensory facilitation[1]

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Four trained Ss participated in a task concerned with intersensory facilitation of reaction time (RT). Discriminative RT to a visual event was longer than discriminative RT to a combined auditory-visual event, even though the auditory event by itself was a catch signal. The magnitude of this difference was greater with a long (5.5 sec) as opposed to short (.5 sec) foreperiod delay. This finding supported the hypothesis that the auditory component of the combined event serves a preparatory state role by enhancing response readiness, a role that is manifest to the extent that S's prior degree of preparation is nonoptimal.

Reaction time (RT) to a combined visual-auditory (VA) event, RT_{va}, is more rapid than RT to the visual (V) component alone, RT_v (Todd, 1912; Hershenson, 1962; Bernstein et al, 1969a, b). Bernstein et al (1969b) have suggested that one reason for this intersensory facilitation effect is that the auditory (A) component may aid in the response preparation process. It follows from this assumption that A will have a greater effect when the S is less well as opposed to better prepared to respond. At high degrees of preparation, S's performance is limited by other factors, such as stimulus intensity. With both maximum preparation and high visual intensities, RT reaches an "irreducible minimum," affording no opportunity for A to affect RT. As foreperiod (FPD) parameters are well known to affect unisensory RT through changes in the preparatory process, it would follow that this magnitude of facilitation ($F = RT_v - RT_{va}$) would be a function of FPD parameters that alter RT_v. The present study varied FPD duration (5.5 vs .5 sec) and FPD variability (random vs fixed duration) as a preliminary test of the preparatory-state hypothesis.

SUBJECTS

Four advanced undergraduate psychology majors, three male (RR, VA, and CN) and one female (PB), enrolled at the University of Texas at Arlington, comprised the sample. All had at least 10 h of experience in experiments of the present type. RR and VA also served as Es and were familiar with the hypothesis under investigation; PB and CN were not familiar with the hypothesis.

PROCEDURE

Throughout the experiment, a given trial could consist of a V, VA, or A event, the latter serving as a catch trial. Trial types occurred with equal frequency and at random. A total of 300 trials was run in each of four sessions, exclusive of warm-up and preexperimental practice. In one session, all trials were run with a 5.5-sec FPD. In a second session, all trials were run with a .5-sec FPD. In the third and fourth sessions, 5.5- and .5-sec FPDs occurred at random and with equal frequency. Conditions, however, were randomized across Ss. Each session was designed to last for slightly more than 1 h to provide rest breaks.

APPARATUS AND STIMULI

V events were presented on a Scientific Prototype Model 800-F two-channel tacnistoscope. The blank field contained a fixation cross subtending 1 deg of arc and 8 min of arc in thickness, which was cut from an opaque mask, covered by a layer of 10% transmittance negative, and back illuminated. The fixation cross was on continually. The exposure field contained the V event, which was a circular aperture subtending 24 min of arc that was presented for 20 msec. This aperture was covered by two layers of 10% transmittance negative. The resulting luminances for the fixation and exposure fields were approximately 1 and .1 apparent fc, respectively. Each trial began with a 100-msec, 500-Hz square-wave warning signal (WS) generated by an RCA WA-44C signal generator at 100 dB. A was a 10-msec, 1,300-Hz, 95-dB sinusoidal tone burst produced by a second RCA generator and amplified by a Scott Monaural receiver. Koss Pro-4 stereophonic headphones and Hunter timing equipment were used. RTs were recorded on a Hunter Klockounter and produced by right-hand telegraph-key depressions.

RESULTS

RT_v. Mean values of RT_v are presented in Table 1 as a function of FPD duration and variability, separately for each S and as a composite. Analysis of variance (ANOVA) of these means indicated that RT_v was longer with the 5.5-sec FPD ($\bar{X} = 284$ msec) as opposed to the .5-sec FPD ($\bar{X} = 234$ msec) duration [$F(1,9) = 45.52$, $p < .01$]. The difference between variable ($\bar{X} = 267$) and fixed FPD types ($\bar{X} = 251$) approached but did not reach statistical significance [$F(1,9) = 4.47$]. Further analysis indicated that RT_v was longer under the variable –.5 sec FPD ($\bar{X} = 247$) as opposed to the fixed –.5 sec ($\bar{X} = 221$) FPD condition [$F(1,9) = 6.64$, $p < .05$]. The comparable variable vs fixed difference (286 vs 282 msec) for the 5.5-sec FPD was minimal [$F(1,9) < 1.00$].

The data thus indicate that FPD duration did affect S's preparatory state. The lesser and generally nonsignificant effects of FPD variability seem to be due to strategies that some Ss indicated they had adopted for the variable FPD condition. Since Ss knew that there were only two FPD durations that were quite widely spaced, they generally set themselves for the .5-sec FPD. If the true FPD was 5.5 sec, they would have ample time to recover. The significant difference in RT_v for the .5-sec FPD duration across predictability conditions suggests that Ss did not always, in fact, adopt this strategy but tended also to gamble somewhat. The effects of such gamling are asymmetric in that being incorrectly set for the longer interval has a greater effect upon RT_v than being incorrectly set for the .5-sec FPD.

F. The values of F obtained by subtracting RT_{va} from RT_v are also presented in Table 1. ANOVA of these data indicated that F was greater for the 5.5-sec FPD ($\bar{X} = 42$ msec) than for the .5-sec FPD ($\bar{X} = 29$ msec), as predicted [$F(1,9) = 5.98$, $p < .05$]. F did not differ as a function of random ($\bar{X} = 37$) vs fixed ($\bar{X} = 34$) FPDs [$F(1,9) < 1.0$]. Separate examination of the predictability effect for the two FPD durations failed to reveal a significant difference, although the trends were similar to those observed for RT_v. The means for the variable and fixed FPDs at .5 sec were 34 and 24 msec, respectively [$F(1,9) = 4.38$]. Failure to find a significant difference occurred because of an 8-msec reversal in the case of one S (DB). Individual t tests indicated that F was greater in the variable condition for RR and CN ($t = 6.37$ and 4.82, both $p < .001$), was in a similar direction for VA ($t = 1.37$) but nonsignificant, and was in the reverse direction for PB ($t = 2.71$, $p < .01$, all $df = 196$). Differences at the 5.5-sec FPD between fixed and variable presentation were minimal and universally nonsignificant.

DISCUSSION

The finding that an increase in FPD duration degraded RT_v and increased F provides qualified support for the hypothesis that one effect of A is to enhance response readiness by compensating for deficiencies in the temporal properties of the WS. In this sense, A may be viewed as serving as a "supplemental" WS, the efficacy of which is inversely related to the efficacy of the nominal WS. The effects of FPD variability, though nonsignificant, were likewise in a direction supportive of this position.

The preparatory role of A is not necessarily its only function. Elsewhere (Bernstein, in press) it has been noted that nontemporal variables affect the magnitude of the intersensory effect. In particular, F is a direct function of the intensity of A.

Because F is affected by A intensity, one problem is raised in the present study. It is not entirely possible to rule out the explanation that the short FPD created a higher adaptation level for A than did the longer FPD. Thus, A may have been effectively weaker in the former case. An attempt to minimize this possible effect was made by having WS and A differ considerably in frequency. Although a visual WS, which was not feasible on the present apparatus, would seemingly avoid this difficulty, a recent study by Kohfeld (1969) suggests this would not be the case. He found that equivalent adaptation-level effects were produced by both an auditory and a visual WS upon an auditory reaction signal. To the extent that the auditory WS also was capable of providing intersensory adaptation level effects, it would weaken V. Bernstein (in press) has shown that F is inversely related to V intensity. This would tend to reduce the difference in F as a function of FPD duration and offset adaptation level effects of WS upon A. Also, the trend towards greater F with variable as opposed to fixed .5-sec FPD durations further weakens the possibility that the main finding of a relation between FPD duration and F can be attributed to adaptation level effects.

The presumed preparatory state effects of A can be produced by one of several mechanisms. The most likely possibility is that A reaches the appropriate locus of preparation before V, even though A and V are physically synchronous, because A is more intense than V with regard to their respective thresholds. On the other hand, the probability that either of two independent events of the same latency will reach a given locus by a specified time is greater than the probability that either one alone will reach that locus. Thus, although a "prior entry" or bias favoring auditory events in general is a remaining possibility, no special assumption of this type need be made to account for the present findings.

Table 1
RT to Visual Event (RT_V) and Facilitation (F) as a Function of Duration (.5 or 5.5 Sec) and Type (Fixed vs Variable) of Foreperiod Delay (FPD), Separately for Each S and as a Composite

	FPD Condition							
	.5-Fixed		5.5-Fixed		.5-Variable		5.5-Variable	
S	RT_V	F	RT_V	F	RT_V	F	RT_V	F
RR	214	20	245	41	227	37	255	43
VA	221	22	303	48	266	29	306	35
CN	224	17	275	39	257	41	273	34
PB	225	37	306	50	240	29	312	50
$\bar{X}$	221	24	282	44	248	34	287	40

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